ESSENTIALS OF LINGUISTICS REMIX 2.0



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Essentials of Linguistics Remix 2.0

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Licensing

*A detailed breakdown of this resource's licensing can be found in **Back Matter/Detailed Licensing**.*

About the Authors

1: Essentials of Linguistics Remix 2.0

This project is a heavy remix of *Essentials of Linguistics*, 2nd edition, by Catherine Anderson et.al. It includes work from an earlier remix of an earlier edition of the work; this remix was done by the same author as the previous remix.

1.1: About the Authors of *Essentials of Linguistics, 2nd edition*

This information was taken directly from the original OER page on PressBooks.

1.1.1: **TiLCoP Canada**

The members of the Teaching in Linguistics Community of Practice (TiLCoP) are instructors of linguistics at universities in Canada. We meet regularly to talk about our teaching practice and our pedagogical research. TiLCoP came together in 2020 to share resources and support at a time when we were all grappling with a rapid shift in teaching modality in response to the pandemic. Several exciting projects have grown out of our collaboration, including Word to the Whys (a companion podcast for Intro Linguistics courses), a special issue of the *Canadian Journal of Linguistics*, and of course this textbook!

1.1.2: **Catherine Anderson**



Catherine Anderson (she/her) is an Associate Professor, Teaching Stream, in the Department of Linguistics & Languages and the Director of the Gender & Social Justice program at McMaster University. She earned a PhD in Linguistics from Northwestern University in 2004, and a BA from McMaster in the department where she is now a faculty member. The thread that connects her wide-ranging teaching and research interests is partnership: collaborating with learners and colleagues to further justice and to make learning accessible and enjoyable. Catherine lives with her wife and their twin teenage sons in Hamilton, on the territory governed by the Dish With One Spoon wampum agreement between the Haudenosaunee and Anishinaabe Nations.

1.1.3: **Bronwyn Bjorkman**



Bronwyn Bjorkman (she/her) is an Associate Professor, Research Stream, in the Department of Languages, Literatures, and Cultures at Queen's University, located in the traditional shared territories of the Haudenosaunee and Anishinaabe peoples. She received her PhD from MIT in 2011. Her research explores the interfaces between phonology, morphology, syntax, and semantics, focusing on how how information is represented and transferred between formal modules of grammar. Her research has appeared in journals such as Linguistic Inquiry, Natural Language and Linguistic Theory, and Glossa. The COVID-19 pandemic shifted her belief in the value of virtual and remote community into ongoing work on building meaningful social connection into hybrid and virtual events both inside and outside academia.

1.1.4: **Derek Denis**



Derek Denis (he/him) is a tenure-stream, Assistant Professor, in the Department of Language Studies at the University of Toronto Mississauga, located within Dish With One Spoon territory and the treaty lands of the Mississaugas of the Credit. He received his PhD from the University of Toronto in 2015. His research examines language change and innovation from variationist and sociocultural linguistic perspectives, most recently focussing on the influence of immigrant youth in the emergence of a multiethnolect in Toronto. His work has appeared in *Language*, *Language Variation and Change*, *American Speech*, and the *Journal of Multilingual and Multicultural Development* among venues. He lives in Toronto but spends as much time as possible at the cottage with his partner.

1.1.5: **Julianne Doner**



Julianne Doner (she/her) is a sessional instructor at several institutions, including the University of Toronto Mississauga, the University of Guelph-Humber, the University of Victoria, and Seneca College. Julianne has also worked in incorporating Writing Across the Curriculum in the Linguistics department at the University of Toronto and provided support and training to instructors as they transitioned to online learning due to the COVID-19 pandemic at the University of Toronto St. George and Mississauga linguistics departments. She earned her PhD in Linguistics in 2019 from the University of Toronto, with a dissertation on cross-linguistic variation in clausal architecture, incorporating data from more than two dozen languages from over ten different language families. Julianne is currently working on directional particles in Niuean (Polynesian) and a cross-linguistic analysis of the cluster or properties associated with verb-initial word order, including doing fieldwork on K'iche' (Mayan) in Guatemala. Julianne plays the violin and enjoys dancing Lindy Hop.

1.1.6: **Margaret Grant**



Margaret Grant (she/her) is Lecturer in the Department of Linguistics and in the Cognitive Science Program at Simon Fraser University, with campuses on the unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish), səl̓ilw̓ətaʔɬ (Tsleil-Waututh), q̓íc̓əy̓ (Katzie), kʷikʷəƛ̓əm (Kwikwetlem), Qayqayt, Kwantlen, Semiahmoo and Tsawwassen peoples. She got her start in Linguistics as an undergraduate student at McGill University, where she earned her BA. Margaret graduated with a PhD in Linguistics from the University of Massachusetts, Amherst in 2013, specializing in psycholinguistics. Her research has focused on sentence comprehension, using a variety of experimental methods including the recording of eye movements during reading. When she isn't introducing students to the study of language, mind and brain, she enjoys spending time outdoors with her family.

1.1.7: **Nathan Sanders**



Nathan Sanders (he/him) is an Associate Professor, Teaching Stream, and Associate Chair, Undergraduate, in the Department of Linguistics at the University of Toronto (St. George), located in the traditional territory of many nations, including the Mississaugas of the Credit, the Anishinaabe, the Wendat, and the Haudenosaunee. He studied mathematics and linguistics at the Massachusetts Institute of Technology and earned his MA (2000) and PhD (2003) from the University of California, Santa Cruz, with a dissertation on phonology and sound change in Polish. He works on the phonetics and phonology of signed and spoken languages, historical phonology, linguistic typology, and innovative and inclusive teaching in linguistics. He has published articles in *Language*, *Sign Language & Linguistics*, *Natural History*, *Journal of the Scholarship of Teaching and Learning*, and *Journal for Research and Practice in College Teaching*, and he is co-editor of the book *Language Invention in Linguistics Pedagogy* (2020, Oxford University Press). He lives in downtown Toronto with his extensive board game collection.

1.1.8: **Ai Taniguchi (谷口愛)**



Ai Taniguchi (she/her) is an Assistant Professor, Teaching Stream in the Department of Language Studies at the University of Toronto Mississauga, located within Dish With One Spoon territory and the treaty lands of the Mississaugas of the Credit. She earned her PhD in Linguistics in 2017 from Michigan State University, with a dissertation that examined various types of non-at-issue meaning in Japanese and English. Her research specialisation is in formal semantics, formal pragmatics, and the semantics-sociolinguistics interface. She is the winner of the 5-Minute Linguist competition at the 2019 Linguistic Society of America annual meeting, and is an advocate of public outreach and public education in linguistics, innovative online teaching, and diversity/inclusion in linguistics. She enjoys drawing and making digital comics, and lives in Toronto with her two cats, Pancakes and Waffles.

1.2: About the Remixing Author

1.2.1: Sarah Harmon



Sarah Harmon (she/her/ella/lei) is an Adjunct Professor of Spanish and Linguistics and serves as the OER/ZTC Coordinator at Cañada College, located on the traditional land of the Ramaytush Ohlone peoples. She earned her Ph.D. in Romance Linguistics in 2007 from the University of Texas at Austin, with a dissertation focusing on evolutionary historical linguistics as it pertains to grammatical gender in the Early Romance Languages. Her research specializations include theories of language change, grammatical and expressed morpho-semantic gender, and language acquisition in the digital age. She is passionate about addressing the cost of learning and addressing the digital divide as ways to democratize education. She has remixed textbooks for both Spanish and Linguistics, and she is part of the writing team that created the *Tarea Libre* homework ancillaries for first-year (2023) and second-year (2024) collegiate Spanish, both of which are housed on ADAPT. She lives with her husband in San José, California, which sits on the aboriginal homeland of the Tamien Nation. She's interested in genealogy, both of her own family and in general, and has investigated her Italian and American families thoroughly. In her spare time, she loves cooking, gardening, landscape photography, playing with her nephews and spending time at the beach.

Revision history

Revision History

Initial Creation

This remix was initially created by Dr. Sarah Harmon on 22 February 2024.

Revisions

- 19 February 2025: Used the AI Co-Author function in LibreTexts Conductor to add meta-data and page descriptions. This updated the Index greatly.
- 20 February 2025: Updated About the Authors to add links to Sarah Harmon's bio.
- 5 August 2025: Added AI-Based Ancillaries page to the Front Matter.

AI-Based Ancillaries

Why AI-based ancillaries?

In a word, because most of us don't have the time to put them together 🙂

The following ancillaries were all created by NotebookLM. I have taken the content of each chapter, excluding any practice exercises and optional content, and had the AI create Study Guides, FAQs, Briefing Docs (overall summary) and a Mind Map. In each case, I have done a quick run-through to catch any glaring errors.

You'll note that I didn't enable the Deep Dive conversation, or the podcast-like feature, for any of these notebooks. I did that on purpose, as I don't want my students to have that element. It's too passive a learning style and doesn't encourage them to learn more or to interact with the material in any way. That said, the chat function is enabled, so anyone in a given notebook can interact with the LLM to gain further understanding of the material.

With each link below, you'll have view access to everything. As I go in and make updates, the links should provide the most up-to-date versions. If you find other errors, or if you would like to see added features, please email me at harmons@smccd.edu.

NotebookLM Links

Each link will open in a new window.

- Chapter 1: Introduction
- Chapter 2: Phonetics
- Chapter 3: Phonology
- Chapter 4: Morphology
- Chapter 5: Syntax
- Chapter 6: Semantics and Pragmatics
- Chapter 7: Sociolinguistics and Languages in Contact
- Chapter 8: Historical Linguistics, Writing and Typology
- Chapter 9: Language Acquisition
- Chapter 10: Language and the Mind

CHAPTER OVERVIEW

1: What Is Linguistics? What Is Language?

Learning Objectives

When you've completed this chapter, you'll be able to:

- Differentiate between prescriptive and descriptive ways of thinking about language,
- Identify components of mental grammar,
- Explain some properties of all human languages,
- Describe some techniques for doing language science, and
- Discuss the ethics of doing language science.

In this chapter, we begin to explore what language is, and how language scientists (also known as linguists) think about it and observe it. It might well be that most of experience learning about language has had to do with rules that you could get right or wrong. That's not the approach we're taking in this book. Instead, we're going to look at how to use the tools and techniques of linguistics to observe the patterns of human languages. From these observations, we'll try to draw some conclusions about the abstract principles and organization of human language in people's minds and in language communities. Along the way, we'll also consider the ways that language science and people's attitudes about language have bolstered colonial structures of power and privilege and have been used to do harm.

1.1: Linguistics as a social science
1.2: The resources used for this course
1.3: Linguistics is a science
1.4: What even is language?
1.5: What grammars are and aren't
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1.12: Next steps and references
1.13: Exercise your linguistics skills

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1.1: Linguistics as a social science



1.1.1: Video Script

Okay, so what is linguistics what is a social science up to this point you have read and or watched Catherine Anderson's explanation. And she says that linguistics is a science and I think that's a great place to start, but it is important to note that linguistics is really a social science. Now for some of you, this might be your very first social science course so let's talk about what makes social sciences and specifically linguistics different from let's say chemistry, physics, biology, those sciences.

Now for some of you, this might be your very first social science course so let's talk about what makes social sciences and specifically linguistics different from let's say chemistry, physics, biology, those sciences. So, what is a social science well to start off let's look at what a standard definition for a social science is and I'm going to go and use the Wikipedia definition. It's a fairly straightforward definition; in most every dictionary you'll see something very similar: Social science is a branch of science devoted to the study of societies and the relationships among individuals within those societies.

There are a number of disciplines that fall under social science; linguistics is one, anthropology, sociology, some of psychology certainly falls under social science. History frequently is put into social sciences, as well as economics part of geography, certainly cultural geography. Definitely when we talk about rhetoric and communication, it frequently falls under social science. Philosophy can be considered a social science at times; it's also a humanity. Same thing with history, but they kind of border. Linguistics is solidly in the social science category because we devote our studies to aspects of the human condition, right?

Well let's take that and kind of understand it a little bit more, because there's something that makes social science a little unique compared to the physical and biological sciences. Social sciences use scientific approaches to observe and catalog human behavior. I think that's a better, more tangible definition for a social science.

So, what does it mean to have a social science mindset, and that means, what does it take to be a social scientist? Any flavor, it doesn't matter. Well, the first thing you have to do is think about descriptivism. Descriptivism is that you describe what you observe; you observe something, and you describe it objectively. You do not want to import any biases that you may have or that your discipline may have with respect to that observation or analysis; you really want to keep it straightforward. You want to think critically about what you are analyzing, and you want to use those tools that we have to analyze the aspects of humanity that interests you. It doesn't matter if we're talking language, or societies and how they form, or the history of these groups or how they work their fun, financial or monetary areas. What is really important, though, is that this critical analysis is not just linear. It is creative; you think outside the box. Of course, you have to know what is inside the box first before you can think outside the box and that's what it means to approach things with a scientific mindset in general, but especially with respect to human or social settings.

The last thing that's really important, and I would say is the main thing that separates social sciences from the behavioral as well as the physical and biological sciences, is that in the social sciences, we use inductive reasoning. This means that we use the data to analyze the behavior or phenomena we look at a to analyze be and then we look at be to analyze see. This is the opposite of the physical biological and behavioral sciences, they tend to use deductive reasoning, they go from the general to the specific we tend to go, specific and then pull out to the general. Now that doesn't make one approach better or worse than the other, it just is a difference.

So, now that we know what a social science is let's think about what is linguistics. If you look it up in a dictionary or anywhere, you'll basically get a definition that says, linguistics is the scientific study of language. Certainly, that is true, but what does that mean? To unpack it a little bit I would argue, and I would think most of my fellow linguists would also agree, that really what we're trying to say is that linguistics is the analysis of language and all of its components. And when we say that we're not just talking about the words or even the sounds or even meaning. We're looking at how they all combined together, because we do not use just a single lexicon by itself a single word by itself; we use it in combination with something else a larger phrase within a larger context. That means that we are analyzing how human beings use the tool of language, as well as the actual language itself. It's like if you were describing how a carpenter uses a hammer. You don't just describe the hammer you describe how the carpenter uses it as well.

So if that's what linguistics is what isn't linguistics and what frequently gets conflated with linguistics and it's important to note that these are things these concepts that I'm bringing up or studies. They have tangible routes to linguistics, but they are not exclusively linguistics. The first one that people often conflate with linguistics is etymology or the history or derivation of a given term or lexicon or word. We're going to use this terminology interchangeably later down the road. As linguists, we do not solely study the history of a word and how it got formed in a language. It certainly uses some of what we use in linguistics, and when we get to morphology in particular will really kind of unpack that. And even for somebody like myself, I am an historical linguist. I am going to look at the etymology of a word, but that's not all that I'm doing. I'm looking at the context; I'm looking at how it changes or doesn't change over time. Etymology is just a very small sliver of what some people might do, but not all. The other thing is linguistics is not a study of dictionaries or study of grammar, although certainly the folks who work on dictionaries and grammars are frequently linguists. But that is only a small part of what they are doing. Dictionaries and grammars are a type of catalog as to what a language does. But not entirely; it's a fixed document as it were, it's not a living language, which is what linguistics is all about.

As we go through any social science course, but especially in linguistics course, there are certain things that all students must keep in mind. They must actively do these throughout the course in order to succeed. In this case, success is not just getting an A; success is understanding the material and applying it to a future use. The most crucial thing I would argue, is that you have to keep an open mind. That's a phrase that gets thrown around quite a bit, but in the social sciences, it is imperative to do that, you must be objective. You must be descriptive, and that means you have to keep an open mind. You must observe what it is that you see and think about all of the possibilities that could be connected with that not just one or two possibilities. The last piece is to see patterns, that is what we human beings do very well, we see patterns, we find patterns and behaviors in colors in anything and then that is how we remember them. Well, language is no different; language has patterns and it's really important to find the pattern whenever you're analyzing language.

Finally, let's talk about some of the resources that we're going to use now to start off, probably the primary and most important resource here. The textbook that we're going to be using is *Essentials of Linguistics* by Catherine Anderson. It originally was published through eCampus Ontario on Pressbooks, but it has also been imported into LibreTexts. It is an open educational resource, meaning that it is free to use, and it is online, that means anyone can use it, and anyone can view it. You don't have to pay anything for it; don't worry, Catherine Anderson most probably got some compensation for her work, that could have come via sabbatical or grant, or it could have come through a number of arenas. Catherine Anderson is a linguist and a professor at McMaster University, which is in Hamilton, Ontario, Canada. Her main specialties are language acquisition: Child language acquisition, but even second language acquisition. She also has a keen interest in how bilingualism comes into play. She does a number of courses at McMaster University and then developed this OER, open educational resource, as a way to have a proper textbook based off of her lectures. Her work is absolutely outstanding and I would not use it if I didn't think it was up to par.

But there are supporting traditional textbooks that I have used over the years that others have used over the years and I can't say that any of my lectures would be complete without mentioning that these textbooks have been used at some point in my career. The main one is introduction to language by Robert Rodman, Victoria Fromkin and Nina Hyams; it is the gold standard with respect to textbooks. It is also very expensive, just like gold is, which is why I don't use it so much. *Language Files* is something I do use.

Language Files is a collection of some lecture material, but most importantly exercises and in fact the exercises that we're going to use in this class for homework do come from *Language Files.* You do not need to purchase it. *Language Files* is produced by the Linguistics Department at the Ohio State University in Columbus, Ohio. And then, of course, the other one that is frequently used the other textbook is *How Languages Work: An Introduction to Language and Linguistics* and it is an edited volume by Carol Genetti. A very good collection and, in some cases when I needed to get a better definition for something I would use one of these three textbooks.

That being said, we are not using those textbooks. The information that is in those textbooks, as far as the general information, is something that is widely used but also general knowledge. I find in a lot of cases Catherine Anderson's explanations are superior; they are broken down in a way that I think are more tangible. The other reason that I want to bring these traditional textbooks up is because, if you take a linguistics course elsewhere, you might run across those and certainly in my previous courses, I used book two, if not all three of those. Throughout each chapter or module, you will see that there are a number of resources that I'm going to pull from. Some of these are resources that I have used and some of them are common across well all of these textbooks. It's important to use those resources to show you them in case you have any lingering questions or you want to find out more information about the topic, then I will have those resources available for you.

With that this is your introduction to the introduction, you are now ready to go forward and really start studying linguistics.

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1.2: The resources used for this course

In addition to the resources below, many of the individual pages have a list of resources. Most of these are resources used by Anderson et.al.

1.2.1: What are the types of resources that have been used to build this course/book?

1.2.1.1: Primary Textbook

Catherine Anderson's *Essentials of Linguistics*, 2nd edition (2024). This second edition was lead by Catherine Anderson and includes significan contributions from her team: Bronwyn Bjorkman, Derek Denis, Julianne Doner, Margaret Grant, Nathan Sanders and Ai Taniguchi.

1.2.1.2: Other Textbooks

I've taken information from a couple of other textbooks and adapted it into my lecture notes. They are commonly used textbooks--and very expensive.

- *Introduction to Language* by Robert Rodman, Victoria Fromkin, and Nina Hyams
- *Language Files* from the Ohio State University Linguistics Department
- *How Languages Work: An Introduction to Language and Linguistics*, edited by Carol Genetti

1.2.1.3: Other resources

- Various articles, as listed at the end of each chapter
- Various YouTube videos, especially from Anthony Pym (sociolinguistics)

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1.3: Linguistics is a science

1.3.1: Linguistics is Science, from Catherine Anderson's *Essentials of Linguistics*.



1.3.1.1: Video Script:

Linguistics is one of those subjects that not many people have heard of, so you might well be wondering exactly what it is.

The simplest definition of Linguistics is that it's **the science of language**.

This is a simple definition but it contains some very important words. First, when we say that linguistics is a science, that doesn't mean you need a lab coat and safety goggles to do linguistics. Instead, what it means is that the way we ask questions to learn about language uses a scientific approach.

The scientific way of thinking about language involves making systematic, **empirical observations**. There's another important word: empirical means that we observe data to find the evidence for our theories.

All scientists make empirical observations: botanists observe how plants grow and reproduce. Chemists observe how substances interact with other. Linguists observe how people use their language.

A crucial thing to keep in mind is that the observations we make about language use are NOT value judgments. Lots of people in the world — like your high school English teacher, various newspaper columnists, maybe your grandparents, and maybe even some of your friends — make judgments about how people use language. But linguists don't.

A short-hand way of saying this is that linguists have a **descriptive approach** to language, not a prescriptive approach.

We describe what people do with their language, but we don't prescribe how they should or shouldn't do it.

This descriptive approach is consistent with a scientific way of thinking. Think about an entomologist who studies beetles. Imagine that scientist observes that a species of beetle eats leaves. She's not going to judge that the beetles are eating wrong, and tell them that they'd be more successful in life if only they eat the same thing as ants. No — she observes what the beetle eats and tries to figure out why: she develops a theory of why the beetle eats this plant and not that one.

In the same way, linguists observe what people say and how they say it, and come up with theories of why people say certain things or make certain sounds but not others.

In our simple definition of linguistics, there's another important word we need to focus on: linguistics is **the science of human language**.

There are plenty of species that communicate with each other in an impressive variety of ways, but in linguistics, our job is to focus on the unique system that humans use.

It turns out that humans have some important differences to all other species that make our language unique.

First, what we call the **articulatory system**: our lungs, larynx & vocal folds, and the shape of our tongue, teeth, lips, nose, all enable us to produce speech. No other species can do this in the way we can, not even our closest genetic relatives the chimpanzees, bonobos, and orangutans.

Second, our **auditory system** is special: our ears are sensitive to exactly the frequencies that are most common in human speech. There are other species that have similar patterns of auditory sensitivity, but human newborns pay special attention to human speech, even more so than synthetic speech that is matched for acoustic characteristics.

And most important of all, our **neural system** is special: no other species has a brain as complex and densely connected as ours with so many connections dedicated to producing and understanding language.

Humans' language ability is different from all other species' communication systems, and linguistics is the science that studies this unique ability.

1.3.1.2: Check Yourself

? Exercise 1.3.1

What does it mean to say that Linguistics is a science?

- The field consists of a set of true facts that can be proven objectively.
- The field uses the scientific method to determine objective rankings of language quality.
- The field uses empirical observations to develop theories of language behaviour.

Answer

"The field uses empirical observations to develop theories of language behaviour."

The reason: Linguistics is a social science, based in empirical observations.

? Exercise 1.3.2

Each of the following sentences represents something someone might say about language. Which of them illustrates a descriptive view of language?

- The use of quotative *like* in sentences such as, "She was like, I can't believe you did that!" began to enter Canadian English with the generation of speakers born in 1971.
- The song "I can't get no satisfaction" should really mean that "I can get some satisfaction" because two negatives always make a positive.
- In a phrase like, "the people who the bride invited to the wedding," it's proper to use *whom* rather than *who*.

Answer

"The use of quotative *like* in sentences such as, "She was like, I can't believe you did that!" began to enter Canadian English with the generation of speakers born in 1971."

The reason: It's an objective description of language without associating a 'prescribed' value of what is 'right' or 'proper'.

? Exercise 1.3.3

Which of the following kinds of data would a linguist be likely to observe?

- Which method is most effective to help a child stop stuttering.
- Whether Korean includes tones that change the meaning of words.
- How many undergraduates can correctly use the words *affect* and *effect* in their essays.
- If second-language speakers can pronounce English words correctly.

Answer

"Whether Korean includes tones that change the meaning of words."

The reason: This is an empirical observation of what happens in a language. The others are all subjective or prescriptive in some way.

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1.4: What even is language?



We're all users of language. Right now I'm talking and writing to you in a variety of Canadian English, and I bet many of you also know one or more other languages. Linguistics is the scientific study of human language. That definition is short, but it's not exactly simple, is it? How do we study language scientifically? And what even is language?

The word *language* is used for several different complex concepts that are interconnected with each other. One use of the word is to refer to individual languages, like American Sign Language (ASL), Basque, English, Langue des signes québecoise (LSQ), Nishnaabemwin, Xhosa, and many others.

The word *language* can also refer to other, related notions. If you're a programmer, you might have a section on your résumé that lists the computer languages you know, like Python, R, C++, or Perl. Computer languages are not usually the focus of linguistics, even though many linguists use them to analyse linguistic data! There are also metaphorical uses of the word *language*, such as body language or love languages. These uses of the word are also outside of what linguistics usually studies.

For the moment, let's think about one particular language, because it happens to be the one we're using now. I'm using one variety of English (a variety spoken by a middle-aged white lady in Ontario). Before I started making this video, I used my fingers to type words on my keyboard. Now as I read those words and talk to you, I'm squeezing the air out of my lungs; I'm vibrating my vocal folds, and I'm manipulating parts of my mouth to produce sounds. Those sounds are getting captured by a microphone and recorded on my computer, then I'll upload them to the eBook. If you're listening to this video, the sounds I recorded are playing on your device, and your eardrums are reacting to the auditory information. If you're reading the text or the captions, your eyes are reacting to the visual information. Your eyes and your ears send signals to your brain. And somehow, after all that, if my communication was successful, you end up with an idea in your mind that's similar to the idea in mine. There must be something that we have in common to allow that to happen: some shared system that allows us to understand each other's ideas through language. This shared system is what many linguists call the **mental grammar**, and one of the goals of linguistics is to find out what that shared system is like.

So we've focused our definition of linguistics a little bit, by saying that we're interested in the scientific study of human language, of the grammar, the shared system that allows us to understand each other. What is the grammar like? Or to put it another way, what do we know when we know a language?

1.4.1: What is grammar?

Imagine you're an alien, you've just arrived on Earth, and you need to figure out how to understand the language used in the particular earthling community that you've landed in. What kinds of things do you need to figure out? One of the first things you'll need to know about that language is what counts as talking. Is this language signed or vocalized? In other words, what is the **modality** of the language? Many human languages are **vocalized** (or "spoken"). In this modality, language users make sounds with

their larynx, tongue, teeth and lips, and receive sounds with their ears. Other human languages are **signed**. Language users make signs with their fingers, hands, wrists and forearms, and receive signs by sight or by touch. Even though they have very different modalities, sign and vocal languages share many properties in their grammars. In this book, we'll try to reserve the words *speaking* and *speech* for vocal languages, and refer to **language users** when we're talking about languages of any modality. In other places you might also see *languaging* used as a verb to mean "using language in any modality".



Figure 1.1. Cookies.

Once you've figured out the modality, what next? You probably need to segment the stream of auditory or visual information into meaningful units. By observing carefully, you might be able to figure out that a particular sequence of sounds or gestures recurs in this language, and that some consistent meaning is associated with that sequence. For example, maybe you've noticed that the language users you've encountered make the sounds "cookie" as they're offering you a round, sweet, delicious baked good. Or maybe you've noticed that when that word has a *z* sound at the end of it, *cookies*, you're being offered more than one of them!

The part of the grammar that links up these forms with meanings is the **mental lexicon**. It's a bit like a dictionary in your mind. Knowing a word in a language involves recognizing its form – the combination of signs or sounds or written symbols, and its meaning. For the majority of words in the world's languages, the link between form and meaning is **arbitrary**.



Figure 1.2. Pumpkin.

For example, the English word for this thing is *pumpkin* and the Nishnaabemwin word is *kosmaan*. There's nothing inherently orange or round or vegetabley about either of those word forms: the pairing of that meaning to that form is arbitrary in each language. (But there are words whose form has an iconic, less arbitrary relationship their meaning; we talk about them more later in this book.)

Suppose you've figured out that cookies are delicious and you want to ask your earthling hosts for more of them. To do that, you need to figure out how to control the muscles of your mouth, tongue, and lips to speak the word for cookie, or how to use your hands, fingers, wrists and forearms to sign the word. In other words, you need to know something about the **articulatory phonetics** of the language. This brings up an important point about grammar: when we know a language fluently, a lot of our grammatical knowledge is unconscious, or **implicit**. For the languages that you know, your knowledge of the lexicon is probably fairly conscious or explicit, and probably also some of your knowledge about your language's **morphology**: that's the combinations of meaningful pieces inside words (like how if you want more than one cookie you say *cookies* with a *z*). But you're probably not as conscious of things like how you use your articulators to make the sounds *k* or *z*.

Our implicit knowledge of language also includes **phonology**, information about how the physical units of language can be combined and how they change in different contexts. **Syntax** is the part of your mental grammar that knows how words can or

can’t be combined to make phrases and sentences, much of which is implicit. Syntax works hand in hand with **semantics** to allow the grammar to calculate the meanings of these phrases. And the **pragmatics** part of the mental grammar can help you to know what meanings arise in different contexts. For example, “I have some news,” could be interpreted as good news or bad news depending on the context.

All of these things are parts of the grammar: the things we know when we know a language. But a lot of this knowledge is implicit, and the thing about implicit knowledge is that it’s hard to observe. One of the most important jobs we’re doing in this textbook is trying to be explicit about what mental grammar is like, and about what kinds of evidence we can use to figure that out. We’ll talk about this challenge more in Section 1.3 below.

1.4.2: What about reading and writing?

I bet you’re wondering why I didn’t include reading and writing as part of the mental grammar above. After all, as a student you probably invested a lot of time into learning how to read and write. And those skills are indeed part of the grammatical knowledge you have about your language. But language users don’t actually need to know how to read and write to have a mental grammar. It’s common for kids in Canada to start learning to read and write around age five, but they are pretty competent in the phonetics, phonology, morphology, syntax and semantics of one or more languages before they ever go to school.



Figure 1.3a. Vertical Mongolian Script.

Монгол

Figure 1.3b. Cyrillic Mongolian script.

Furthermore, language users could start using a different writing system without changing anything else about the grammar. Mongolian, for example, presently uses two different writing systems: the Cyrillic alphabet and traditional Mongolian script, which is written vertically. Speakers of Mongolian understand each other’s speech no matter which script they use to record the language in writing. And there are plenty of human languages that just don’t have written forms. Signed languages like ASL and LSQ, for example, don’t have written forms. Most signers are bilingual in their sign language and in the written form of another language.

So, because not every human language has a reading and writing system and not every language user has access to reading and writing systems, we consider these skills to be secondary parts of the mental grammar. If you’re literate in your language, then that literacy is certainly woven into your mental grammar. But literacy isn’t necessary for grammatical competence.

1.4.3: Check your understanding

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1.5: What grammars are and aren't



The previous section was a very quick tour of some of the parts of the mental grammar. We'll be discovering a lot more about grammar throughout this book. Notice that we're using the term *grammar* a little differently from how you might have encountered it before. Maybe your experience of grammar is as a textbook or style guide with a set of rules in it, rules that lead to consequences if you break them — you'll lose points on your essay or get corrected with a red pen. What we're most interested in this book is the mental grammar: the system in your mind that allows you to understand and be understood by others who know your language. Every human language has a mental grammar: that's how the users of each language understand each other!

This is a really important idea. One way that people sometimes express racist, colonialist and ableist ideas is to deny the validity of a language by claiming that it "has no grammar". But the truth is that **all languages have grammar**. All languages have a system for forming words, a way of organizing words into sentences, a systematic way of assigning meanings. Even languages that don't have alphabets or dictionaries or published books of rules have users who understand each other; that means they have a shared system, a shared mental grammar. Using linguists' techniques for making scientific observations about language, we can study these grammars.

The other important thing to keep in mind is that no grammar is better than any others. Maybe you've heard someone say, "Oh, I don't speak real Italian, just a dialect," implying that the dialect is not as good as so-called real Italian. Or maybe you've heard someone say that Québec French is just sloppy; it's not as good as the French they speak in France. Or maybe you've heard someone say that nobody in Newfoundland can speak proper English, or nobody in Texas speaks proper English, or maybe even nobody in North America speaks proper English and the only good English is the Queen's English that they speak in England. From a linguist's point of view, **all languages and dialects are equally valid**! There's no linguistic way to say that one grammar is better or worse than another. This is part of what it means to study grammar from a scientific approach: scientists don't rate or rank the things they study. Ichthyologists don't rank fish to say which species is more correct at being a fish, and astronomers don't argue over which galaxy is more posh. In the same way, doing linguistics does not involve assigning a value to any language or variety or dialect. We also need to acknowledge, though, that many people, including linguists, do attribute value to particular dialects or varieties, and use social judgments about language to create and reinforce hierarchies of power, privilege and status. We'll look at some examples in Section 1.4 and in Chapter 2 we'll go into more detail about the terms terms *language*, *variety*, and *dialect*.

One of the most fundamental properties of grammar is **creativity**. One obvious sense of the word *creative* has to do with artistic creativity, and it's true that we can use language to create beautiful works of literature. But that's not the only way that human language is creative. The sense of creativity that we're most interested in in this book is better known as **productivity** or **generativity**. Every language can create an infinite number of possible new words and sentences. Every language has a finite set of words in its vocabulary – maybe a very large set, but still finite. And every language has a small, finite set of principles for

combining those words. But every language can use that finite vocabulary and that finite set of principles to produce an infinite number of sentences, new sentences every single day.

A consequence of the fact that grammar is productive is that **languages are always changing**. Have you heard your teachers or your parents say something like, “Kids these days are ruining English! They should learn to speak properly!” Or if you grew up speaking Mandarin, maybe you heard the same thing, “Those teenagers are ruining Mandarin! They should learn to speak properly!” For as long as there has been language, older people have complained that younger people are ruining it. Some countries, like France and Germany, even have official institutes that make rules about what words and sentence structures are allowed in the language and which ones are forbidden. But the truth is every language changes over time. Languages are used by humans, and as humans grow and change, and as our society changes, our language changes along with it. Some language change is easy to observe in the lexicon: we need to introduce new words for new concepts and new inventions. For example, the verb *google* didn’t exist when I was an undergraduate student, and now googling is something I do nearly every day. Languages also change in their phonetics and phonology, and in their syntax, morphology and semantics. In Chapter 10 we’ll look at the systematic ways that linguists study variation and change.

1.5.0.1: Check your understanding

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1.6: Studying language scientifically



We said that linguistics is the science of human language. When we say that linguistics is a science, that doesn't mean you need a lab coat and a microscope to do linguistics. Instead, what it means is that the way we ask questions to learn about language uses a scientific approach.

The scientific way of thinking about language involves making systematic, **empirical observations**. That word *empirical* means that we observe data to find the evidence for our theories. All scientists make empirical observations. Entomologists observe the life cycles and habitats of insects. Chemists observe how substances interact. Linguists observe how people use their language. Just like entomologists and chemists, linguists aim for an accurate description of the phenomenon they're studying. And like other scientists, linguists strive to make observations that are not value judgments. If an entomologist observes that a certain species of beetle eats leaves, she's not going to judge that the beetles are eating wrong, and tell them that they'd be more successful in life if only they ate the same thing as ants. Ideally, the same would be true of linguists — we wouldn't go around telling people how they should or shouldn't use language. Of course, like all scientists, and like all humans, linguists have biases that often prevent us from reaching this ideal; more on this later in the book. But the goal for doing language science is to do so with a **descriptive** approach to language, not a **prescriptive** approach, to describe what people do with their language, but not to prescribe how they should or shouldn't do it.

For example, you could describe English plurals this way:

> Adding *-s* to a noun allows it to refer to many of something, like *apples*, *books*, or *shoes*.

Or you could prescribe how you think people should form plurals this way:

> Because the word *virus* is derived from Latin, you should pluralize it as *viri*, not *viruses*.[1]

So when we're doing linguistics, our goal is to make descriptive, empirical observations of language. But one challenge to being a language scientist is that a lot of what you're studying is hard to observe. Unlike our entomologist friends, we can't just go out to the garden and poke around and find some grammar crawling on a plant. We have to figure out how to make observations about the mind. Throughout this book you'll get introduced to the many different tools of language science, which allow us to make systematic observations of how humans use language.

1.6.1: Going meta: Observing what's possible in a language

As I keep saying, a lot of the linguistic knowledge we have is unconscious. One of the tools we can use to get at our mental grammar is to try to access **metalinguistic awareness**, that is, the conscious knowledge you have about your grammar, not the grammatical knowledge itself. If you've studied a language in school you probably have some metalinguistic awareness about it because you got taught it explicitly. But for your first language, the one you grew up speaking, it can be a little more difficult to access your metalinguistic knowledge because so much of it is implicit. It's a skill that we'll keep practicing throughout this book.

Here's an example of accessing your metalinguistic awareness. Say you want to create a new English word for a character in a game. Are you going to call your cute little creature a *blifter* or a *lbitfer*? Neither of those forms exists in English, but they both use sounds that are part of English phonetics. You probably have a strong feeling that *blifter* is an okay name for your new creature, while *lbitfer* is a pretty terrible name. Notice that your sense that *lbitfer* is wrong is not a prescriptive sense — it's not that it sounds rude or you'll get in trouble for combining those sounds that way. It just … can't happen. You've made a descriptive observation that *lbifter* is not a possible word in English. From that observation, we can conclude that *lbitfer* is ungrammatical in English.

Since linguistics uses the word *grammar* in a particular way, the words *grammatical* and *ungrammatical* also have a specific meaning. An **ungrammatical** word or phrase or sentence is something that just can't exist in a particular language: the mental grammar of that language does not generate it. Notice that grammaticality isn't about what actually exists in a language; it's about whether a form could exist. In this example, both *blifter* and *lbitfer* have the same sounds in them, but *blifter* could be an English word and *lbifter* couldn't. In other words, *blifter* is grammatical in English and *lbifter* is ungrammatical in English.

It's often useful to compare similar words, phrases or sentences to try to access our metalinguistic awareness. Let's look at another example of observing what's possible. Here are two similar sentences, both of which are possible (or acceptable) in English.

a. Sam compared the forged painting with the original.
b. Sam compared the forged painting and the original.

Let's try to make questions out of these sentences:

c. Did Sam compare the forged painting with the original?
d. Did Sam compare the forged painting and the original?

Observing those two questions, we can see that both (c) and (d) are acceptable in English. Now let's try a different kind of question:

e. What did Sam compare the forged painting with?
f. *****What did Sam compare the forged painting and?

Comparing these two sentences gives us a really clear finding: (e) is possible, but (f) is not. We use an asterisk or star at the beginning of sentence (f) to indicate that it just can't happen. These **acceptability judgments** (also sometimes known as **grammaticality judgments**) are our empirical observations: these two similar sentences are both possible as declarative statements (a-b) and as yes-no questions (c-d), but when we try to make a wh-question out of them, the result is acceptable for the first one (e) but not for the second one (f). Having made that observation, now our job is to figure out what's going on in the mental grammar that can account for this observation. Why is (e) grammatical but (f) isn't?

1.6.2: More tools for language science



Figure 1.4. Hoodie.

Because it can be tricky to access metalinguistic knowledge, you might not want to rely on the acceptability judgments of one single language user. Instead, you could use a survey to gather quantitative data about acceptability from many users. We can also use **surveys** to **elicit** the words that people use for particular items. From survey data we know that some people call this thing a sweatshirt, other people call it a hoodie, and people in Saskatchewan call it a bunny hug. Surveys are particularly useful for learning about regional variation, which you can learn more about in Chapter 10. If you're studying regional and social variation you might also gather data using **interviews**, in which you could ask questions like, "Does the 'u' in *student* sound like the 'oo' in *too* or the 'u' in *use*?".

A **corpus** is another tool that allows us to make language observations. A corpus is a big database that collects examples of language as used in the world, from books, newspapers, message boards, videos. Some corpora contain only written text, and others include video of signed language, or audio files with phonetic transcription. The nice thing about tools like acceptability judgments, surveys, and corpora is that they're relatively easy to use: you don't need a lot of training or money to ask people what word they use for athletic shoes, or to see how a word or phrase is used in a corpus. We'll use some of these accessible tools throughout this book.

There are also more specialized tools for doing language science. Phoneticians use a variety of software for analyzing audio and video recordings of speakers and signers. Praat (Boersma & Weenink, 2022) is a popular waveform editor for analyzing audio recordings. While Praat is specialized for linguists, it has some similarities to audio-editing programs for podcasting. ELAN (*ELAN | The Language Archive*, 2021) is a powerful tool that allows a user to annotate video recordings, and the program SLP-Annotator (Lo & Hall, 2019) also enables phonetic **annotations** of video-recorded sign language. Some phoneticians also make anatomical measurements of the articulators, using ultrasound or palatography for speech or motion capture for signing.

We can draw on techniques from behavioural psychology to make observations about language use in real-time using **experiments**. You might measure reaction times and reading times for words and sentences, or ask participants to listen to words that are mixed with white noise. Some experiments use eye-tracking to measure people's eye movements while reading a text, watching a signer, or listening to a speaker. It's even possible to use **neural imaging** techniques like electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) to observe brain activity during language processing. You can learn more about interpreting the data from these experiments in Chapter 13.

When you're starting out in linguistics, it's often really exciting to use the scientific method to think about grammar, as you start to see that grammar is not just a set of arbitrary rules to memorize so you sound "proper". Even if we're not peering through a microscope wearing a lab coat, the tools of language science allow us to make systematic observations of how humans use language. And we can interpret those observations to draw conclusions about the human mind.

1.6.3: Check your understanding

1.6.4: References

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1. This prescriptive statement doesn't reflect what really happens in English, since most English speakers talk about *viruses*, not *viri*. And in fact, it doesn't even reflect what happens in Latin, since the Latin word *virus* did not have a plural form! ↵

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1.7: Thinking about standards and “proper” grammar



In previous sections we learned that one of the goals of doing linguistics is to describe languages and dialects accurately without ranking any dialect as better than any other. This is actually a pretty radical goal, because of course language is a deeply human behaviour, and therefore is deeply intertwined with human relationships and social categories. Relationships like teacher-student, doctor-patient, or customer-server, for example, all involve power relations that play a role in people’s expectations about language. Likewise, the communities that we belong to, whether they’re based on ethnicity, religion, profession, fandom, or any other social category, shape how we use language and how we expect others to use language. So when we’re studying language scientifically, we can’t separate the grammar from all the other social pieces.

So we’re striving for this radical goal of considering **all languages and dialects as equally valid** from a linguistic point of view, but we also have to acknowledge that people have attitudes and expectations that arise from social power dynamics, and these attitudes – whether positive and negative – lead to linguistic **bias**. Everyone, including linguists, has linguistic biases. We can’t help making judgments about people based on how they use language. But by learning to think about the relationship between language and power, we can gain **metalinguistic awareness** of our own linguistic biases, at the same time as we’re developing metalinguistic awareness of our grammars.

Here’s an example of a linguistic bias that’s really prevalent in Canada and the US. North Americans tend to perceive all the varieties of British English as having **high prestige**. They tend to assume that speakers of UK English are better educated and more intelligent than speakers of North American varieties of English — even for varieties that have low prestige in the United Kingdom. Someone who speaks a variety that’s stigmatized in the UK might arrive in Canada to find that everyone thinks their English is very fancy. Their English hasn’t changed, but people’s attitudes towards it have!

1.7.1: Language Standards and “Standard” Languages

Some ways of using language are associated with higher prestige. Because of colonialism, these are often the forms of language used by white people, by wealthier people, or by people who have received more formal education.

When people talk about the “standard” variety of a language, they usually mean the form that has been **standardized**, that is, the form that most closely matches the language used in dictionaries, textbooks, and high-status media. This standardization happens via social mechanisms of power. In France, for example, there’s an official government body, the *Académie Française*, that decides what counts as correct, standard French. In 2017, when they noticed more and more French writers including feminine nouns and adjectives alongside the standard masculine forms, they published a declaration that this kind of inclusive writing was a mortal danger (“*un péril mortel*”) for French! It’s their literal job to tell people they’re languaging wrong.

Unlike French, English does not have an official language police to enforce prescriptive language rules, but that doesn’t mean the standardized varieties of English are any less connected to power and privilege. Instead, standardized English is enforced through

social norms, through dictionaries and style guides, textbooks and grammar-checking software. There's no official Boss of Canadian English warning about the dangers of gender-inclusive language, but it was still a big deal when the in-house style guide of the *Globe and Mail*, a national newspaper in Canada, decided in 2017 that it was okay to use specific singular *they*. And in the UK, the shorthand term for the highest-prestige variety is "the Queen's English" — who has more power and privilege than a monarch?

To be clear, the "standard" that these authorities enforce isn't chosen out of nowhere, and is not somehow objectively determined to be the best or clearest variety. (Remember there's no linguistic way to determine "best" when it comes to language.) The standard is usually just the variety that's associated with economic, social, or political power. For many languages, the "standard" is whatever variety is spoken in the capital city, or by a dominant political class. For English and for other European languages, the variety that people categorize as "standard" tends to be the variety that white people with a certain amount of formal education use.

In North America, we can observe how assumptions about standard languages intersect with our ideas of race by considering the variety of English associated with Black speakers. You'll see this variety called **African American Language (AAL)**, **African American Vernacular English** (AAVE), **Black English**, or **Ebonics**, depending on who's talking about it and when. I'll use the term *Black English* here, following Calhoun et al. (2021), to include people who use this variety and who are part of the African diaspora but not necessarily African-American. One important thing to note is that not all Black folks in the United States speak Black English, and not all speakers of Black English are Black, but using this variety of English is a strong indicator of Black American identity. Even though Black English is characteristically American, and has many speakers across many different regions of the USA, it's somehow not what anyone means when they refer to Standard American English. That reveals the common linguistic bias: when people say "standard language" they usually think "the language that white people use".

1.7.2: Isn't it good to have standards?

You might think of having a standardized variety of a language as a good thing, or at least as a neutral thing. We're used to having a single variety of English appear in most written sources, for example. It's easy to view standardization as positive if the variety that you and your family used when you were growing up was relatively close to the standardized variety used in schools. But if we assume that the standardized form is the only correct or proper form, we end up discriminating against users of different varieties. Here are some examples:

- More than 90% of people Haiti speak Kreyòl, a language with its own consistent grammar and spelling. But public education in Haiti is offered in standardized French. So when kids start school, they get told by their teachers that their language is wrong (Degraff & Stump, 2018). The same pattern holds true for kids who speak Black English in most US schools. It's harder for them to learn!
- A judge in Alberta disregarded the medical evidence provided by an expert witness, a doctor who spoken Nigerian English. In his ruling, the judge made it clear that he distrusted the doctor's medical opinion because his accent was not Canadian. (Grant, 2019)
- A Black deaf man who signed in Black ASL was imprisoned in an institution for decades because the signers who assessed him categorized his variety of ASL as incoherent, so they labelled him as languageless and incompetent. (Burch & Joyner, 2007)

We'll learn about more examples in Chapter 2.

Because elementary and high schools usually teach language in a prescriptive way, you've probably internalized the assumption that the standardized variety of your language is the best or most correct variety, and maybe even the assumption that languages have to have standards. Using your growing metalinguistic awareness, you can start to question why some varieties are considered standard and others aren't. It's likely that the answers to those questions have more to do with social status than with grammar.

1.7.3: Check your understanding

1.7.4: References

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1.8: Doing harm with language science



Content Note: This section includes discussion of residential schools.

As exciting as it is to think about language scientifically, it's important to remember that science is not inherently virtuous as a field. Humans can use the tools of science to do harm, and that includes the tools of linguistics. Much of the foundational work in the field of Linguistics was carried out by Christian missionaries whose goal was less to discover the systematic nature of mental grammar and more to convert people to their religion. Their work has several consequences for Indigenous languages.

The missionaries who first came to the land that is currently called Canada were European Christians. They started to document the **Indigenous** languages they encountered so that they could use them to teach Christian doctrine, and so that they could conduct trade and obtain resources. As they wrote down the words and structures they learned, they used the Roman alphabet and based their assumptions about how language worked on what they knew from studying Latin and other European languages. What this means is that the earliest written documents for these Indigenous languages described the languages through that point of view. The Roman alphabet (the same alphabet that English uses today) developed to represent European languages, so it's not very accurate at representing the phonetics of other languages.

Once they had enough language written down, the missionaries started translating the Christian Bible into the local languages. Since written documents are permanent in a different way from speech and sign, writing a text has the effect of "freezing" that form of the language. So when the Europeans started teaching literacy using their written texts, the result was that some of the variation across languages fell out of use as the written forms took priority. And these effects weren't accidental or benign. From the missionaries' own writings we can see that they considered Indigenous languages to be inferior to European languages. They complained, incorrectly, that the languages didn't have words for *soul* and *belief* and *angel*, and they thought that the complex grammars, which we'll learn more about in later chapters, were barbaric. In the History of the Language Sciences, Edward Gray writes:

> *"Jesuits generally derided the languages, characterizing the polysynthetic character of American languages as a symptom of social decay. In keeping with their heathen character, missionaries widely assumed, [Indigenous people] had failed to impose grammatical discipline on their languages." (Gray 2000, p. 934)*

On the one hand, we might point to the work of these European Christian missionaries in documenting Indigenous languages as foundational to the field of linguistics. And in some cases, those written documents have served as source material for work to reawaken sleeping languages like Huron-Wendat. But at the same time, we have to acknowledge that the missionary work did real harm: the documentation itself was inaccurate and led to the loss of many features of the languages. As the Christian church gained power on this continent, they stopped trying to teach in the local languages and instead imposed English or French, often violently.

In fact, eliminating Indigenous languages and cultures was the stated goal of the Canadian government. Well into the 20th century, police, church and government officials forcibly seized Indigenous children, removed them from their families, and sent them to residential schools. In these schools, children were separated from their siblings and cousins and forbidden to speak their families' languages. They were starved, physically and sexually abused, and some of them murdered. Under these conditions, it's not surprising that they stopped using their family languages: using English or French was a matter of sheer survival. In spite of the colonial government's attempts to assimilate Indigenous people into "the habits and modes of thought of white men" (MacDonald, quoted in TRC (2015)), some Indigenous languages still have living speakers, while others are asleep. You can learn more about the work that Indigenous people are doing to reclaim their languages in Chapter 9.

When we're doing language science, it might be tempting to try to dissociate ourselves from the harm those missionaries did, to say, "they were doing religion, not linguistics." But modern scientific practices of linguistics have also done harm to Indigenous and other minoritized languages. Linguists rely on language users to provide language data, but those who spend their time and energy answering our questions don't always get much in return. Sometimes linguists gather data to test a particular scientific hypothesis, and the data ends up existing only in obscure scholarly publications when it could also have been made available to the community of language users themselves, for preserving and teaching their language. Sometimes what is merely data to a linguist is a sacred story or includes sensitive personal information, and publishing it might violate someone's beliefs or privacy. Even if a linguist is careful to work descriptively, there's a real risk of linguistic and cultural appropriation if they become the so-called authority on the language without being a member of the language community. And sometimes linguists' attempts at descriptive statements can turn into prescriptive norms: if a linguist writes "In Language X, A is grammatical and B is ungrammatical" based on what they've learned from one set of speakers, that observation can become entrenched as the standard variety of Language X, even if there's another group of speakers out there for whom B is perfectly grammatical.

It's not only in settler states like Canada that languages are harmed by **colonialism**. Capitalism offers a strong incentive for people all around the world to speak English so they can participate in the labour market. And the more they use English, the less they use their local languages. In Chapter 12 we'll consider some of the ways that the field of Applied Linguistics and the teaching of English as a Foreign Language (EFL[1]) can reinforce racist norms.

As a field, linguistics is also responsible for harms to disabled people and their language practices. In Chapter 11 we'll see how deaf kids are often deprived of language input because of **oralism**, the view that vocal language is more important than signed language. Oralism is prevalent in the field of linguistics, which often fails, like the first edition of this book did, to study or teach the linguistic structures of sign languages. The practice of observing patterns of language across many users, even from a descriptive point of view, has the tendency to identify **norms** of language use which then makes it all too easy to describe anything that differs from the norm as disordered. For example, Salt (2019) showed that when linguists used standard interview techniques to research autistic people's conversation, they found "deficits" in their pragmatic abilities. But when the autistic participants were observed in conversation with each other, no such deficits were apparent. Salt concluded that it was the research method itself, namely, the interview, that gave rise to the so-called pragmatic disorders of autism. Similarly, MacKay (2003) reported his experience of **aphasia** resulting from a stroke. His account eloquently illustrates how the standard diagnostic and treatment techniques ignored his communicative adaptations and treated him as incompetent.

What's the lesson for us, then, as 21st-century linguists? I'm going to aim for some humility in my scientific thinking. I love using the tools of science to observe language. But I try to remember that science is one way of knowing, which brings its own cognitive biases. In other words, doing linguistics is not a neutral exercise. One of the fundamental lessons of this book is to move from thinking about grammar as a set of prescriptive rules in a book to seeing grammar as a living thing in our minds. But let's not get stuck in that way of thinking either. In addition to thinking about language as something that lives in the individual minds of individual humans, let's also remember that language is something that lives in communities and is shared among users, in the conversations we have and the stories we tell. We'll continue to explore these ways of thinking about language throughout the rest of this book.

1.8.0.1: Check your understanding

1.8.0.1: References

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1. Also known as English as a Second Language (ESL) or English as an Alternate Language (EAL). ↵

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1.9: Doing good with language science



In the previous section we tried to acknowledge the ways that linguistics has done and continues to do harm, like many fields of academic inquiry. Acknowledging those harms is only part of our responsibility. In this book, we're trying to focus on ways we can use the tools of language science to address some of those harms and even more importantly, do some good in the world. We also hope that working with this book will make you excited to carry on doing linguistics! So let's think about some of the things linguistics can prepare you to do.

In the tech sector, people with linguistics training use their skills to improve software that summarizes texts, translates from one language to another, synthesizes natural-sounding speech for your voice assistant or your GPS, helps your voice assistant understand your speech! As I'm writing this book, speech recognition systems do an okay job on standardized American English accents, especially when spoken by lower voices, but are much less accurate for higher voices and for the many different accents that English speakers use. Maybe you'll be one of the linguists who pushes back against these biases that are built into the algorithms!

Speaking of tech, another field where language science is valuable is in developing language-learning apps. That owl that scolds you if you skip your daily Esperanto practice was designed by linguists! Many people who are learning a new language find that their learning is enhanced by gaining the kind of metalinguistic awareness that you'll acquire from this book.

That brings us to another really important area where linguistics is important: in supporting Indigenous people who want to reclaim, revive, or revitalize their languages. As we'll see in later chapters, linguistic analysis of these grammars can be useful for creating teaching materials and supporting adult language learners who did not have the chance to learn their languages as children. Speaking for myself as a settler, I would want to be careful not to position myself as the expert who's here to save the language! Instead, I'd want to follow the lead of Indigenous community members in deciding how and where to deploy my linguistics skills.

Linguistics training is not only good for language learning, but also for language teaching! Studying linguistics is often a good entry point to getting certified as an ESL teacher, or learning how to teach any other language for that matter.

A lot of students are drawn to studying linguistics because they want to pursue a clinical career in speech-language pathology. Ideally, evidence from language science informs the treatments that clinicians offer. For example, if someone has a brain injury, their ability to produce or understand language might be impaired, and speech therapy can sometimes recover some of that function. Or a trans person who wants their voice to sound different might seek the advice of a speech-language pathologist as part of their transition. Some clinicians take their careers in a more Hollywood direction and offer accent or dialect coaching for actors!

Linguists find their skills called upon in many other industries. I personally know linguists who have been paid for their expertise in:

- testifying in court as to the interpretation of contracts and policies,

- interpreting how customers understand the products they use,
- identifying the author of a disputed document,
- consulting on potential brand names for new medications, and
- creating entirely new languages for film and TV series.

Language is everywhere. It's fundamental to how humans interact with each other, so understanding how language works is part of understanding people. And understanding people just might be a step towards doing some good in the world.

1.9.1: Check your understanding

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1.10: Hallmarks of human language

Creativity and Generativity in Anderson's *Essentials of Linguistics*



Video Script

Probably the most fundamental property of human language is **creativity**. When we say that human languages are creative, we don't just mean that you can use them to write beautiful poems and great works of literature.

When we say that human language is creative, we mean a couple of different things:

First, every language can express any possible concept.

That notion might surprise you at first. I often see magazine articles or blog posts that talk about supposedly untranslatable words that exist in other languages but that don't exist in English. A quick search online leads me to these gems:

Kummerspeck is the German word for excess weight gained from emotional overeating.

In Inuktitut, ***iktsuarpok*** is that feeling of anticipation when you're waiting for someone to show up at your house and you keep going outside to see if they're there yet.

And in Tagalog, ***gigil*** is the word for the urge to squeeze something that is irresistibly cute.

So if you believe that kind of article, it might seem like some concepts are restricted to certain languages. But think about it: Just because English doesn't have one single word that means "the urge to squeeze something cute" doesn't mean that English-speakers can't understand the concept of wanting to squeeze something cute. As soon as I described it using the English phrase "the urge to squeeze something cute" you understood the concept! It just takes more than one word to express it! The same is true of every language: all of the world's languages can express all concepts.

The other side of the creativity of language is even more interesting. Every language can generate an infinite number of possible new words and sentences.

Every language has a finite set of words in it. A language's vocabulary might be quite large, but it's still finite. And every language has a small and finite set of principles for combining those words.

But every language can use that finite vocabulary and that finite set of principles to generate an infinite number of sentences, new sentences every single day.

Likewise, every language has a finite set of sounds and a finite set of principles for combining those sounds. Every language can use those finite resources to generate an infinite number of possible new words in that language.

Because human languages are all capable of generating new words and generating new sentences, we say that **human grammar is generative**.

Remember that when we use the word “grammar” in linguistics, we’re talking not about the prescriptive rules that your Grade 6 teacher tried to make you follow, but about **mental grammar**, the things in our minds that all speakers of a language have in common that allow us to understand each other. Mental grammar is generative.

The final, and possibly the most important thing to know about the creativity of language is that it is governed by systematic principles. Every fluent speaker of a language uses systematic principles to combine sounds to form words and to combine words to form sentences. In *Essentials of Linguistics*, we’ll use the tools of systematic observation to discover what these systematic principles are.

Check Yourself

Exercise 1.10.1

What does it mean to say that mental grammar is generative?

- Every child inherits a mental grammar through their genes.
- Some languages can generate concepts that are impossible to express in other languages.
- The principles of mental grammar allow us to form completely novel sentences, and to understand them when we hear them.

Answer

"The principles of mental grammar allow us to form completely novel sentences, and to understand them when we hear them."

The reason: A mental grammar is just that, a concept that we have of how to put together words and phrases in a given language. Primarily, it's for our native langauge(s), but it can also include those languages in which we are fully fluent. This mental grammar helps us to both produce and comprehend langauge.

Exercise 1.10.2

The systematic principles of English phonology generate some word forms but not others. Which of the following words could be a possible word in English?

- Klaff.
- Fkal.
- Flakf.
- Sflak.

Answer

"Klaff"

The reason: When we think about possible combinations in English, we think about what could possibly be used together--what sounds could possibly work in the language. We'll get more into this in Chapters 2 and 3, but for now it's more of an issue of what could be possible. The other options are 'hard to pronounce' from an English point of view.

Exercise 1.10.3

The systematic principles of English syntax generate some sentences but not others. Which of the following sentences is not possible in English?

- You ain’t going nowhere.
- Herself have wrote these excellent book.
- Sam said she needed to speak to Chris and me.
- This expedition aims to boldly go where no expedition has gone before.

Answer

"Herself have wrote these excellent book."

The reason: There are a number of issues, both morphological and syntactical, with the sentence.

- 'Herself' is a reflexive pronoun, and has to refer back to someone--but as the subject of the sentence, that can't be done, as there's nothing before it to set up the reference.
- The verb 'have' is not a third person singular form--what we would expect for a 'She' subject.
- The past participle should be used in this verb construction, because this is a perfective form. But 'wrote' is not the past participle of 'to write'; it would be 'written'.
- 'These' implies a plural noun, but it is paired with 'book', which is singular.

Hallmarks of Human Language, from Sarah Harmon



Video Script

What is a language? For now, when we talk about a language, we're talking about a human language, and there are certain components that are found in human languages. They are consistent and they are unique, at least in their sum, that human languages all have certain components to them. With respect to animal communication, we'll cover that at a later point.

What are these attributes of human language? These hallmarks of human language? There are six in total. And it kind of goes in order, meaning that probably the most important aspect of human language is arbitrariness. **Arbitrariness** means that a given sign and a given meaning are arbitrarily connected. That means that there is no reason whatsoever that this thing is called a 'cup' or a 'mug' or a 'bottle'. In fact, the fact that we can use three different terms in mainstream American English for just the same thing, shows the arbitrariness. There is no reason whatsoever that this thing is called a 'telephone'; it just happens to be called telephone. Now I would also argue that arbitrariness may be the hardest of the areas to understand; in fact, it's the next section of this chapter is devoted to arbitrariness, and we're going to come back to arbitrariness in a number of chapters in this course. It is fundamental to what a human language is; there's no reason why anything is given a specific name. It just happens. Either we as a speaker of a language decide that's the name it should be, or we're trying to connect it to something else, but even that connection is arbitrary in and of itself. We will come back to that one.

Displacement. You might think of with respect to physical sciences about displacing water like you see in the picture. So **displacement** is the fact that we can use language to talk about things that are not in front of us. We can talk about anything at all.

It doesn't have to be right in front of us. It can be something tactile but just not in front of us; it can be something abstract; it can be something hypothetical. We can use language to describe all of it.

Cultural transmission is pretty much what you think it is, meaning that we use language to transmit culture from one person to another. Culture is not just music, art and literature; when we talk about culture, we talk about anything that is a human artifact. Remember, this is a social science.

The next one is duality. **Duality** is the fact that we can use a limited amount of lexicon or terms and a limited amount of phrase possibilities, as far as the construction of a phrase in a language. But we can create an infinite number of statements, questions, thoughts, declarations, hypotheses, anything. As we go through this course, it's really interesting to look at what a given language does. All languages have peculiarities, but they all have certain things in common as well. And one of these is duality.

Productivity or **creativity**, they're used interchangeably. Productivity is the word I tend to use; creativity is perfectly fine. It's the fact that we talk about things that we have never thought about before. We create, we produce with language. We do it in a way that is inventive. Again, humans seem to be pretty unique in this.

Last is **reflexivity.** We don't just talk about things around us; we talk about ourselves.

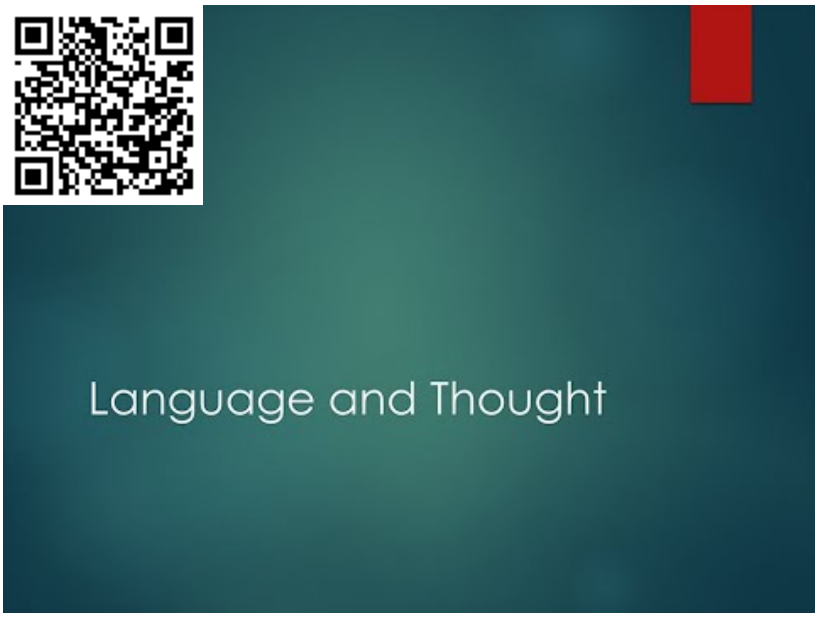
As we'll discuss later down the road with respect to these attributes, we can find a lot of them in a number of types of animal communication. But to this point in time, human beings are the only ones that have a type of communication that encompasses all six of these attributes. It's not to say that other animal languages don't. It's that we don't understand, or that it's possible but we just haven't figured out their code yet. We'll talk more about this when we get to human language, processing and how the brain works. In the next section we're going to focus on the main one, the biggest element, with respect to human language: arbitrariness.

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1.11: Language and thought

Language and Thought, from Sarah Harmon



Video Script

Language and thought. There has been quite a bit of discussion over the years and, especially, it has resurfaced in the last 15 years about whether language and thought are connected. By that I mean whether or not how we speak the language affects how we think, or how we think affects how we speak the language. There has been quite a bit of discussion; it is not a new topic, in fact, this has been openly discussed in academic circles for over 100 years. Certainly with respect to the philosophical side of things, probably…well, how long has philosophy been around? . 🤣 Certainly, this is a discussion that warrants a little bit of light, especially with respect to getting into a mind frame of analyzing language like a linguist would, so let's talk about it.

Frequently, the term the **Sapir-Whorf Hypothesis** is put out as a way to say that language affects how we think. There are some things to keep in mind. First of all, Edward Sapir and Benjamin Lee Whorf never wrote anything together; in fact, I believe Sapir predates Whorf. Also, it's really important to remember that both of them were early anthropologists. 'Early' is the key term there, because even anthropology has moved on significantly from both of their work. It is not something that is espoused necessarily even today in anthropology. But what it really refers to is this concept of **linguistic determinism,** the fact that our language determines how we view the world. That has been absolutely debunked in every way possible, both by linguists and by anthropologists. That is in fact not even exactly what Edward Sapir and Benjamin Lee Whorf wrote about; it is just what people interpreted from their works.

A different version of it, a softer version of it, has come out as **linguistic relativism**. That there might be some connections, that it is potentially the case that how we speak a language and how our language is set up might inform certain perspectives of how we see the world. A linguist will say, probably not. It could be true, but it bottom line is very hard to determine this, to analyze this. That is because we cannot, for example, measure how a person thinks in such detail that we can see the connection between the language and the thought process. We just can't do that. For right now, it is what we affectionately like to call 'armchair philosophy', as in you sit in an armchair and you think deep thoughts about life. It's not actual social science and our colleagues in anthropology would say the same thing.

What we can say?

We can question about a few things. First of all, the work of Dan Sullivan, who promotes this concept of **Thinking for Speaking**, that there is some interesting data that we can collect. For example, there are a number of languages throughout the world, where this concept of past, present, and future (the three verbal tenses) doesn't really exist, but it does exist in a different way. For

example, you may not have ‘I speak’, ‘I spoke’, ‘I will speak’—present past future—you may not have those very three linear breaks between how you say those reactions. But you will convey that same information in some way, shape or form. There's also the concept that in many cultures, you do not refer to things being above or below, up or down, to the left or to the right; you don't think in those terms. You think north, south, east, west. Again, this is something that is interesting and certainly linguistically, as well as anthropologically very interesting. Can we prove that those differentiations in language affect how a person thinks? It may just simply be a case of perspective or focus, but it may not exactly be what we would consider a change in thought process.

The work of John McWhorter really speaks to this. He has written a number of books and has a couple different podcasts on language and specifically really highlights how nothing with respect to language implies actual differences in the psychological linguistic connection. It's just a matter of different perspective that being said. It is interesting to think and perhaps in the future we may get some way of measuring this connection. For right now, though, there really isn't one that we can say shows a different perspective. A lot of it is cultural. That doesn't mean it is not linguistically relevant; it just means it's different and a different element to analyze. It is, overall, still a controversial thing to say, “Well, language has a major impact on thought.” We don't really know that to be true.

What do we know to be true?

Well, we know that there are some, shall we say, **linguistic universals**, things that we have observed over 100-150 years, give or take, of linguistic analysis. Here's a few things that we know. We know we can prove that there is a difference between **knowledge** or **competence**, on the one hand, and **performance**, on the other. We also know, without question, that human beings understand a language before they're able to produce it. That part we can say, and we can say that that is a psychological linguistic connection that we have to understand the tool before we use the tool. We have to know what a hammer is before we can use it. We have to know what a language does before we can use it, and that is something that we know. As far as other universals, that's the next section.

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1.12: Next steps and references

Next steps and references, from Sarah Harmon



Video Script

So where do we go from here? How do we transition to our next several chapters or modules?

Well, this is the layout of the rest of the textbook and the modules in the course will follow along with this. Notice that we're going to go from small to big. So, the small we're going to start with sounds. It can get very complex and it's totally normal to be freaked out; this happens. We're going to start small with the sounds and then go a little bigger and talk about words… and go a little bit bigger and talk about phrases… and then go a little bit bigger and talk about meaning. Phonetics, Phonology, Morphology, Syntax, Semantics and pragmatics. Those are the core areas of linguistics as you saw in an earlier section, and those are really the areas that you need to understand before you start applying to this information to different areas.

After we finish semantics and pragmatics, then we can start talking about speech communities and how different speech communities interact, dialects. That is sociolinguistics. From there we'll talk about historical linguistics, how language changes over time. We'll talk a little bit more about language universals as well. From there, we'll talk about how we acquire or learn a language. It doesn't matter if it's a related language or a completely different language, if it's a language that we learn as a child or a language that we learn as an adult. We'll talk about all of it. Then we'll round out with a little bit on how language processing happens, so how our brain takes language and understands it, as well as produces it. It should be noted that, especially in chapters nine and 10, there are new advances all the time; even as I record, this which is fairly late before the semester starts for 2021, there are changes that are going to be announced. Even what is in this textbook could get modified. There's a lot of what Catherine Anderson says, and a lot of what I say, that is a little bit more generic exactly because of that; we want to give you a good foundation first before we get into the nitty gritty of what actually goes into learning a language, as well as understanding language.

As far as the resources for this chapter, a lot of what I talked about can also be found in just about any intro to linguistics textbook, in their chapter one or their introductory chapter. If you want some more resources, I would look at what both *Introduction to Language* and *Language Files* have, as far as their list of resources. It's really long and I didn't want to put them in the slides here, but you will see them listed out in the actual LibreTexts page.

You can do this. Remember language is difficult, it's complex, it's not simple by any stretch of the imagination. Even when you look at a language and think it's simple, it's not. It is really nuanced and complex, and so to analyze it, we have to take a step back, we have to open our minds, we have to be creatively thinking about any possibility and, most importantly, we need to find patterns, but we need to have fun doing it.

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1.13: Exercise your linguistics skills

Exercise 1. The terms *first language* and *L1* (or sometimes, *native language*) refer to the language you learned from the people around you from your very early childhood. Many people have more than one L1. What is your L1? Do you have more than one? Make two scientific observations about your L1. Remember that scientific observations are descriptive, not prescriptive.

Exercise 2. Pretend you're working for a start-up that has developed a cool new product. Your company turns to you, the in-house linguist, to come up with a name for this new product. It has to be a unique name that doesn't already exist. What will you name your company's cool new product?

Now, look at this list of product names generated by other students. Which of them are good product names and which aren't? What makes something a good name? How do you know?

mentocular	swoodiei	torrix	baizan
jibberdab	keerild	euquinu	tuitionary
kzen	zirka	hbiufk	fluxon

Exercise 3. One of the many ways that mental grammar is generative is that it is always possible to create new words in a language. English often allows the creation of new verbs from existing nouns, even from proper names like in the following sentences:

- We're **Megabussing** to Montreal this weekend.
- You can find out the answer by **Googling**.
- The kids got **Pfizered** before going back to school.

Create three new verbs from English nouns (common nouns or proper names), and put each one in a sentence to illustrate its meaning.

Exercise 4. Think of a word that has only recently entered English, so it's not yet in mainstream dictionaries. Observe some examples of the word being used in context, either in your regular conversations or by searching online. Based on your observations of the word in context, write a dictionary definition of the word.

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CHAPTER OVERVIEW

2: Sounds, Part 1- Phonetics

Learning Objectives

When you've completed this chapter, you'll be able to:

- Identify the locations and functions of parts of the human anatomy relevant to the articulation of spoken and signed languages,
- Provide articulatory descriptions of given examples of phones and signs, and
- Identify the meanings of many common symbols from the International Phonetic Alphabet.

A key aspect of any language is its physical reality in the world: how we transmit linguistic signals from one person to another. This chapter explores this physical reality by looking at the body parts used for language, how they move to create a linguistic signal, and how linguists categorize, describe, and notate these physical properties so they can record and access information about a language.

2.1: Introduction to Phonetics
2.2: Modality
2.3: Speech articulators
2.4: Describing consonants- Place and phonation
2.5: Describing consonants- Manner
2.6: Describing vowels
2.7: The International Phonetic Alphabet
2.8: Signed language articulators
2.9: Syllables
2.10: Stress
2.11: Tone and intonation

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2.1: Introduction to Phonetics

First, watch this video of Anne Sullivan describing how she taught Helen Keller how to speak.



2.1.1: Introduction to Phonetics, from Sarah Harmon



2.1.1.1: Video Script

So in the video above this video script you see a dialogue between Annie Sullivan and us. She's describing what she did to teach Helen Keller, to speak. Remember Helen Keller was both blind and deaf; so a deaf person normally relies on a primary sign language like ASL couldn't do that because Helen was blind. She had to first teach Helen how to finger spell but with the hands, so that you could do [gestures] the different letters on the hand. She could feel them and then she wanted to learn how to speak so Annie Sullivan taught her how to speak. And I think it's really important to understand what Annie taught her is essentially phonetics articulatory phonetics; that's what she taught her how to do.

Why do we need to study phonetics? Well English is a really great example as to why; you can't just rely on how a language is written in order to know how it is pronounced. Those of you who had to learn English as teenagers or adults, you know this very well, so this is a really great poem by T.S. Watts; I love using it.

> *"English--As I Know It" by T.S. Watts*
>
> *I take it you already know*
>
> *of tough and bough and cough and dough*
>
> *Other may stumble you, but not you,*
>
> *on hiccough, thorough, laugh, and through.*
>
> *Well done! And now you wish, perhaps,*
>
> *To learn of less familiar traps?*
>
> *Beware of heard, a dreadful word,*
>
> *That looks like beard and sounds like bird.*
>
> *And dead: it's said like bed, not bead;*
>
> *For goodness' sake, don't call it deed!*
>
> *Watch out for meat and great and threat.*
>
> *(They rhyme with suite and straight and debt.)*
>
> *A moth is not a moth in mother,*
>
> *Nor both in bother, broth in brother.*
>
> *And here is not a match for there*
>
> *Nor dear and fear for bear and pear*
>
> *And then there's dose and rose and lose*
>
> *Just look them up—and goose and choose*
>
> *And cork and work and card and ward*
>
> *And font and front and word and sword*
>
> *And do and go and thwart and cart—*
>
> *Come, come, I've hardly made a start!*
>
> *A dreadful language? Man alive.*
>
> *I'd mastered it when I was five!*

Certainly with respect to language, if we go just strictly by how a language is written, we're not going to be actually describing how it is pronounced. Some languages are written fairly phonetically but even still how you write down the sound is arbitrary.

There's that word again, and we're going to come back to over and over and over again. So, how do we talk about languages sounds? How do we describe them and how do we produce them? That is the subject of phonetics.

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2.2: Modality

There is no video for this chapter. Below is a recording of the information presented below. It was created using Eleven Labs, using the Matilda voice. Note that any comprehension sections (or 'Check Your Understanding' questions) are not included in the recording.

2.2.0.1: The major components of communication

An act of communication between two people typically begins with one person constructing some intended message in their mind (step ❶ in Figure 2.2.1). This person can then give that message physical reality through various movements and configurations of their body parts, called **articulation** (step ❷). The physical **linguistic signal** (step ❸) can come in various forms, such as sound waves (for spoken languages) or light waves (for signed languages). The linguistic signal is then received, sensed, and processed by another person's **perception** (step ❹), allowing them to reconstruct the intended message (step ❺). The entire chain of physical reality, from articulation to perception, is called the **modality** of the language.

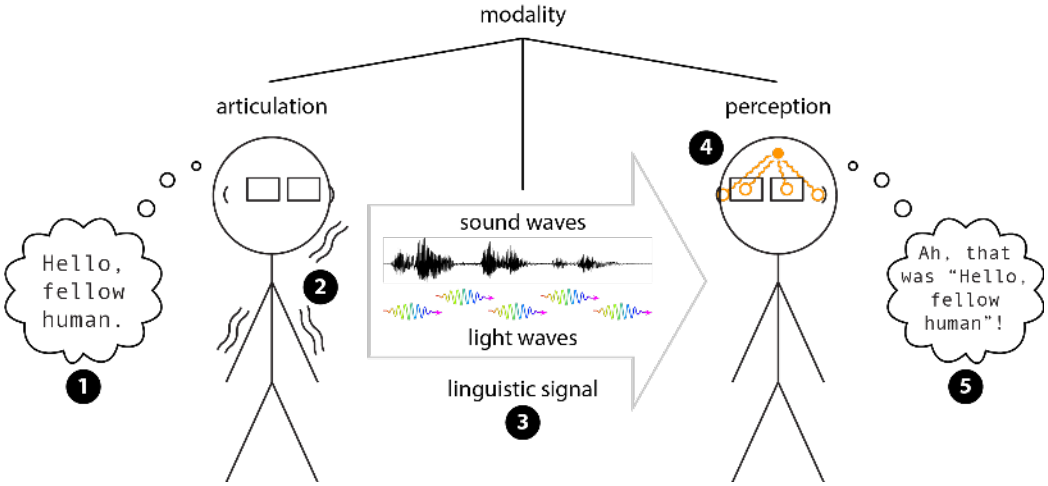


Figure 2.2.1: Steps in the transmission of a linguistic signal from one person to another.

2.2.1: Spoken and signed languages

The modality of **spoken languages**, such as English and Cantonese, is **vocal**, because they are articulated with the vocal tract; **acoustic**, because they are transmitted by sound waves; and **auditory**, because they are received and processed by the auditory system. This modality is often shortened to **vocal-auditory**, leaving the acoustic nature of the signal implied, since that is the ordinary input to the auditory system.

Signed languages, such as American Sign Language and Chinese Sign Language, also have a modality: they are **manual**, because they are articulated by the hands and arms (though most of the rest of the body can be used, too, so this component of modality might best be called *corporeal*); **photic**, because they are transmitted by light waves; and **visual**, because they are received and processed by the visual system. This modality is often shortened to **manual-visual**.

Other modalities are also possible, but full discussion is beyond the scope of this textbook. One notable example is the **manual-somatic** modality of **tactile signing**, in which linguistic signals are articulated primarily by the hands and are perceived by the somatosensory system, which is responsible for sensing various physical phenomena on the skin, such as pressure and movement. This modality can be used for deafblind people to communicate, often by adapting aspects of an existing signed language in such a way that the signs are felt rather than seen. Some examples of such languages include tactile Italian Sign Language (Checchetto et al. 2018) and a tactile version of American Sign Language called Protactile (Edwards and Brentari 2020).

Finally, it is important to note that actual instances of communication are often **multimodal**, with language users making use of the resources of more than one modality at a time (Perniss 2018, Holler and Levinson 2019). For example, spoken language is often accompanied by various kinds of **co-speech behaviours**, such as shrugging, facial expressions, and hand gestures, which are used for many meaningful functions in the linguistic signal: emphasis, emotion, attitude, shifting topics, taking turns in a conversation, etc. (Hinnell 2020; also see Sections 8.7 and 10.4 for discussion of some related issues and examples). A full analysis of how language works must ultimately take into account its multimodal nature and the complexity and flexibility of how humans do language.

Terminological note: Signed languages are sometimes called *sign languages*. Both terms are generally acceptable, so you may encounter either one in linguistics writing. *Sign languages* has long been the more common term, but *signed languages* has recently been gaining popularity among deaf scholars.

Another piece of relevant terminology that is in flux is the long-standing distinction in capitalization between uppercase *Deaf* (a sociocultural identity) and lowercase *deaf* (a physiological status). However, this distinction has been argued to contribute to elitist gatekeeping within deaf communities, so many deaf people have pushed to eliminate this distinction (Kusters et al. 2017, Pudans-Smith et al. 2019).

In this textbook, we follow these prevailing modern trends by using *signed languages* and by not using the *Deaf/deaf* distinction. However, the alternatives are still widespread in linguistics writing, so you may still encounter them.

For these issues, it is important to proceed with caution and follow the lead of anyone more knowledgeable than you, especially if they are deaf. If you are uncertain what usage is appropriate in a given situation with a given deaf person, ask what they prefer.

2.2.2: The study of modality

Because spoken languages have long been the default object of study in linguistics, and because the vocal-auditory modality is centred on sound, the study of linguistic modality is called **phonetics**, a term derived from the Ancient Greek root *φωνή* (*phōnḗ*) ‘sound, voice’. However, all languages have many underlying similarities, so linguists have long used many of the same terms to describe properties of different modalities, even when the etymology is specific to spoken languages. This includes the term *phonetics*, which is now commonly used to refer to the study of linguistic modality in general, not just the vocal-auditory modality.

This is an important reminder that the etymology of a word may give you *hints* to its meaning, but it does not *determine* its meaning. Instead, the meaning of a word is determined by how people actually use that word (for more discussion of meaning, check out Chapter 7 on semantics). This usage-based meaning can diverge and even contradict historical etymology, especially in scientific fields where our knowledge of the world is constantly evolving.

An example of such a divergence between etymology and current usage for a scientific term can be seen with the English word *atom*, which comes from the Ancient Greek *ἄτομος* (*átomos*) ‘indivisible’. This term was used by Ancient Greek philosophers to represent their belief that atoms were the smallest building blocks of matter. However, more than 2000 years later, we discovered that atoms are in fact divisible, being made up of protons, neutrons, and electrons. Rather than rename atoms, we just kept the old name and accepted that its etymology was no longer an accurate representation of our current scientific knowledge. The same is true for the term *phonetics*.

However, be aware that many linguists still hold biased views about language and linguistics, and they often forget to include signed languages and other modalities when talking about phonetics or language in general. Some may even think signed languages cannot have phonetics at all. As linguists have become more knowledgeable about linguistic diversity and more sensitive to challenges faced by marginalized groups, there has been an ongoing shift towards increased inclusivity in how we talk about language. As with any such shift, some people will remain in the past, while others will be proactively part of the inevitable future.

In this chapter, we focus on **articulatory phonetics**, which is the study of how the body creates a linguistic signal. The other two major components of modality also have dedicated subfields of phonetics. **Perceptual phonetics** is the study of how the human body perceives and processes linguistic signals. We can also study the physical properties of the linguistic signal itself. For spoken languages, this is the field of **acoustic phonetics**, which studies linguistic sound waves. However, there is currently no comparable subfield of phonetics for signed languages, because the physical properties of light waves are not normally studied by linguists. Perceptual and acoustic phonetics are beyond the scope of this textbook.

2.2.3: Check your understanding

2.2.4: References

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2.3: Speech articulators

There is no video for 2.3.1 through 2.3.6. Below is a recording of the information presented below. It was created using Eleven Labs, using the Matilda voice. Note that any comprehension sections (or 'Check Your Understanding' questions) are not included in the recording.

2.3.0.1: Overview of the vocal tract

Spoken language is articulated by manipulating parts of the body inside the **vocal tract**, such as the lips, tongue, and other parts of the mouth and throat. The vocal tract is often depicted in a **midsagittal diagram**, a special kind of diagram that represents the inside of the head as if it were split down the middle between the eyes. Midsagittal diagrams are conventionally oriented as in Figure 3.2, with the nostrils and lips on the left and the back of the head on the right, so that we are viewing the inside of the human head from its left side. The main regions and individual articulators of the vocal tract labelled in Figure 2.3.1 are defined and described in more detail in the rest of this section and the following sections.

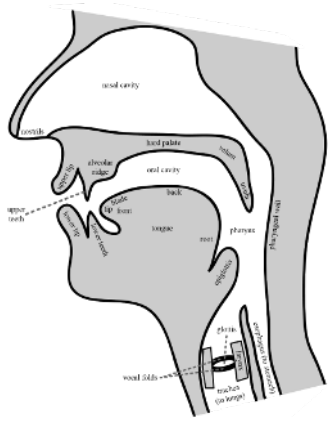


Figure 2.3.1: Midsagittal diagram of the human vocal tract.

2.3.1: Open spaces in the vocal tract

There are three main open regions of the vocal tract. The **oral cavity** is the main interior of the mouth, taking up space horizontally from the lips backward. The **pharynx** is behind the oral cavity and tongue, forming the upper part of what we normally think of as the throat. Finally, the **nasal cavity** is the open interior of the head above the oral cavity and pharynx, from the nostrils backward and down to the pharynx.

The bottom of the pharynx splits into two tubes: the **trachea** (also known as the **windpipe**), which leads down to the lungs, and the **esophagus**, which leads down to the stomach. The esophagus is not normally relevant for phonetics, but the trachea is important, since the vast majority of spoken language is articulated with air coming from the lungs, and as discussed later in Section 3.3, there are ways we can manipulate that airflow when it passes from the trachea to the pharynx.

2.3.2: Phones as a basic unit of speech

The pieces of the vocal tract can be articulated in various ways to create and manipulate a wide range of sounds. In the phonetics of spoken languages, we are primarily interested in studying units of speech called **phones** or **speech sounds**. It is difficult to provide a precise definition of what a phone is, either in general or for a specific spoken language, but roughly speaking, a phone in a spoken language is a linguistically significant sound, which means that can be used as part of an ordinary word in that language. For example, the ordinary English words *spill*, *slip*, *lisp*, and *lips* each contain four phones; in fact, these words have the same four phones, just in different orders (with some slight variation in how they are pronounced; see Chapter 4 for more information).

There are many other sounds we can produce with the vocal tract or even with other body parts, such as burps, snorts, finger snaps, etc., However, these are not typically studied in phonetics, because they are not known to be phones in any spoken language. However, even though they do not occur in ordinary words, they may still be used to express non-linguistic meaning. For example, in some cultures, snapping fingers can indicate quickness or a desire for attention.

Note that spoken languages may differ in how they use phones and whether they even use the same phones at all. For example, English speakers may use clicking sounds to express disapproval (the soft teeth-sucking *tsk-tsk* click) or to urge a horse to go faster (the loud popping *giddyup* click), but they are not phones in English, because they are not used within ordinary words. However, these same sounds do occur as phones in some other languages, such as Hadza (a language isolate spoken in Tanzania; Sands et al. 1996) and isiZulu (a.k.a. Zulu, a Southern Bantu language of the Niger-Congo family, spoken in southern Africa; Poulos and Msimang 1998).

We have to be careful about what kinds of words we look at to determine the phones of a language, because there are some marginal word-like expressions that can be used while speaking, but which may contain sounds that are not phones in the language. For example, the English word *ugh* is often pronounced with a rough gravelly sound that is otherwise not used in English, and we can say things like *Kaoru noticed their car was making a glzzk-glzzk-glzzk sound*, where *glzzk* is some impromptu sound produced to mimic the noise made by a vehicle in desperate need of repair.

One of the most fundamental distinctions between phones is whether they are **consonants** or **vowels**. The next three sections address how consonants and vowels are articulated and how they are described and categorized in meaningful ways by linguists.

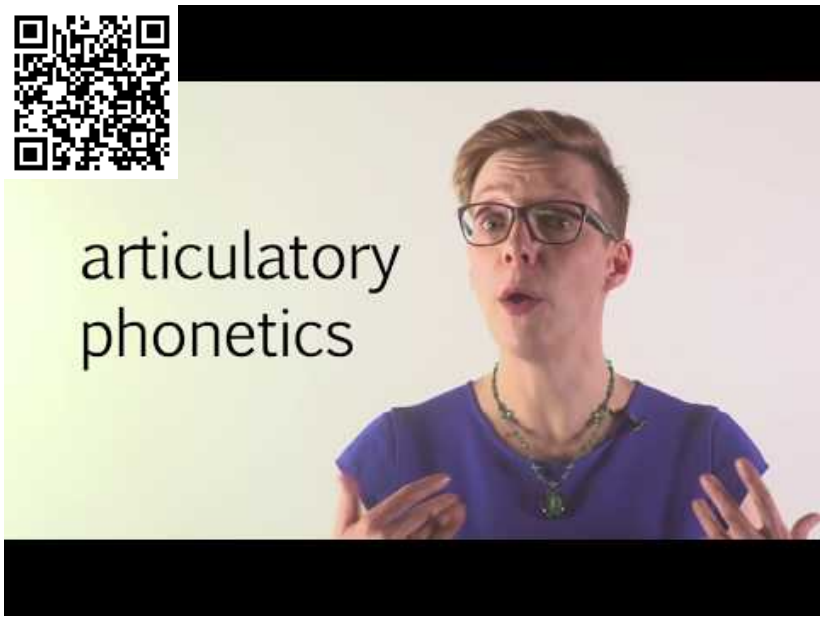
2.3.3: Check your understanding

2.3.4: References

Poulos, George, and Christian T. Msimang. 1998. *A linguistic analysis of Zulu*. Pretoria: Via Afrika.

Sands, Bonny, Ian Maddieson, and Peter Ladefoged. 1996. The phonetic structures of Hadza. *Studies in African Linguistics* 25(2): 171–204.

2.3.5: How Humans Produce Language, in Anderson's *Essentials of Linguistics*

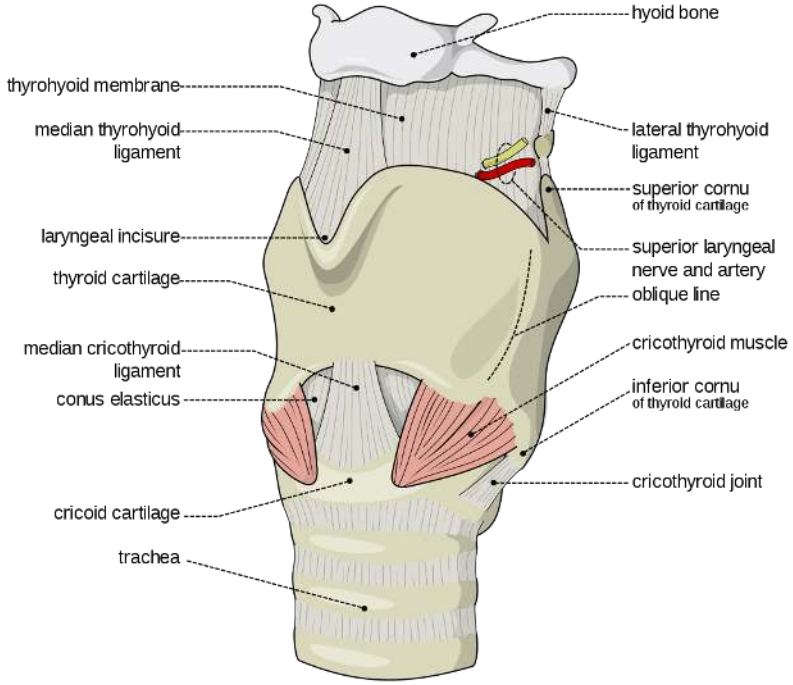


2.3.5.1: Video Script

The field of phonetics studies the sounds of human speech. When we study speech sounds we can consider them from two angles. **Acoustic phonetics**, in addition to being part of linguistics, is also a branch of physics. It's concerned with the physical, acoustic properties of the sound waves that we produce. We'll talk some about the acoustics of speech sounds, but we're primarily interested in **articulatory phonetics**, that is, how we humans use our bodies to produce speech sounds. Producing speech needs three mechanisms.

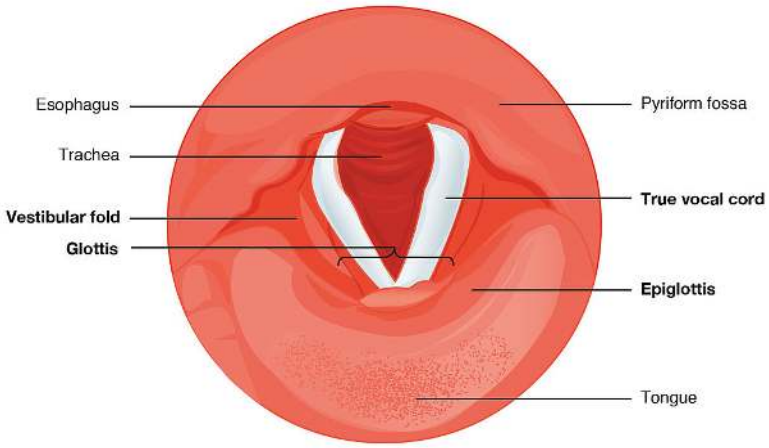
The first is a source of energy. Anything that makes a sound needs a source of energy. For human speech sounds, the air flowing from our lungs provides energy.

The second is a source of the sound: air flowing from the lungs arrives at the larynx. Put your hand on the front of your throat and gently feel the bony part under your skin. That's the front of your **larynx**. It's not actually made of bone; it's cartilage and muscle. This picture shows what the larynx looks like from the front.



By Olek Remesz (wiki-pl: Orem, commons: Orem) [CC BY-SA 2.5-2.0-1.0 (https://creativecommons.org/licenses...sa/2.5-2.0-1.0)], via Wikimedia Commons

This next picture is a view down a person's throat.



By OpenStax College [CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons

What you see here is that the opening of the larynx can be covered by two triangle-shaped pieces of skin. These are often called "vocal cords" but they're not really like cords or strings. A better name for them is **vocal folds**.

The opening between the vocal folds is called the **glottis**.

We can control our vocal folds to make a sound. I want you to try this out so take a moment and close your door or make sure there's no one around that you might disturb.

First I want you to say the word "uh-oh". Now say it again, but stop half-way through, "Uh-". When you do that, you've closed your vocal folds by bringing them together. This stops the air flowing through your vocal tract. That little silence in the middle of "uh-oh" is called a glottal stop because the air is stopped completely when the vocal folds close off the glottis.

Now I want you to open your mouth and breathe out quietly, "haaaaaaah". When you do this, your vocal folds are open and the air is passing freely through the glottis.

Now breathe out again and say "aaah", as if the doctor is looking down your throat. To make that "aaaah" sound, you're holding your vocal folds close together and vibrating them rapidly.

When we speak, we make some sounds with vocal folds open, and some with vocal folds vibrating. Put your hand on the front of your larynx again and make a long "SSSSS" sound. Now switch and make a "ZZZZZ" sound. You can feel your larynx vibrate on "ZZZZZ" but not on "SSSSS". That's

because [s] is a **voiceless** sound, made with the vocal folds held open, and [z] is a **voiced** sound, where we vibrate the vocal folds. Do it again and feel the difference between voiced and voiceless.

Now take your hand off your larynx and plug your ears and make the two sounds again with your ears plugged. You can hear the difference between voiceless and voiced sounds inside your head.

I said at the beginning that there are three crucial mechanisms involved in producing speech, and so far we've looked at only two:

- Energy comes from the air supplied by the lungs.
- The vocal folds produce sound at the larynx.
- The sound is then filtered, or shaped, by the **articulators**.

The oral cavity is the space in your mouth. The nasal cavity, obviously, is the space inside and behind your nose. And of course, we use our tongues, lips, teeth and jaws to articulate speech as well. In the next unit, we'll look in more detail at how we use our articulators.

So to sum up, the three mechanisms that we use to produce speech are:

- **respiration** at the lungs,
- **phonation** at the larynx, and
- **articulation** in the mouth.

2.3.5.2: Check Yourself

? Exercise 2.3.1

What is the voicing of the last sound in the word *soup*?

- Voiced.
- Voiceless.

Answer

"Voiceless"

The reason: [p] is a voiceless sound. When we pronounce it on its own, our vocal cords don't vibrate.

? Exercise 2.3.2

What is the voicing of the last sound in the word *life*?

- Voiced.
- Voiceless.

Answer

"Voiceless"

The reason: The last sound is [f], which is a voiceless sound. When we pronounce it on its own, our vocal cords don't vibrate.

? Exercise 2.3.3

What is the voicing of the last sound in the word *seem*?

- Voiced.
- Voiceless.

Answer

"Voiced"

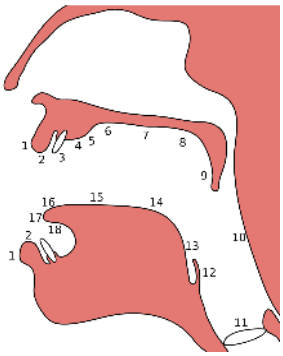
The reason: The last sound is [m], which is a voiced sound. When we pronounce it on its own, our vocal cortds vibrate.

2.3.6: Articulators, in Anderson's *Essentials of Linguistics*



2.3.6.1: Video Script

We know that humans produce speech by bringing air from the lungs through the larynx, where the vocal folds might or might not vibrate. That airflow is then shaped by the **articulators**.



Created by User:ish shwar (original .png deleted), .svg by Rohieb [GFDL (http://www.gnu.org/copyleft/fdl.html), CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0/) via Wikimedia Commons

This image is called a sagittal section. It depicts the inside of your head as if we sliced right between your eyes and down the middle of your nose and mouth. This angle gives us a good view of the parts of the vocal tract that are involved in filtering airflow to produce speech sounds.

Let's start at the front of your mouth, with your **lips**. If you make the sound "aaaaa" then round your lips, the sound of the vowel changes. We can also use our lips to block the flow of air completely, like in the consonants [b] and [p].

We also use our **teeth** to shape airflow. They don't do much on their own, but we can place the tip of the tongue between the teeth, for sounds like [θ] and [ð]. Or we can bring the top teeth down against the bottom lip for [f] and [v].

If you put your finger in your mouth and tap the roof of your mouth, you'll find that it's bony. That is the hard **palate**. English doesn't have very many palatal sounds, but we do raise the tongue towards the palate for the glide [j].

Now from where you have your finger on the roof of your mouth, slide it forward towards your top teeth. Before you get to the teeth, you'll find a ridge, which is called the **alveolar ridge**. If you use the tip of the tongue to block airflow at the alveolar ridge, you get the sounds [t] and [d]. We also produce [l] and [n] at the alveolar ridge, and some people also produce the sounds [s] and [z] with the tongue at the alveolar ridge (though there are other ways of making the [s] sound.)

When we block airflow in the mouth but allow air to circulate through the **nasal cavity**, we get the nasal sounds [m] [n] and [ŋ].

Some languages also have nasal vowels. Make an "aaaaa" vowel again, then make it nasal. [aaaaa] [ããããã]

The articulator that you move to allow air into the nasal cavity is called the **velum**. You might also know it as the soft palate. For sounds made in the mouth, the velum rests against the back of the throat. But we can pull the velum away from the back of the throat and allow air into the nose. We can also block airflow by moving the body of the tongue up against the velum, to make the sounds [k] and [ɡ].

Farther back than the velum are the **uvula** and the **pharynx**, but English doesn't use these articulators in its set of speech sounds.

Every different configuration of the articulators leads to a different acoustic output.

2.3.6.2: Check Yourself

Exercise 2.3.4

Which articulators are responsible for the first sound in the word *minor*?

- Lips.
- Lips and teeth.
- Tongue and teeth.
- Tongue and alveolar ridge.
- Tongue and palate.
- Tongue and velum.

Answer

"Lips"

The reason: The first sound is [m], which is a bilabial sound. Only the lips are involved in that sound.

Exercise 2.3.5

Which articulators are responsible for the final sound in the word *wit*?

- Lips.
- Lips and teeth.
- Tongue and teeth.
- Tongue and alveolar ridge.
- Tongue and palate.
- Tongue and velum.

Answer

"Lips"

The reason: The first sound is [w], which is a bilabial sound. Only the lips are involved.

Note: It's actually a labio-velar sound, but more on that soon.

Exercise 2.3.6

Which articulators are responsible for the first sound in the word *photography*?

- Lips.
- Lips and teeth.
- Tongue and teeth.
- Tongue and alveolar ridge.
- Tongue and palate.
- Tongue and velum.

Answer

"Lips and teeth"

The reason: The first sound is [f], which is a labiodental sound. Both the bottom lip and the top teeth are involved.

2.3.7: Articulators and Airstream Mechanisms, from Sarah Harmon



2.3.7.1: Video Script

There's only a little bit more than I'm going to add to Catherine Anderson's discussion on articulators and air stream mechanisms, not much more, because what she puts up there is really good really detailed and I can't do much better so I'll let her take that wheel. There's only a couple of things I want to add.

When we talk about the air stream mechanism, yes, most all sounds that are used for human language are pulmonic, meaning that the air comes from the lungs and then goes out. It is there, and it is pushed out from the lungs all the way. There are, however, some languages that do include sounds that are not pulmonic; they can be either glottalic or velaric. Let me explain what those are.

Glottalic sounds you hear in a number of languages that are indigenous to South America; Quechua is one of them; the early version of it was spoken by the Inca Empire and continues to be spoken to this day. They have, for example, an egressive [t']. So, take a regular [t] sound, and instead of that pulmonic [t] (the is pushed all the way from the lungs), if you are stopping the air also at the glottis and ejecting it out forcefully, that is what a glottalic sound is. It's an egressive, meaning the air flow coming out of the glottis. With the egressive, the air starts from the lungs, but it is stopped also at the glottis and then ejected it out, as I say, the [t']. You can hear like a [t] but it's got more push behind it, and that is the sound. In theory, you could have an ingressive glottalic, but that doesn't really happen.

Velaric sounds, at the velum, meaning the air is stopped at the velum, the back of the mouth, and then pushed out. We have two different kinds: you have ingressive and egressive. With the egressive, air goes out and the famous one is blowing a raspberry. That is a bilabial, ingressive, fricative, velaric. Ingressive velaric, now we're talking about the very famous clicks that we hear in the Bantu languages. The Bantu languages are spoken in central and especially southern Africa. Zulu is, for example, a Bantu language; !Xhosa is a Bantu language; there's a few others. Even when I said that second language name, !Xhosa, and you heard that [click] in front, that's a click. We use clicks all the time, but maybe not to communicate within a human language. Certainly, a lot of us in Europe and the Americas, for example, when we want to call our pet will go right that little kissy sound. That the click you're pulling in air is the second comes from the back of the mouth and it's a bilabial ingressive velaric. Some of us do a different kind of velaric sound when we are disapproving of something. [tsk tsk] The tip of your tongue is up against the back of your teeth and you're sucking in, pulling in from the back of your mouth of the velum. Sometimes, some of these clicks are associated when we're trying to talk or communicate to our pack animals, like horses or oxen or donkeys. Those are all clicks.

When we're talking human language, there are some languages—and the Bantu family is one—that use clicks. It's really cool to see and hear. In the video below this one, you will see a song on YouTube. It's being sung by Miriam Makeba; she was a very famous South African singer. She is among a wide group of black artists from Africa, mostly South Africa. They're all speakers have a Bantu language and they're singing in those languages frequently. A lot of it came out in the jazz movements in the 60s and 70s; Miriam Makeba certainly was part of that. I love her music; her music is amazing and inspiring. Even if I cannot understand it most of the time, it's just the way she conveys sound. But what is really cool is she made a very common Bantu cultural song –I can't remember what exactly it's called in !Xhosa, but it is translated into French and English and etc, as "The Click Song." It's a song about a beetle; she's going to explain more in this video. What is really cool, though, is she sings that in !Xhosa, and then the spelling of the !Xhosa words is there, and under it is the English. In the captioning you can watch and read and listen all at the same time.

Click languages are really awesome; they're amazing and they are unique to the Bantu languages. There are no other language families that are recorded in human history that have the sounds. So where did they come from? That's the mystery and discussion for another time.

2.3.7.1.1: "Qongqothwane" by Miriam Makeba, with captions in English and !Xhosa

Unfortunately, the video that I originally had in this text was taken off of YouTube; there are other videos of the same performance, but the captions are not there. Fortunately, I found a different performance of the same song with the captions in both !Xhosa and English. However, the video quality is

quite poor.



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2.4: Describing consonants- Place and phonation

There is no video for this chapter. Below is a recording of the information presented below. It was created using Eleven Labs, using the Matilda voice. Note that any comprehension sections (or 'Check Your Understanding' questions) are not included in the recording.

2.4.1: Consonants as constrictions

Consonants are phones that are created with relatively narrow constrictions somewhere in the vocal tract. These constrictions are usually made by moving at least one part of the vocal tract towards another, so that they are touching or very close together. The moving part is called the **active** or **lower articulator**, and its target is called the **passive** or **upper articulator**. Vowels have wider openings than consonants, so they are not usually described with the terms used here; more appropriate terminology for vowel articulation is discussed in Section 3.5.

2.4.2: Active articulators

The active articulators we find in phones across the world's spoken languages are listed below, in order from front to back. They are also labelled in the midsagittal diagram in Figure 2.4.1.

1. the **lower lip**, which is used for the consonants at the beginning of the English words *pin* and *fin*
2. the **tongue tip** (the frontest part of the tongue; also called the **apex**), which is used for the consonants at the beginning of the English words *tin* and *sin*
3. the **tongue blade** (the region just behind the tongue tip; also called the **lamina**), which is used for the consonants at the beginning of the English words *thin* and *chin*
4. the **tongue front** (the tip and blade together as a unit, also called the **corona**); it is useful to have a unified term for the tip and blade together, since they are so small and so close, and languages and even individual speakers of the same language may vary in which articulator is used for similar phones; for example, while many English speakers use the tongue tip for the consonant at the beginning of the word *tin*, other speakers may use the tongue blade or even the entire tongue front; however, while there may be variation in some languages, the distinction between the tip and blade is crucial in others, such as Basque (a language isolate spoken in Spain and France), which distinguishes the words *su* 'fire' and *zu* 'you', both of which sound roughly like the English word *sue*, with the tongue tip used for *su* and the tongue blade used for *zu* (although this distinction has been lost for some speakers under influence from Spanish; Hualde 2010)
5. the **tongue back** (the upper portion of the tongue, excluding the front; also called the **dorsum**), which is used for the consonants at the beginning of the English word *kin* and *gone*
6. the **tongue root** (the lower portion of the tongue in the pharynx; also called the **radix**), which is not used for consonants in English but is used for consonants in some languages, such as Nuu-chah-nulth (an endangered language of the Wakashan family, spoken in British Columbia)
7. the **epiglottis** (the large flap at the bottom of the pharynx that can cover the trachea to block food from entering the lungs, forcing it to go into the esophagus instead), which is not used for consonants in English but is used in for consonants in some languages, such as Archi (a Lezgic language of the Northeast Caucasian family, spoken in Russia)

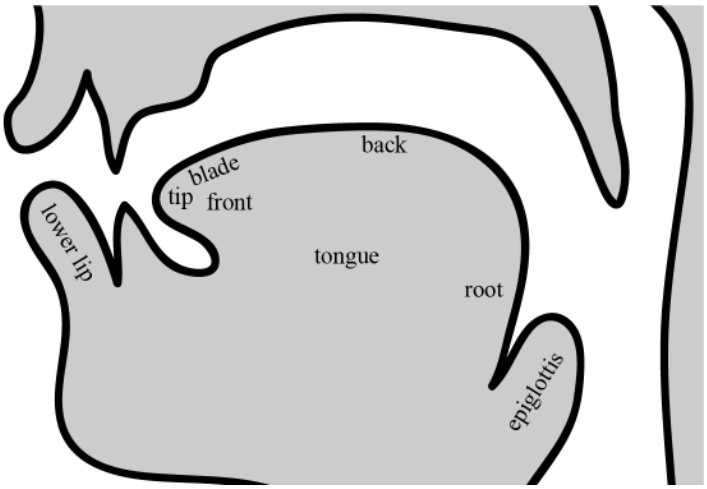


Figure 2.4.1: Midsagittal view of the active articulators of the vocal tract.

Note that while the lower teeth could theoretically be an active articulator (we can move them towards the upper lip, for example), it turns out that no known spoken language uses them for this purpose, so we do not include them here.

Each of the active articulators has a corresponding adjective to describe phones with that active articulator. These adjectives are given in the list below, again from front to back:

1. **labial** (articulated with the lower lip)
2. **apical** (articulated with the tongue tip)
3. **laminal** (articulated with the tongue blade)
4. **coronal** (articulated with the tongue front)
5. **dorsal** (articulated with the tongue back)
6. **radical** (articulated with the tongue root)
7. **epiglottal** (articulated with the epiglottis)

Thus, we could say that the English words *pin* and *fin* begin with labial consonants, while *thin* and *chin* begin with laminal consonants. Note that all apical and laminal consonants are also coronal, so *thin* and *chin* can also be said to begin with coronal consonants.

2.4.3: Passive articulators

The passive articulators we find in phones across the world's spoken languages are listed below, in order from front to back. They are also labelled in the midsagittal diagram in Figure 2.4.2.

1. the **upper lip**, which is used for the consonants at the beginning of the English words *pin* and *bin*
2. the **upper teeth**, which are used for the consonants at the beginning of the English words *fin* and *thin*
3. the **alveolar ridge** (the firm part of the gums that extends just behind the upper teeth, recognizable as the part of the mouth that often gets burned from eating hot food), which is used for the consonants at the beginning of the English words *tin* and *sin* (though some speakers may use the upper teeth instead or in addition)
4. the **postalveolar region** (the back wall of the alveolar ridge), which is used for the consonants at the beginning of the English words *shin* and *chin*
5. the **hard palate** (the hard part of the roof of the mouth; sometimes called the **palate** for short), which is used for the consonant at the beginning of the English word *yawn*
6. the **velum** (the softer part of the roof of the mouth; also called the **soft palate**), which is used for the consonants at the beginning of the English words *kin* and *gone*
7. the **uvula** (the fleshy blob that hangs down from the velum), which is not used for consonants in English but is used for consonants in some languages, such as Q'anjob'al (a language of the Mayan family, spoken in Guatemala)
8. the **pharyngeal wall** (the back wall of the pharynx), which is not used for consonants in English but is used in languages that have consonants with the tongue root or epiglottis as an active articulator (such as Nuu-chah-nulth and Archi mentioned earlier)

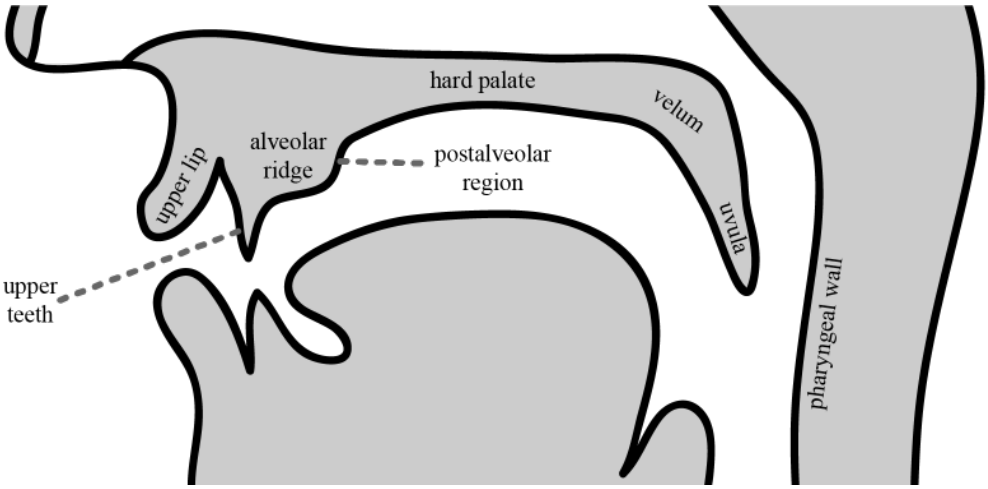


Figure 2.4.2: Midsagittal diagram of the passive articulators in the vocal tract.

Each of the passive articulators has a corresponding adjective to describe phones with that passive articulator. These adjectives are given in the list below, again from front to back:

1. **labial** (articulated at the upper lip)
2. **dental** (articulated at the upper teeth)
3. **alveolar** (articulated at the alveolar ridge)
4. **postalveolar** (articulated at the back wall of the alveolar ridge)
5. **palatal** (articulated at the palate)
6. **velar** (articulated at the velum)
7. **uvular** (articulated at the uvula)
8. **pharyngeal** (articulated at the pharyngeal wall)

Thus, we could say that the English words *tin* and *sin* begin with alveolar consonants, while *kin* and *gone* begin with velar consonants.

Since all consonants have two articulators, they could be described by either relevant adjective. For example, the consonant at the beginning of the English word *shin* could be described as a laminal consonant (because of its active articulator) as well as a postalveolar consonant (because of its passive articulator).

Note that the term *labial* is ambiguous in whether it refers to the lower or upper lip. In general, this ambiguity is not a problem, so labial consonants include those with the lower lip as an active articulator as well as those with the upper lip as a passive articulator.

2.4.4: Place of articulation

The overall combination of an active articulator and a passive articulator is called a consonant's **place of articulation**, or simply **place** for short. Places of articulation are usually described with a compound adjective that refers to both articulators, with the adjective for the active articulator first (without the *–al* ending), then a linking *–o-*, followed by the adjective for the passive articulator.

For example, the consonant at the beginning of the English word *fin* is a **labiodental** consonant, because it is articulated with the lower lip (*labi-*) at the upper teeth (*-dental*), as circled in the midsagittal diagram in Figure 2.4.3a. Similarly, the consonant at the beginning of the English word *kin* is **dorsovelar**, because it is articulated with the tongue back (*dors-*) at the velum (*-velar*), as circled in the midsagittal diagram in Figure 2.4.3a.

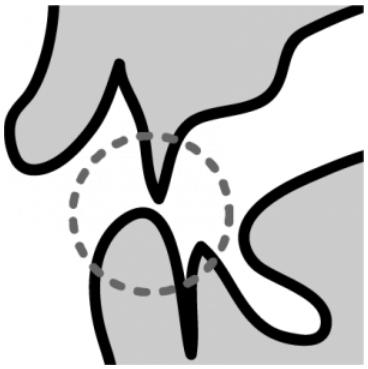


Figure 2.4.3a: Midsagittal diagram of a labiodental place of articulation.

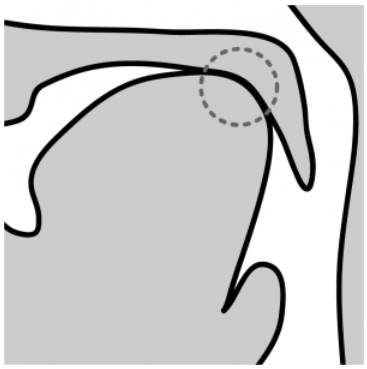


Figure 2.4.3a: Midsagittal diagram of a dorsovelar place of articulation.

Not all combinations of active and passive articulators are used in the world's spoken languages. Some are simply impossible. For example, ordinary humans cannot stretch their lower lip to reach all the way back to the pharyngeal wall, so there is no such thing as a labiopharyngeal consonant.

Other combinations are physically possible, but no spoken language is known to use them. For example, most people have no difficulty touching their tongue tip to the velum, but that articulation is awkward enough that no language seems to have apicovelar consonants. Of course, our knowledge of language is constantly expanding, so we could theoretically come across apicovelar consonants in some language someday, but it is unlikely.

Many of the places of articulation are used frequently enough that their corresponding compound adjectives are normally replaced with a shorter adjective, often highlighting just the passive articulator. For example, **apicoalveolar** (tongue tip and alveolar ridge) is often shortened to just *alveolar*, because the tongue tip is more commonly used than the tongue blade when the alveolar ridge is the passive articulator. The full adjective can be used as needed to distinguish apicoalveolar from **laminoalveolar** (tongue blade and alveolar ridge), such as when a language has both kinds of alveolar consonants, as with Basque mentioned earlier.

Other shortened adjectives are used because one of the articulators is predictable from the other. For example, *dorsovelar* is often shortened to just *velar*, because no other active articulator is ever used with the velum as a passive articulator.

Other common shortened adjectives for places of articulation are listed below:

- **laminodental** (tongue blade and upper teeth) ⇒ dental
- **dorsopalatal** (tongue back and hard palate) ⇒ palatal
- **dorsouvular** (tongue back and uvula)⇒ uvular
- **radicopharyngeal** (tongue root and pharyngeal wall) ⇒ pharyngeal
- **epiglottopharyngeal** (epiglottis and pharyngeal wall) ⇒ epiglottal

Note that palatal phones move the entire upper part of the tongue, both the front and the back, so they technically count as both coronal and dorsal. However, the tongue back is often considered the more important active articulator, and it is often the only active articulator listed for palatals.

Some other alternative adjectives are used in certain special cases. For example, consonants that use both lips as articulators, such as the consonants at the beginning of the English words *pin* and *bin*, are called **bilabial** rather than the inelegant term *labiolabial*. Note that for bilabial phones, both lips are involved roughly equally, with each actively moving towards the other as mutual targets. So for the bilabial place of articulation, it is technically more accurate to say that the lips are the lower and upper articulators, but it is common to refer to the lower lip at the active articulator and the upper lip as the passive articulator.

Another special case are dental consonants. There are two main types. In the most common case, the tongue blade is on or near the back of the teeth (as circled in Figure 2.4.4a). In the other main type, the tongue protrudes between the two sets of teeth, with the tongue blade below the bottom edge of the upper teeth (as circled in Figure 2.4.4b). The first type of dental consonant is what is often referred to by default as *dental* (as a shortening for *laminodental*), while the second type is called **interdental**. The consonants at the beginning of the English words *thin* and *then* are commonly articulated as interdental.

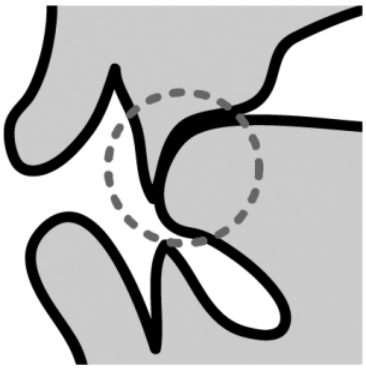


Figure 2.4.4a: Midsagittal diagram of a dental (laminodental) articulation.

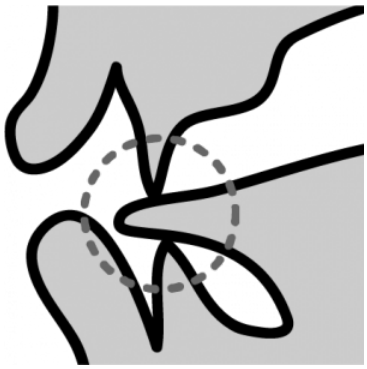


Figure 2.4.4b: Midsagittal diagram of an interdental articulation.

Finally, there are also two main types of postalveolars. In the most common case, the tongue blade is on or near the alveolar ridge (as circled in Figure 3.7a). In the other case, the tongue tip curls backward, so that the tip points towards the hard palate, and the underside of the tongue tip is at or near the back wall of the alveolar ridge (as circled in Figure 3.7b). The first type of postalveolar consonant is what is often referred to by default as *postalveolar*, while the second type is called **retroflex**. The consonant at the beginning of the English word *run* is articulated as retroflex by some speakers, but there is much variation.

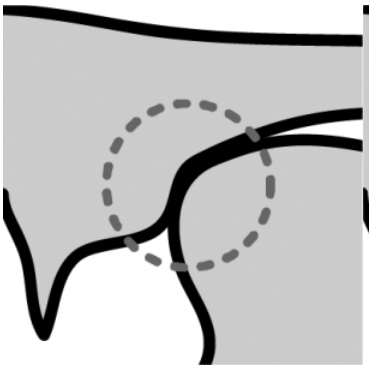


Figure 2.4.5a: Midsagittal diagram of a postalveolar articulation.

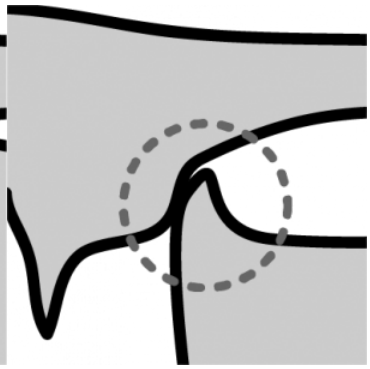


Figure 2.4.5b: Midsagittal diagram of a retroflex articulation.

2.4.5: Glottal articulation

There is one important place of articulation that is somewhat different from the ones discussed so far. At the top of the trachea is the **larynx** (or **voice box**). Inside the larynx are the **vocal folds** (or **vocal cords**), which are two membranes that stretch from front to back. The vocal folds are separated by an empty space, the **glottis**. These structures are shown from the side in the midsagittal diagram in Figure 2.4.6a and in more detail as viewed looking down the throat in Figure 2.4.6b.

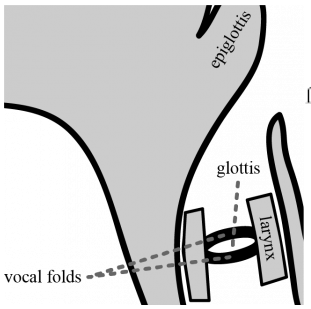


Figure 2.4.6a: Midsagittal diagram of the larynx.

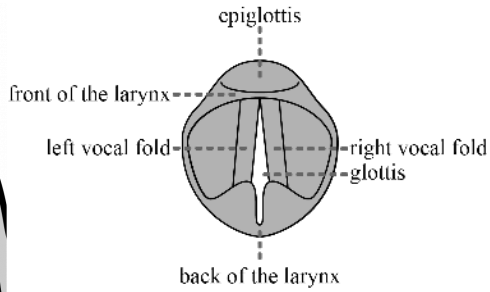


Figure 2.4.6b: Top view of the larynx.

Some consonant phones seem to consist only of articulation of the vocal folds, with no significant movement of any of the active articulators discussed previously. We see this with the first consonant in the English words *he* and *who*. Such phones are said to

have a **glottal** or **laryngeal** place of articulation. Unlike other consonants, they have no clear active or passive articulator (since both vocal folds move equally) and no clear lower or upper articulator (since the vocal folds are at the same height).

Additionally, across the world's spoken languages, we find that glottal consonants behave somewhat oddly, sometimes acting more like vowels than consonants. Because of this, glottal consonants are sometimes said to have no inherent place of articulation of their own. Instead, they seem to pick up aspects of the articulation of the phones around them, especially vowels. You should be able to observe this in the first consonant of the English words *he* and *who*, especially in the configuration of the lips. the lips are spread into a smile throughout *he*, but they are rounded throughout *who* (see Section 3.5 for more information about lip configuration and other vowel properties). So even though we may think of these two words as starting with the same consonant, they are articulated in different ways, at least at the lips. But importantly, they have the same glottal articulation.

Regardless of the problematic nature of the glottal place of articulation, it is still typically counted among the possible places of articulation for consonants, and we follow that practice here. A full table of the places of articulation discussed in this chapter is given in Table 3.1, showing the usual shortened adjective and the active and passive articulators (with none given for glottal, since neither of the vocal folds has a privileged status over the other).

Table 2.4.1. Places of articulation

place of articulation	*active articulator*	*passive articulator*
bilabial	lower lip	upper lip
labiodental	lower lip	upper teeth
dental / interdental	tongue blade	upper teeth
alveolar	tongue tip	alveolar ridge
postalveolar	tongue blade	postalveolar region
retroflex	underside of the tongue tip	postalveolar region
palatal	tongue front and back	hard palate
velar	tongue back	velum
uvular	tongue back	uvula
pharyngeal	tongue root	pharyngeal wall
epiglottal	epiglottis	pharyngeal wall
glottal	—	—

In addition to acting as a place of articulation for some consonants in some languages, the vocal folds are also used to regulate airflow through the vocal tract for most consonants and vowels in all spoken languages. In particular, when the vocal folds are configured in the right way, airflow through the glottis will cause the vocal folds to vibrate.

You can feel this vibration by placing your fingers on the front of your throat where the larynx is, while making the sound of a bee buzzing, like the sound of the consonant at the end of the English word *buzz*. If instead you make the sound of a snake hissing, like the sound of the consonant at the end of the English word *bus*, you should feel that there is no vocal fold vibration. Switch between buzzing and hissing to feel the change in the presence versus absence of vibration: *zzzzz-sssss-zzzzz-sssss-zzzzz-sssss*.

Vocal fold vibration is often called **voicing**, and a phone with vocal fold vibration is called **voiced**, while a phone without it is called **voiceless** or **unvoiced**. There are many other ways the vocal folds can play a role in shaping airflow. This larger category of manipulating airflow with the vocal folds in different ways is called **phonation**; you may sometimes see the term *voicing* refer to phonation generally, but this should be avoided, so that *voicing* can refer specifically to phonation in which the vocal folds vibrate. In this textbook, we will only discuss voiced and voiceless phonation.

2.4.6: Check your understanding

2.4.7: References

Hualde, J. Ignacio. Neutralización de sibilantes vascas y seseo en castellano. *Oihenart* 25: 89–116.

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2.5: Describing consonants- Manner

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2.5.1: Manners of articulation

Consonant phones can also be categorized by their **manner of articulation** (or **manner** for short), which is how air flows through the vocal tract, based on the size and shape of the constriction between the articulators.

2.5.2: Stops

The most basic manner of articulation is **stop**, in which the active articulator presses firmly against the passive articulator to make a complete closure, blocking all airflow at that point. A bilabial oral stop closures are shown in the midsagittal diagrams in Figure 3.9. There are many kinds of stops across the world's spoken languages. One important distinction for stops is based on the position of the velum. The velum may be raised against the upper pharynx to block off access to the nasal cavity, as indicated by the dotted circle in the midsagittal diagram on the left in Figure 2.5.1. The forces all airflow to go into the oral cavity only, as indicated by the arrow in Figure 2.5.1. Such a stop with a raised velum and oral airflow only is called an **oral stop**. The English words *pet* and *get* both begin and end with oral stops. If instead a stop is articulated with a lowered velum, , as indicated by the dotted circle in the midsagittal diagram on the right in Figure 3.9, this allows air to flow into both the oral and nasal cavities. Such a stop with a lowered velum and both oral and nasal airflow is called a **nasal stop**, or sometimes just a **nasal** for short. The English words *met* and *net* both begin with nasal stops.

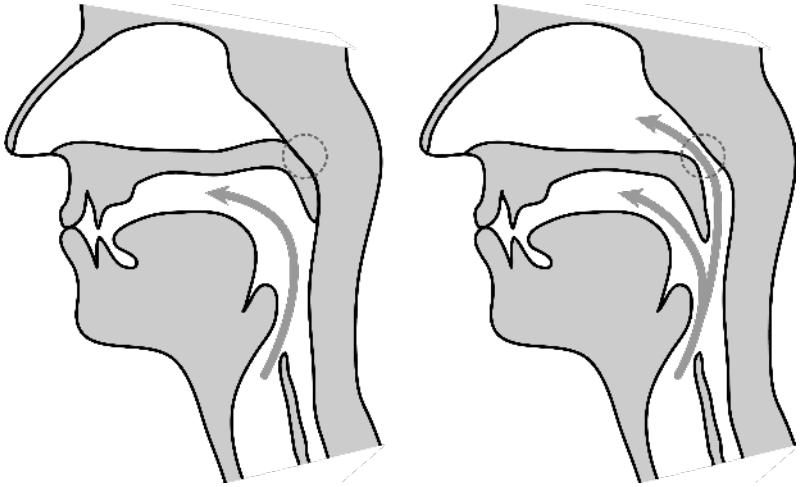


Figure 2.5.1: Midsagittal diagrams showing a raised velum for a bilabial oral stop (left) and a lowered velum for a bilabial nasal stop (right).Figure 3.9.

The most common type of oral stops are **plosives**, which have airflow from the lungs that gets trapped behind the stop closure, until the air can be quickly released in an explosive burst. Most spoken languages have plosives as their only oral stops, so the terms *plosive* and *oral stop* are often used interchangeably. However, in more careful work, they are distinguished, because plosives are only one kind of oral stop. Other kinds of oral stops include **ejectives** (in which air is pushed up by raising the vocal folds rather than exhaling from the lungs), **implosives** (in which air is sucked in by lowering the vocal folds), and **clicks** (in which air is sucked in by quickly lowering the tongue).

2.5.3: Fricatives

If the active and passive articulators are very close but not touching, creating a narrow constriction, airflow through this constriction becomes very turbulent, resulting in highly random noisy airflow called **frication**, which sounds like hissing or buzzing. A phone articulated this way is called a **fricative**. The English words *set* and *vet* begin with fricatives.

2.5.4: Approximants

If the active and passive articulators are not touching and are spaced far enough apart to create little or no frication in the airflow, then the resulting phone is called an **approximant**. Most approximants have relatively unrestricted airflow through the middle of the oral cavity and are called **central approximants**. However, during the articulation of an approximant, part of the tongue may instead make full contact with an upper articulator, causing the airflow to be diverted along one or both sides of the tongue, but still without frication. Such an approximant is called a **lateral approximant**. The English words *yet* and *wet* begin with central approximants, while the English word *let* begins with a lateral approximant.

These four manners of articulation are schematized in the diagrams in Figure 2.5.2, in which the flat bars across the top of each diagram represent the midsagittal view of some arbitrary passive articulator, such as the alveolar ridge or hard palate, while the rounded shapes represent some active articulator, such as the tongue tip or tongue back, and arrows represent the nature of the airflow during the consonant.

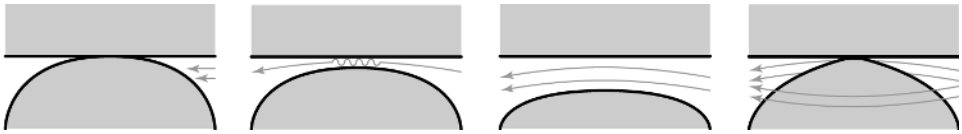


Figure 2.5.2: Manners of articulation, from left to right: stop, fricative, central approximant, and lateral approximant.

The stop (far left in Figure 3.10) has a complete closure between the two articulators, preventing airflow from getting past. The fricative (second from the left) has a narrow opening with tightly constrained, fricated airflow, indicated in Figure 3.10 with a wavy line in the airflow arrow. The central approximant (third from the left) has a wider opening with relatively unobstructed airflow, indicated by the gently curved arrows. Finally, the lateral approximant (far right) also has a wide aperture, but with a small central obstruction that forces airflow to be diverted around the sides of the obstruction.

2.5.5: Affricates

Normally, the stop closure for a plosive is released relatively quickly, allowing the air to begin flowing almost immediately. However, it is also possible to release the closure slowly, so that a very brief fricative-like sound is created, causing the release of the plosive to have some frication, in which case, we say that it has a **fricated** release. A plosive with such a fricated release is often referred to as an **affricate**, which is a fifth kind of manner of articulation. The English word *jet* begins with an affricate.

Careful study of the language is usually required to determine what is really going on when you encounter some sort of plosive followed by some frication. In this textbook, you will be told whether you are dealing with an affricate or not. It can be difficult to determine the difference between a true affricate versus a sequence of a true plosive followed by a true fricative, because they are both very similar. In some languages, the difference between an affricate and plosive-fricative sequence can change the meaning, as in English with *ratchet* (with an affricate) versus *rat shit* (with a plosive followed by a fricative). The distinction is marginal in English, but it is robust in other languages, such as Polish (a West Lechitic language of the Indo-European family, spoken in Poland). In Polish, the word *czy* 'if, whether' begins with an affricate, while *trzy* 'three' begins with plosive followed by a fricative. The pronunciation of these two Polish words can be heard in the following sound file, first *czy* with an affricate, then *trzy* with a plosive plus a fricative.

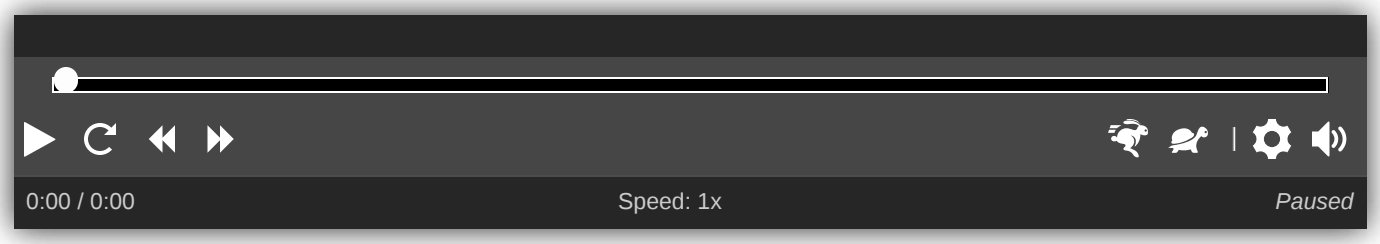


Although most affricates are articulated as plosives with a fricated release, it is possible for other kinds of oral stops to have fricated releases, so ejective affricates, implosive affricates, and click affricates also exist in some of the world's spoken languages.

2.5.5.2: Other manners of articulation

There are many other manners of articulation that are beyond the scope of this textbook. The two most notable ones are **taps** (also called **flaps**) and **trills**. Taps are like stops, except that the closure is so short that airflow is barely interrupted. The consonant in the middle of the English word *atom* is articulated as a tap for most North American speakers.

Trills are like repeated taps, in which one articulator vibrates quickly against the other, usually 2–3 times. Most dialects of English do not have trills, though some speakers of Scottish English may have a trill for the first consonant of *run*. Some languages have both a tap and a trill, such as Spanish (a Western Romance language of the Indo-European family, spoken in Spain and its former colonies), which has a tap in the middle of the word *pero* 'but' and a trill in the middle of the word *perro* 'dog'. The pronunciation of these two Spanish words can be heard in the following sound file, first *pero* with a tap, then *perro* with a trill.



2.5.6: Other classes of consonants

A few larger groupings of these manners of articulations are also often useful to talk about because of their common patterns in the world's spoken languages (see Chapter 4 for more information). Oral stops, fricatives, and affricates together form the class of **obstruents**, which are defined by having an overall significant obstruction to free airflow in the vocal tract. Consonants with the remaining manners of articulation (nasal stops, approximants, taps, and trills) form the class of **sonorants**, which have fairly unrestricted airflow, either through the nasal cavity (for nasal stops) or through the oral cavity (for approximants, taps, and trills).

Fricatives and approximants, because of their continuous airflow through the oral cavity, can also be referred to collectively as the class of **continuants** (sometimes trills are grouped with the continuants as well).

Note that the terms *sonorant* and *continuant* are typically used to refer only to consonants, but it is sometimes useful to define these classes to include vowels as well.

2.5.7: Putting it all together!

We now have three different ways to talk about how a consonant phone is articulated: its place of articulation, its phonation, and its manner of articulation. We can put these three together to give a complete description of the most common consonant phones. There are many consonants that go beyond this three-part description and require a bit more information to be fully specified, but for the purposes of this textbook, these three categories will be sufficient.

Consider the consonant phone at the beginning of the English word *met*, which has the articulation shown in the midsagittal diagram in Figure 3.2.5.3, with crucial aspects of the articulation circled.

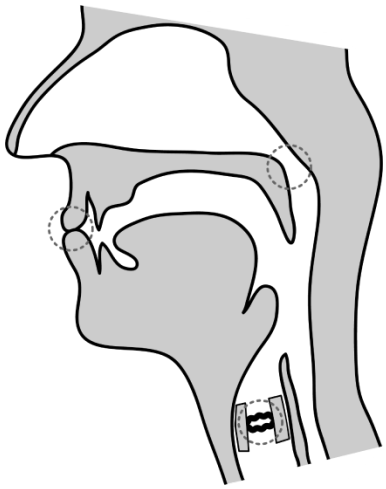


Figure 2.5.3: Midsagittal diagram of a voiced bilabial nasal stop.

This consonant involves articulation of both lips, so it has a bilabial place of articulation. While saying this consonant, our vocal folds vibrate, so it has a voiced phonation. Finally, the two articulators are pressed firmly together, allowing no airflow through the oral cavity, but the velum is lowered to allow airflow through the nasal cavity, so this consonant has a nasal stop manner of articulation.

Conventionally, these three components in the description of a consonant phone are put in the order *phonation – place – manner*, so the consonant at the beginning of the English word *met* would be fully described as a voiced bilabial nasal stop. Because it is a nasal stop, we can also further classify this consonant as a sonorant.

For another example, consider the consonant phone at the beginning of the English word *set*, which has the articulation shown in the midsagittal diagram in Figure 2.5.4, with crucial aspects of the articulation circled.

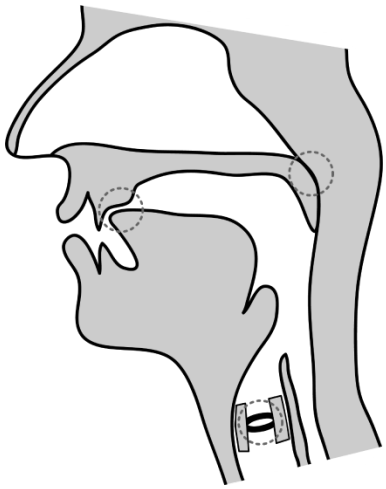


Figure 2.5.4: Midsagittal diagram of a voiceless alveolar fricative.

This consonant involves active articulation of the front of the tongue; most speakers use the tongue tip, but some may use the tongue blade, either instead of the tip or in addition to it. The passive articulator of this phone can be hard to determine, since the front of the tongue is not touching it, but rather, is separated slightly from it. However, you can sometimes feel what the passive articulator is by breathing in instead of blowing out, because this can cause the passive articulator to become slightly cooler. If you do that with this consonant, you should feel the alveolar ridge getting cooler. Thus, this consonant has an alveolar place of articulation, and whether that place is apical (the default) or laminal depends on the individual speaker.

For this consonant, the vocal folds do not vibrate, so it has a voiceless phonation. Finally, the two articulators are separated very slightly, creating loud, very turbulent airflow, so this consonant has a fricative manner of articulation. Putting it all together, this consonant phone is a voiceless alveolar fricative, or voiceless apicoalveolar fricative, or for some speakers, a voiceless laminoalveolar fricative, if we want to be precise about which active articulator is used. Because it is a fricative, we can also further classify this phone as both an obstruent and a continuant.

Also note that for this consonant, the velum is raised and backed to block airflow from entering the nasal cavity. Fricatives are nearly always oral consonants, because having any airflow leak into the nasal cavity makes it difficult to produce high enough air pressure to force airflow through the narrow fricative opening.

We will look more closely at how to describe some more consonants at the end of this chapter, but for now, focus on understanding the definitions of the various terms that are used to fully describe a consonant's phonation, place, and manner.

2.5.8: Check your understanding

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2.6: Describing vowels

There is no video for this chapter. Below is a recording of the information presented below. It was created using Eleven Labs, using the Matilda voice. Note that any comprehension sections (or 'Check Your Understanding' questions) are not included in the recording.

2.6.1: Vowel quality

Vowel phones can be categorized by the configuration of the tongue and lips during their articulation, which determines the vowel's overall **vowel quality**. Vowel quality is often much more of a continuum than consonant categories like place and manner. A slight change in articulation makes little difference in what a vowel sounds like, but it can have a drastic effect on a consonant. For example, moving an active articulator away from a passive articulator by just a tiny bit, less than 1 mm, is enough to turn a stop into a fricative, but that same distance for a vowel will have no noticeable effect. However, we can still identify several broad categories of vowel qualities based on dividing up this continuum into a few major regions.

2.6.2: Height

Vowels are articulated with a larger opening in the oral cavity than consonants are, requiring the tongue to move farther down than for approximants. This is typically facilitated by also moving the jaw down to allow the tongue to move even lower. The height of the tongue during the articulation of a vowel is called **vowel height**, or simply **height** for short.

A vowel with a very high tongue position, as in the English word *beat*, is called a **high** vowel. Some linguists instead call this a **close** vowel, but we will not use that terminology here. High vowels have an opening just slightly larger than for approximants. Indeed, high vowels and approximants are often related in many languages, with one turning into the other in certain positions. Compare the different pronunciations of the phone represented by the letter *i* in the middle of the English words *unique* (with a high vowel) and *union* (with an approximant).

A vowel with a very low tongue position, as in the English word *bat*, is called a **low** vowel. Again, some linguists have a different term that we will not use, calling these vowels **open** instead. Low vowels have the largest opening of any phone, whether vowel or consonant.

A vowel with an intermediate tongue position between high and low, as in the English word *bet*, is called a **mid** vowel. The differences in vertical tongue position for these three categories of vowel height are shown in Figure 3.2.6.1, from highest on the left (as in *beat*) to lowest on the right (as in *bat*). Note how the jaw also lowers along with the tongue in these diagrams.

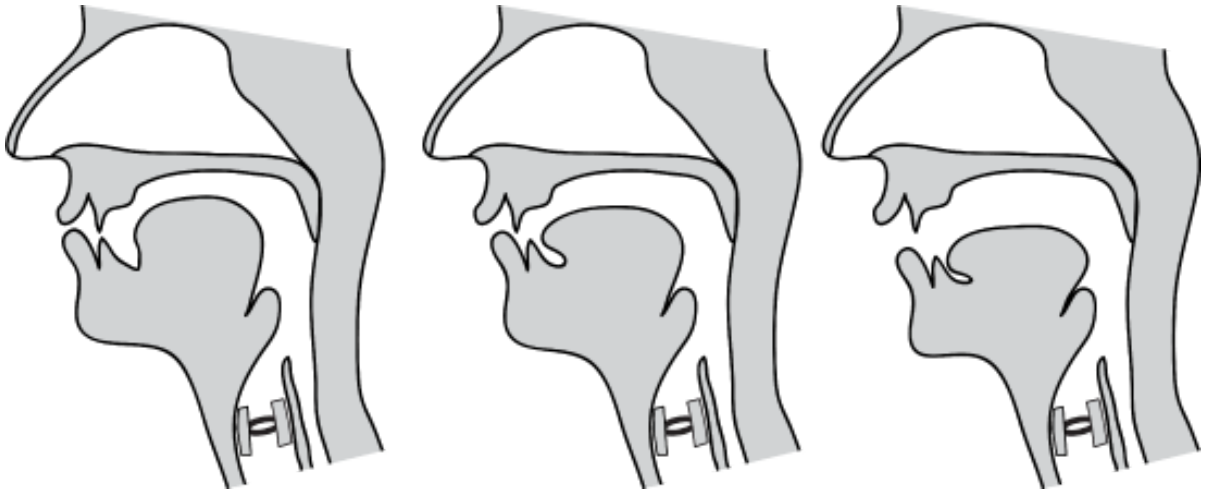


Figure 2.6.1: Three categories of vowel height: high as in ***beat*** *(left), mid as in* ***bet*** *(centre), and low as in* ***bat*** *(right).*

The horizontal position of the tongue, known as its **backness**, also affects vowel quality. Backness could equally be called *frontness*, and sometimes this term is used, but *backness* is more standard and preferred. If the tongue is positioned in the front of the oral cavity, so that the highest point of the tongue is under the front of the hard palate, as for the vowel in the English word *beat*, the vowel is called a **front** vowel.If the tongue is positioned farther back in the oral cavity, so that the highest point of the tongue is under the back part of the hard palate or under the velum, as in the English word *boot*, the vowel is called a **back** vowel.

If the tongue is positioned in the centre of the oral cavity, so that the highest point of the tongue is roughly under the centre of the hard palate, in between the positions for front and back vowels, as for the English word *but*, the vowel is called a **central** vowel. Be careful not to confuse the technical terms *central* and *mid*. *Central* refers to an intermediate position in *backness*, while *mid* refers to an intermediate position in *height*. These two terms are not interchangeable! The differences in horizontal tongue position for these three categories of vowel backness are shown in Figure 2.6.2. from frontest on the left (as in *beat*) to backest on the right (as in *boot*).

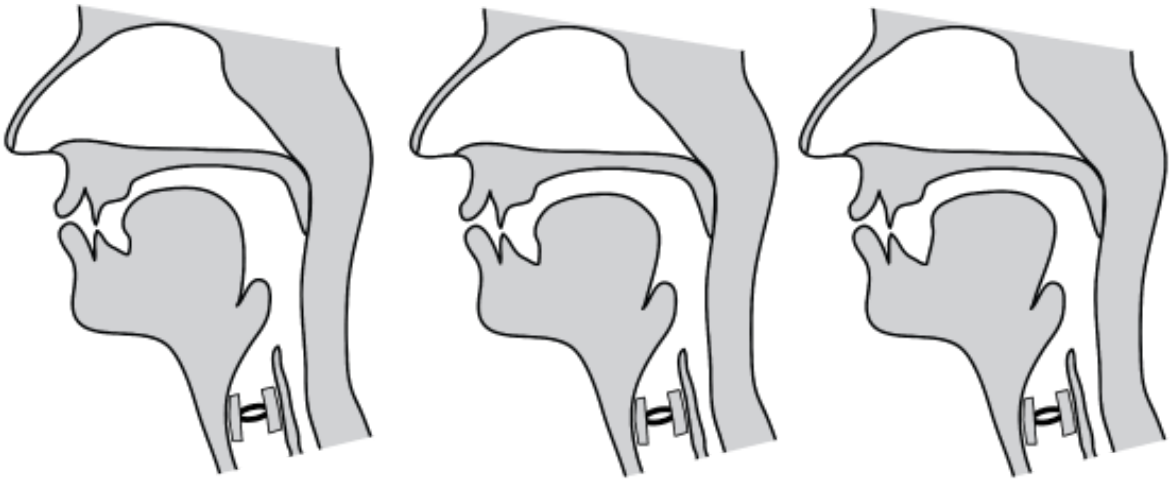


Figure 2.6.2: Copy and Paste Caption here. (Copyright; author via source)

Note that what counts as front for a vowel depends on its vowel height, because of how the jaw moves. Humans have a hinged jaw, which means that as the jaw moves down to allow for a lower tongue position, the jaw also swings backward, carrying the tongue along with it. As the tongue moves backward due to this hinged movement, its centre position also moves backward, and it becomes more difficult for this lowered tongue to move as far forward as for a higher vowel.

In fact, the frontest position for a low vowel (as in the English word *bat*) typically has an actual overall backness a bit farther back than for a front high vowel (as in the English word *beat*). Thus, backness must be defined relative to the possible range of horizontal positions at a given height, rather than being defined in absolute terms with respect to the roof of the mouth. This results in a skewed shape of the possible combinations of vowel height and backness, with more distance between front and back positions for high vowels than for low vowels.

This is often graphically represented as in Figure 2.6.3, with the total vowel space drawn as an asymmetric quadrangle, like a rectangle with the bottom left corner cut off. This missing corner represents the space where humans cannot produce a vowel because of the how the tongue moves backward as the jaw lowers. A few example words of English are listed in Figure 3.15 as rough indications for what tongue position many speakers use for the vowels in these words.

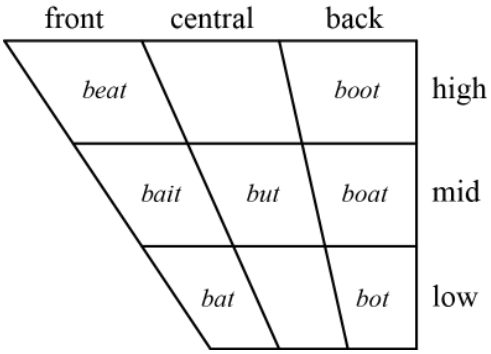


Figure 2.6.3: Standard vowel quadrangle with example English words.

The cells in this quadrangle represent possible positions of the tongue within the oral cavity. For example, *beat* is shown in the high front cell, which indicates that it is pronounced with a high front tongue position. Note that there is much variation in English vowels across speakers, so the positions in Figure 3.15 are only meant to be suggestive of broad patterns across a range of dialects. The positions of the tongue for the vowels in these words may be somewhat different for you or for other speakers. For example, some speakers may have a low or back vowel for *but*, and some may have a more central vowel for *bot* or *boat*.

2.6.2.1: Rounding

Vowel quality also depends on the shape of the lips, generally referred to as the vowel's **rounding**. If the corners of the mouth are pulled together so that the lips are compressed and protruded to form a circular shape, as for the vowel in the English word *boot* in many dialects, the lips are said to be **rounded** and the corresponding vowel is called a **round** or **rounded** vowel.

If the corners of the mouth are pulled apart and upward so that the lips are thinly stretched into a shape like a smile, as for the vowel in the English word *beat*, the lips are said to be **spread**.

The lips may also be in an intermediate configuration, neither rounded nor spread, as for the vowel in the English word *but*, in which case, the lips are said to be **neutral**. Spread and neutral vowels are collectively referred to as **unrounded** or **non-rounded** vowels, because the distinction between spread and neutral lips seems almost never to be needed in any spoken language, whereas the distinction between rounded and unrounded frequently is needed. The differences in lip shape for these three categories of vowel rounding are shown in Figure 2.6.4.



Figure 2.6.4: Three categories of rounding: round as in *boot* (left), neutral as in *but* (centre), and spread as *beat* (right), where neutral and spread are also classified together as unrounded.

2.6.2.2: Tenseness

The position of the tongue root may also play a role in vowel quality. If the tongue root is advanced forward away from the pharyngeal wall, as for the vowel in the English word *beat*, the tongue root pushes into the rest of the tongue. This causes the tongue to be somewhat denser and firmer overall, so a vowel with an advanced tongue root is sometimes called a **tense** vowel. If the tongue root is instead in a more retracted position closer to the pharyngeal wall, as for the vowel in the English word *bit*, it keeps the tongue somewhat more relaxed, so a vowel with a retracted tongue root is sometimes called a **lax** vowel. The property of whether a vowel is tense or lax is called **tenseness**. The different positions of the tongue root for tense and lax vowels are shown in Figure 2.6.5.

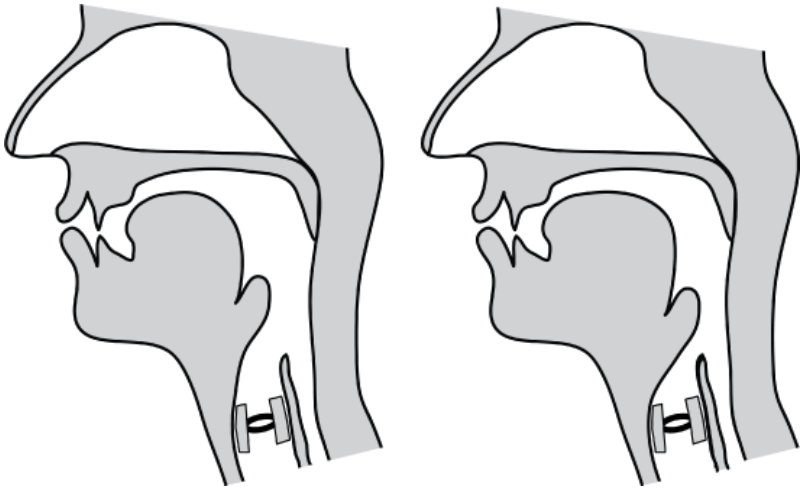


Figure 2.6.5: Two categories of tenseness: tense with an advanced tongue root as in *beat* (left) and lax with a retracted tongue root as in *bit* (right).

For many spoken languages, vowel tenseness is not a relevant property. Languages like Taba (a.k.a. East Makian, a Central-Eastern Malayo-Polynesian language of the Austronesian family, spoken in Indonesia) have only five vowels that are spread quite far apart.

There is only one high front vowel, one mid front vowel, etc. These vowels can vary in how tense or lax they might be from one pronunciation to the next, so there is no need to use the terminology *tense* and *lax* to describe them.owever, other spoken languages have more complex vowel systems, with vowel pairs articulated in roughly the same way, except for tenseness. For example, most dialects of English have multiple pairs of vowels that are distinguished primarily by tenseness, such as the vowels in *beat* and *bit*. Both of them have a high front tongue position and are unrounded, but the *beat* vowel is tense, while the *bit* vowel is lax. Similarly, the vowels of the English words *bait* and *bet* are both front, mid, and unrounded, but the *bait* vowel is tense, while the *bet* vowel is lax. Thus, for languages like English, the *tense*/*lax* terminology is often necessary to fully describe the vowel system.

That said, low vowels are very rarely tense in any language, because lowering the tongue and advancing the tongue root are making almost contradictory demands on the tongue, pushing the bulk of tongue in two different directions. However, the tongue is quite flexible and can physically be both lowered and tensed, so tense low vowels are not impossible, and there are some languages that have them, such as Akan (a Kwa language of the Niger-Congo family, spoken in Ghana), which has both a tense and a lax low vowel.

2.6.3: Nasality

In Section 3.4, we talked about how the velum can move to make a distinction between oral and nasal stops based on whether or not air can flow into the nasal cavity. The same distinction can be for vowels. If a vowel is articulated with a raised velum to block airflow into the nasal cavity, the vowel is called **oral**. If instead the velum is lowered, allowing airflow into the nasal cavity, the vowel is called **nasal** or **nasalized**. The property of whether a vowel is oral or nasal is called its **nasality**. Vowels in most dialects of English are often nasal when they are immediately before a nasal stop, as in the English word *bent*. The different positions of the velum for oral and nasal vowels are shown in Figure 2.6.6, with arrows indicated direction of airflow.

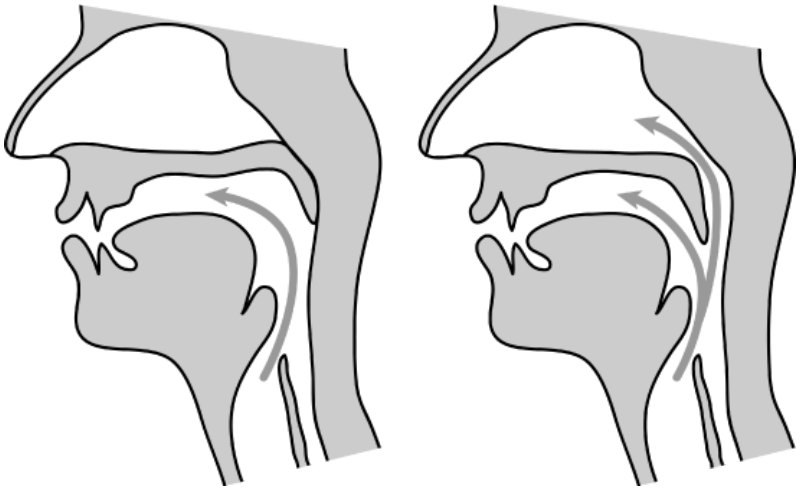
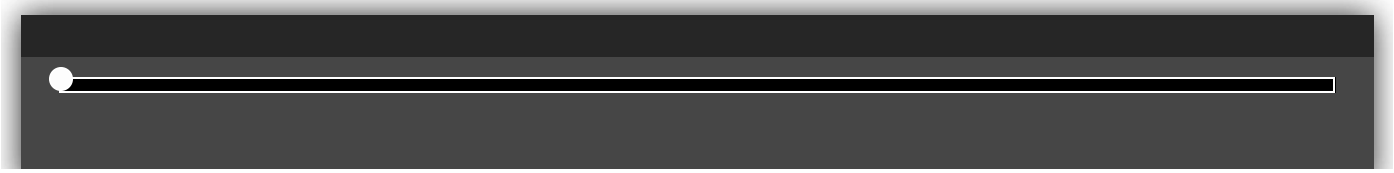


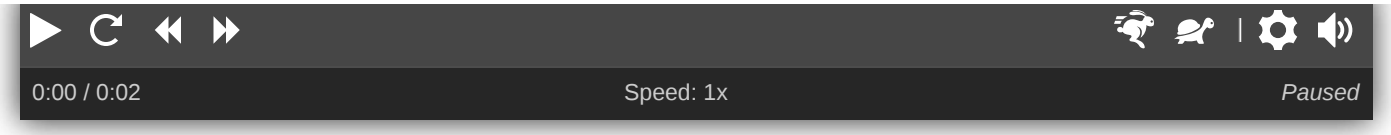
Figure 2.6.6: Two categories of nasality: oral with a raised velum as in *bet* (left) and nasal with a lowered velum as in *bent* (right).

2.6.4: Length

In addition to differences in vowel quality and nasality, vowels may also differ from each other in **length**, which is a way of categorizing them based on their duration. In most spoken languages where vowel length matters, there is just a two-way distinction between **long** vowels and **short** vowels, with long vowels having a longer duration than their short counterparts. For example, in Japanese (a Japonic language spoken in Japan), the word いい *ii* 'good' has a long vowel, while the word 胃 *i* 'stomach' has a short vowel, although they both have the same vowel quality: they are both high front unrounded vowels. The pronunciation of these two Japanese words can be heard in the following sound file, first いい *ii* with a long vowel, then 胃 *i* with a short vowel.

lowers to a mid position, and then finally ends in a high back position with rounding. The pronunciation of this Vietnamese word can be heard in the following sound file.





In most dialects of English, vowel length is not used to distinguish words with completely different meanings like it is in Japanese. However, English vowels can still differ in vowel length in some circumstances. For example, English vowels are often pronounced a bit longer before voiced consonants than before voiceless consonants. Thus, the vowel in the English word *bead* is usually pronounced longer than the vowel in the word *beat*, even they both have the same vowel quality: high front unrounded. The tense vowels of English also tend to inherently be a bit longer than their lax counterparts. For example, the tense vowel in the English word *beat* is longer than the lax vowel in *bit*.

Consonants may also differ from each other in length. Long consonants are often called **geminates**, while short consonants are called **singletons**. English does not really make regular use of consonant length, though there are some marginal examples for some speakers, such as *unnamed* (with a geminate alveolar nasal stop) versus *unaimed* (with a singleton alveolar nasal stop). However, many other languages have widespread distinctions based on consonant length.

For example, geminates and singletons are contrasted in Hindi (a Central Indo-Aryan language of the Indo-European family, spoken in India). Hindi has word pairs like सम्मान *sammān* 'honour' (with a geminate bilabial nasal stop in the middle of the word) versus समान *samān* 'equal' (with a singleton bilabial nasal stop in the middle of the word). The pronunciation of these two Hindi words can be heard in the following sound file, first सम्मान *sammān* with a geminate consonant, then समान *samān* with a singleton consonant.

lowers to a mid position, and then finally ends in a high back position with rounding. The pronunciation of this Vietnamese word can be heard in the following sound file.



2.6.5: Multiple vowel qualities in sequence

Many vowels of the world's spoken languages have a relatively stable pronunciation from beginning to end. These kinds of stable vowel phones are called **monophthongs**. However, just as there are dynamic consonant phones (affricates), vowel phones may also change their articulation from beginning to end. Most of these are **diphthongs**, which begin with one specific articulation and shift quickly into another, as with the vowel in the English word *toy*, which begins with a mid back round quality but ends high, front, and unrounded. As with affricates, it can be difficult to determine whether a given change in vowel quality is best treated as a true diphthong or instead as a sequence of two separate monophthongs.

Some languages can even have **triphthongs**, which are vowel phones that change from one vowel quality to another and then to a third, as in *rượu* 'alcohol' in Vietnamese (a Viet-Muong language of the Austronesian family, spoken in Vietnam and China). The word *rượu* has a vowel phone that begins with a high central unrounded quality, then lowers to a mid position, and then finally ends in a high back position with rounding. The pronunciation of this Vietnamese word can be heard in the following sound file.



2.6.6: Putting it all together!

There is not as much consistency in the order of descriptions for vowels as for consonants. Perhaps the most common order is *height – backness – rounding*, but rounding is sometimes given first instead, and though height is usually given immediately before backness, these can also be switched. Thus, the vowel in the English word *bet* might be described as a mid front unrounded vowel, or as an unrounded mid front vowel, or as a front mid unrounded vowel, or as an unrounded front mid vowel. All of these would be considered correct, and other combinations may be used.

When descriptions of nasality are needed, they are almost always placed after the description of vowel quality. Thus, the vowel in the English word *bent* might be described as a mid front unrounded nasal vowel, or as an unrounded mid front nasal vowel, but rarely as a nasal mid front unrounded vowel.

If descriptions of tenseness or length are also needed, these are often placed before the other descriptions, but sometimes either or both may be placed after vowel quality, but usually still before the position for the description for nasality. Thus, the vowel in the English word *bend* could be described as a long lax mid front unrounded nasal vowel, or as a lax mid front unrounded long nasal vowel, or as an unrounded mid front long lax nasal vowel, or many other combinations!

2.6.7: Check your understanding

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2.7: The International Phonetic Alphabet

2.7.1: Segmentation

Note that we have been talking about phones as if it is obvious what they are, but this is not always the case. It is sometimes easy to find a clear separation between the phones in a given word, that is, to **segment** the word into its component phones, but sometimes, it can be very difficult. We can see this difference by looking at **waveforms**, which are special pictures that graphically represent the air vibrations of sound waves. The two waveforms in Figure 2.7.1 show a notable difference in how easy it is to segment the English words *nab* and *wool*.

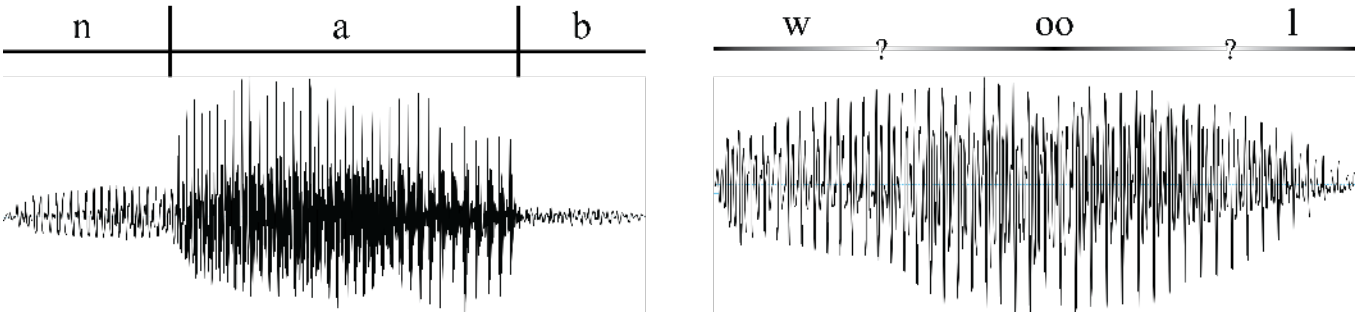


Figure 2.7.1: Waveforms for the English words *nab* and *wool*.Figure 3.19. Waveforms for the English words *nab* and *wool*.

The waveform for *nab* contains abrupt transitions between three very different regions, corresponding to three phones. In comparison, the waveform for *wool* has smooth transitions from beginning to end, with no obvious divisions between phones. For the purposes of this textbook, all words will be segmented for you, but it is important to remember that when working with raw data from a spoken language, it may not be so clear where the boundaries are between phones.

2.7.2: Transcription

When we can identify the individual phones in a word, we want to have a suitable way to notate them that can be easily and consistently understood, so that the relevant information about the pronunciation can be conveyed in an unambiguous way to other linguists. Such notation is called a **transcription**, which may be very **broad** (giving only the minimal information needed to contrast one word with another), or it may be very **narrow** (giving a large amount of fine-grained phonetic detail), or somewhere in between. Whether broad, narrow, or in between, phonetic transcription is conventionally given in **square brackets [ ]**, so that, for example, the consonant at the beginning of the English word *nab* could be transcribed as [n], with the understanding that the symbol [n] is intended to represent a voiced alveolar nasal stop.

As linguists, we are interested in studying and describing as many languages as we can, so for spoken languages, we ideally want to use a transcription system that can be used for all possible phones in any spoken language. This means we cannot simply use one existing language's writing system, because it would be optimized for representing the phones of that language and would not have easy ways to represent phones from other languages.

In addition, many writing systems are filled with inconsistencies and irregularities that make them unsuitable for any kind of rigorous and unambiguous transcription, even for their associated spoken language. For example, the letter <a> in the English writing system is used to represent different phones, such as the low front unrounded vowel in *nab*, the low back unrounded vowel in *father*, the mid front tense unrounded vowel in *halo*, and the mid central unrounded vowel in *diva*. Conversely, the high front unrounded tense vowel in English can be represented by different letters and letter combinations: <i> in *diva*, <ee> in *meet*, <ea> in *meat*, <e> in *me*, and <y> in *mummy*. That is, then English writing system does not have a one-to-one relationship between phones and letters.

Note that symbols from a writing system are represented here with surrounding **angle brackets < >**. This is a common notational convention in linguistics that helps visually distinguish symbols in a writing system from symbols used for the transcription of phones, which are enclosed in square brackets [ ].

Furthermore, even if English spelling were perfectly regular, many specific English words have different equally valid pronunciations, such as *either*, *data*, and *route*. But even words that seem to have only one consistent pronunciation may in fact be

pronounced differently by different speakers in more subtle ways. For example, in Los Angeles and London, the vowel in the word *mop* normally has a low back tongue position, with the London vowel also having some lip rounding that is not used in the Los Angeles pronunciation. In Chicago, the vowel in *mop* is articulated more in the centre of the mouth, making *mop* sound nearly like *map* to other speakers. If we tried to describe in writing how to pronounce a vowel from another language, and we said that it was pronounced the same as the vowel in the English word *mop*, we could not guarantee that the reader would know whether the vowel in question is back and unrounded (as in Los Angeles *mop*), back and round (as in London *mop*), or central and unrounded (as in Chicago *mop*).

2.7.3: The International Phonetic Alphabet

To avoid these problems, linguists have devised more suitable transcription systems for spoken languages, each with their own strengths and weaknesses. In this textbook, we will use a widespread standard transcription system called the **International Phonetic Alphabet** (abbreviated **IPA**). The IPA was created by the **International Phonetic Association** (unhelpfully also abbreviated IPA). The IPA organization was founded in 1886, and the first version of their transcription system was published shortly after. Since then, the IPA transcription system has undergone many revisions as our understanding of the world's spoken languages has evolved. The most recent symbol was added to the IPA in 2005: [ⱱ] for the labiodental tap, a phone found in many languages of central Africa, such as Mono (a Central Banda language of the Ubangian family, spoken in the Democratic Republic of the Congo).

For reference, the full chart for the IPA is given in Figure 2.7.2. This chart is available under a Creative Commons Attribution-Sharealike 3.0 Unported License, copyright © 2020 by the International Phonetic Association. It is also available online at the IPA's homepage, and there are also some online versions that are accessible for screenreaders, such as this one created by Weston Ruter. \)

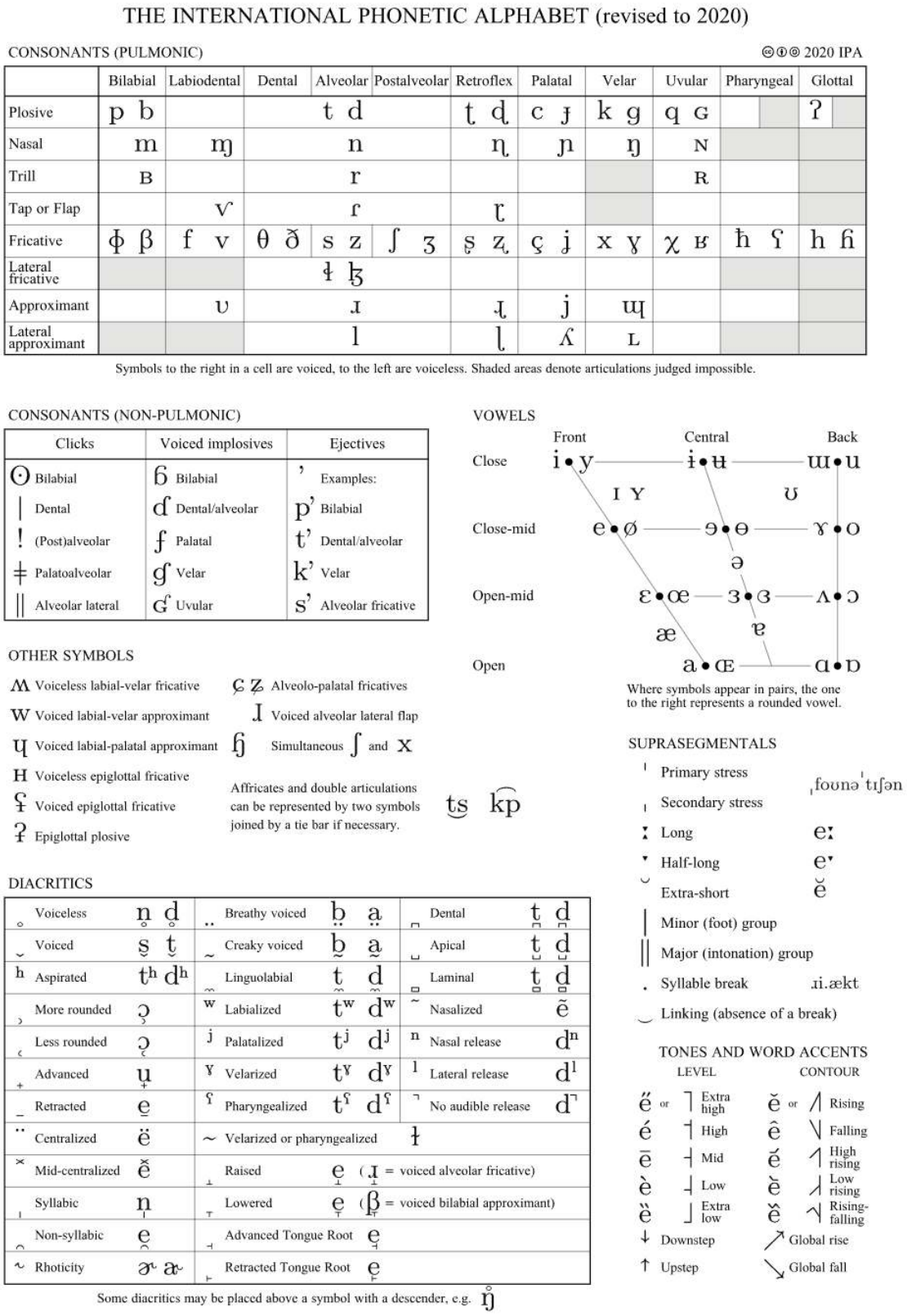


Figure 2.7.2: Full chart of all symbols in the International Phonetic Alphabet.

Learning the IPA takes a lot of time, practice, and guidance, and it is not just about memorizing symbols. The underlying structure and principles behind the organization of the table are what really matter. In this way, the IPA is like the periodic table of elements

in chemistry. So, it is helpful to know that Na is the chemical symbol for the element sodium with atomic number 11 and that [m] is the IPA symbol for a voiced bilabial nasal stop, but it is much more important to know what these concepts are and what those terms mean. What is sodium? What does it mean for an element to have an atomic number of 11? What does it mean for a phone to be voiced? How is the vocal tract configured for a bilabial nasal stop?

This is why this chapter focuses on defining concepts, so that you can build a solid foundation in understanding *how* phones are articulated. The notation is also important, but it has no value without the corresponding conceptual understanding.

2.7.4: Using the IPA

A full discussion of how to use the IPA for transcription is beyond the scope of an introductory textbook like this one. Here, we discuss a few guidelines and some concrete examples from English. For any transcription, it is important to keep in mind who your audience is and what the purpose of the transcription is. Most of the time, we normally only need a fairly broad transcription to get across a basic idea of the most important aspects of the articulation.

One important guiding recommendation from the IPA for broad transcription is to use the **typographically simplest** notation that still conveys the most crucial information. For example, when possible, we should choose symbols like upright [a] and [r] rather than their rotated counterparts [ɐ] and [ɹ]. These upright symbols are easier to type, easier to read, and more reliable in how they are displayed in different fonts.

Another aspect of typographic simplicity is to avoid **diacritics**, which are special marks like [◌̪] and [◌ʰ] that are placed above, below, through, or next to a symbol to give it a slightly different meaning. These are often necessary for certain contexts, but sometimes, they are superfluous and can hinder the reader's understanding. Thus, you should use diacritics when their meaning is crucial, but avoid them otherwise.

Typographic simplicity is also good practice when dealing with a lot of variation between speakers that is not relevant to the main point. For example, the English consonant typically spelled by the letter <r> is pronounced in many different ways by different speakers. Many North Americans have some sort of central approximant, but it varies from alveolar [ɹ], to postalveolar [ɹ̠], to retroflex [ɻ]. Some speakers may also have a constriction between the tongue root and pharyngeal wall, which is indicated in the IPA with a [ˤ] diacritic after the symbol. Some speakers may have some amount lip rounding, which is indicated in the IPA with a [ʷ] diacritic after the symbol. Some speakers may have both pharyngealization and rounding!

That results in at least twelve different possible articulations, each with its own transcription in the IPA, depending on the place of articulation, whether or not there is pharyngealization, and whether or not there is lip rounding. The IPA symbols for these twelve possibilities are given in the list below. For each, the symbols are in order by place of articulation: alveolar, postalveolar, and retroflex.

- no pharyngealization and no rounding: [ɹ], [ɹ̠], or [ɻ]
- pharyngealization and no rounding: [ɹˤ], [ɹ̠ˤ], or [ɻˤ]
- rounding and no pharyngealization: [ɹʷ], [ɹ̠ʷ], or [ɻʷ]
- both pharyngealization and rounding: [ɹˤʷ], [ɹ̠ˤʷ], or [ɻˤʷ]

Furthermore, there are many other rhotic pronunciations beyond those in North American varieties, such as an alveolar tap [ɾ] or trill [r] in Scotland, a voiced uvular fricative [ʁ] in Northumbria, and a labiodental approximant [ʋ] in London.

Thus, when transcribing English in general, there is no one single symbol that accurately represents the pronunciation of this consonant, so for broad transcription, a plain upright [r] with no diacritics is a reasonable choice that follows the IPA's recommendation for typographic simplicity. Of course, when transcribing a specific articulation from a specific speaker, it may make sense to use a more precise symbol, especially if the details of the articulation are important. But generally speaking, a plain upright [r] is normally fine for English, though some linguists may prefer to use [ɹ] or [ɻ] for North American English, even though there are at least a dozen equally valid North American pronunciations. If you are taking a course in linguistics, be sure to follow the standards and conventions set by your instructor.

Why is there so much variation in the pronunciation of English <r>? These consonants belong to an unusual class of phones called **rhotics**, named after the Greek letter **rho <ρ>**, which itself represents a rhotic consonant. Across the world's spoken languages, we find a lot of variation in rhotics. Many languages only have one rhotic, but which particular rhotic they have can be very different even between closely related languages. The pronunciation of rhotics in a language can also shift over time, especially if the language only has one. There seems to be no single overarching phonetic similarity in the various rhotics, and linguists are still trying to figure out what makes this class of consonants so special.

Even when the pronunciation of a given phone is fairly consistent across speakers, many linguists still choose a typographically simpler transcription. Consider the consonant at the beginning of the English word *chin*, which is a voiceless postalveolar affricate. Affricates in the IPA are normally transcribed by writing the corresponding plosive symbol to represent the stop closure, followed by the corresponding fricative symbol to represent the fricated release, both united under a curved **tie-bar [͡]** to show they are unified as a single phone.

So, to represent the voiceless postalveolar affricate in *chin*, we need to select the correct plosive and fricative symbols. First, let us consider the voiceless postalveolar fricative. We can find its symbol in the IPA chart by looking in the section devoted to consonants. Places of articulation are listed across the top, while manners of articulation are listed down the left. Within a given cell, if there are two symbols, the one on the left is voiceless, and the one on the right is voiced. So looking in the postalveolar column and the fricative row, we find the symbols [ʃ] and [ʒ], and since we are interested in the voiceless fricative, we pick the symbol [ʃ].

However, there is no similar basic symbol for a voiceless postalveolar plosive in the IPA. That part of the chart is blank, so we have to create our own symbol by using the base symbol for a similar consonant and adding one or more diacritics. In this case, we can use alveolar [t] and put a retraction diacritic [̟] under it to indicate that its place of articulation is slightly farther back, as we did for the postalveolar central approximant [ɹ̠] before. Thus, we get [t̠] as the symbol for a voiceless postalveolar plosive.

So, we would begin by putting these two symbols together under a tie-bar: [t̠͡ʃ]. However, most English speakers also pronounce this affricate with some amount of lip rounding, so a fully accurate transcription would be something more like [t̠͡ʃʷ], with the [ʷ] diacritic to indicate rounding.

But hardly any linguist transcribes this affricate with that much phonetic detail. It is almost never relevant to indicate that it is round, and the postalveolar location of the stop closure is implied by the fact that it has a postalveolar release. You cannot release a stop closure in a position different from where it is made: if there is a postalveolar release, it necessarily must come from a postalveolar closure. So for typographic simplicity, the affricate is more commonly transcribed simply as [t̠͡ʃ], with neither of the two diacritics. As with [r] for the English rhotic, [t̠͡ʃ] is not technically an accurate transcription for most speakers, but it is typographically simpler and conveys of all the crucial information needed to understand the basics of the articulation. The tie-bar on the affricate may also sometimes be left off in transcriptions, so [tʃ] is also a common transcription for this affricate, making it even more typographically simple.

Even without these issues, there is still usually no such thing as “the” correct transcription of a word. Two pronunciations of the same word by the same speaker will always have some differences, because we live in a physical world where we cannot avoid slight imperfections and fluctuations. Even if we wanted to capture all of those possible differences with the IPA, it is simply not designed for that level of phonetic detail. When such detail is important, it needs to be conveyed in other ways, such as with pictures (like waveforms and midsagittal diagrams) and numerical measurements (like loudness in decibels and duration in milliseconds). Thus, an IPA transcription is always inherently missing some details, so we have to decide how much detail is needed and how much should be left out for simplicity.

2.7.5: Transcribing English with the IPA

Despite all these pitfalls, it is still important to get some basic skill in transcription for future work in linguistics. Since this textbook is presented in English, English is a good starting point to give you something concrete in which to ground your understanding of how to do transcription. However, there is much dialectal variation in English, so the transcriptions offered here are very general and may differ from the varieties of English you are familiar with.

We begin with consonants, where there tends to be less variation across dialects. Table 2.7.2 lists some plosives and affricates of English, with their IPA symbol (keeping in mind typographic simplicity) and example words containing each consonant in various positions, where possible. For each word, The portion of the spelling that corresponds to the phone is in bold. Finally, a phonetic description of each consonant is also given.

Table 2.7.2. English plosives and affricates.

symbol	example (beginning)	example (middle)	example (end)	description
[p]	**p**an	ra**p**id	la**p**	voiceless bilabial plosive

[b]	**b**an	ra**b**id	la**b**	voiced bilabial plosive
[t]	**t**an	a**t**op	le**t**	voiceless alveolar plosive
[d]	**d**en	a**d**opt	le**d**	voiced alveolar plosive
[t͡ʃ]	**ch**in	ba**tch**es	ri**ch**	voiceless postalveolar affricate
[d͡ʒ]	**g**in	ba**dg**es	ri**dg**e	voiced postalveolar affricate
[k]	**c**an	bi**ck**er	la**ck**	voiceless velar plosive
[ɡ]	**g**ain	bi**gg**er	la**g**	voiced velar plosive
[ʔ]	—	uh–oh	—	voiceless glottal plosive

Most of these are straightforward, but as discussed in Section 3.3, the alveolar consonants are normally apicoalveolar, though some speakers may pronounce them with the blade of the tongue. If that detail is necessary, these consonants can be transcribed as [t̻] and [d̻], using the laminal diacritic [̻]. Regardless of the active articulator, some speakers may pronounce these consonants on the back of the teeth rather than on the alveolar ridge, in which case, they would be transcribed as [t̪] and [d̪], using the dental diacritic [̪].

The glottal plosive (also frequently called a **glottal stop**) is only a marginal consonant in English. It can be found as the catch in the throat in the middle of the interjection *uh-oh*. Some speakers also have it elsewhere, such as in the middle of some British English pronunciations of the word *bottle*. It is articulated by making a full stop closure with the vocal folds, blocking all airflow through the glottis.

Table 2.7.3 lists some fricatives of English.

Table 2.7.3. English fricatives.

symbol	example (beginning)	example (middle)	example (end)	description
[f]	**f**an	wa**f**er	lea**f**	voiceless labiodental fricative
[v]	**v**an	wa**v**er	lea**v**e	voiced labiodental fricative
[θ]	**th**in	e**th**er	tru**th**	voiceless interdental fricative
[ð]	**th**an	ei**th**er	smoo**th**	voiced interdental fricative
[s]	**s**in	mu**sc**le	bu**s**	voiceless alveolar fricative
[z]	**z**one	mu**zz**le	bu**zz**	voiced alveolar fricative
[ʃ]	**sh**in	Hai**ti**an	ru**sh**	voiceless postalveolar fricative
[ʒ]	—	A**si**an	rou**g**e	voiced postalveolar fricative
[h]	**h**en	a**h**ead	—	voiceless glottal fricative

The most notable variation here is that some speakers do not have [θ] and [ð], and instead used [t] and [d] or [f] and [v], depending on the dialect and the position in the word. As with the postalveolar affricates mentioned before, the postalveolar fricatives are also usually somewhat rounded, so they could be more narrowly transcribed as [ʃʷ] and [ʒʷ]. The voiced postalveolar fricative [ʒ] is also one of the rarest consonants in English, and many speakers pronounce it as an affricate in some positions instead of as a fricative. For example, you may hear speakers pronounce the final consonant of *garage* as the affricate [d͡ʒ] rather than the fricative [ʒ].

Table 3.4 lists some sonorants of English. Across the world's spoken languages, sonorants tend to be voiced by default, because their high degree of airflow causes the vocal folds to spontaneously vibrate, unless extra effort is put in to keep them from vibrating. This is true for English, so the phonation of the sonorants is not listed here.

Table 3.3. English sonorants.

symbol	example (beginning)	example (middle)	example (end)	description
[m]	**m**an	si**mm**er	ra**m**	bilabial nasal stop
[n]	**n**un	si**nn**er	ra**n**	alveolar nasal stop
[ŋ]	—	si**ng**er	ra**ng**	velar nasal stop
[l]	**l**ane	fo**ll**y	ba**ll**	alveolar lateral approximant
[r]	**r**un	so**rr**y	ba**r**	(various! see earlier discussion)
[j]	**y**awn	on**i**on	—	palatal central approximant
[w]	**w**on	a**w**ake	—	labial-velar central approximant

A few of these sonorants warrant extra discussion. The alveolar nasal stop [n] has much of the same variation as the alveolar plosives, with some speakers having a laminoalveolar articulation [n̻] and some having a dental articulation [n̪]. The velar nasal stop is often one of the most surprising phones of English to English speakers who are new to phonetics, because is not easily identifiable as its own phone. Many people are misled by the spelling and think they say words like *singer* with a [ɡ], but in fact, most speakers have only a nasal stop there, so that *singer* differs from *finger*, with *singer* having only [ŋ] and *finger* having [ŋɡ]. However, there are speakers who do genuinely pronounce all words like these with a [ɡ] after the nasal stop, but even then, the nasal stop they have is still velar [ŋ], not alveolar [n].

A notable consonant here is [w], which is special among the consonants of English in being **doubly articulated**, which means that it has two equal places of articulation. It is both bilabial (with an approximant constriction between the two lips) and velar (with a second approximant constriction between the tongue back and the velum). Its place of articulation is usually called **labial-velar**. English used to consistently have two labial-velar approximants, a voiced [w] and a voiceless [ʍ]. Very few speakers today have both of these, but those who do pronounce the words *witch* and *which* differently, with voiced [w] in *witch* and voiceless [ʍ] in *which*.

Now we can move on to the vowels. This is where much of the variation in pronunciation occurs across English dialects, and fully describing all of the vowels in English would take up an entire textbook of its own. Note that this is not a general property of spoken languages overall. Some are like English, with most dialectal variation in the vowels, but others have much more dialectal variation in the consonants, while others may have a relatively even mixture of variation in both consonants and vowels.

Table 2.7.4 lists some monophthongs of English, with a focus on the English vowels as they are broadly pronounced across North American dialects. However, there is still much variation just in North America, and this discussion should not be taken to represent any particular speaker or region, let alone any sort of idealized standard or target pronunciation. This is simply a convenient abstraction that provides a useful baseline, though it is still only a very rough guide, and individual speakers can vary

quite a lot from what is discussed here. Note also that unstressed vowels are very unstable, especially in fast speech, so for example, unstressed [u] could be pronounced more like [ʊ] or [ə], even for the same speaker saying the same word. As in most spoken languages, the vowels of English are generally all voiced, so their phonation is not listed here. Example words are given that show the vowel in a stressed syllable, an unstressed syllable, and at the end of the word (see Sections 3.10 and 3.11 for more about syllables and stress).

Table 2.7.4. English monophthongs.

symbol	example (stressed)	example (unstressed)	example (end)	description
[i]	b**ea**ter	salt**i**er	s**ee**	high front unrounded tense
[ɪ]	b**i**tter	—	—	high front unrounded lax
[e]	b**a**ker	—	s**ay**	mid front unrounded tense
[ɛ]	b**e**tter	—	—	mid front unrounded lax
[æ]	b**a**tter	—	—	low front unrounded
[ɑ]	f**a**ther	—	sp**a**	low back unrounded
[ɒ]	b**o**nnet	—	—	low back round
[ɔ]	b**o**rder	—	s**aw**	mid back round lax
[o]	b**oa**ter	—	s**ew**	mid back round tense
[ʊ]	b**oo**ker	—	—	hi**g**h back round lax
[u]	b**oo**mer	man**u**al	s**ue**	hi**g**h back round tense
[ʌ]	b**u**tter	—	—	mid central unrounded lax (stressed)
[ə]	—	an**i**mal	sof**a**	mid central unrounded lax (unstressed)

As noted before, there is a lot of variation that cannot be adequately discussed here, so we only cover a few notable deviations. First, while many speakers pronounce the four tense vowels as monophthongs as transcribed here, most speakers pronounce some or all of them as diphthongs instead, perhaps even having an approximant at the end rather than a vowel. For example, high front unrounded tense [i] may be pronounced more like [ɪi] or [ij] by some speakers. It is especially common for the two tense mid vowels to be pronounced as diphthongs, something like [eɪ] and [oʊ] or perhaps [ej] and [ow].

Many of the back round vowels, especially [ʊ], are fronter and/or unrounded for some speakers in some dialects.

The back vowels in *bore* and *bought* are pronounced similarly to each other by some North Americans, and so they are often represented with the same symbol [ɔ], though note there may still be some differences, with [ɔ] before a rhotic often pronounced somewhat higher, closer to [o]. However, many speakers in Canada and in the western United States have a very different vowel in *bought* from *bore*. Their *bought* vowel is much lower, and for some speakers, it is also unrounded. These speakers use the same low vowel in *bought* that they use in *bot*. For most North Americans, the low vowels in *bot* and *balm* are pronounced the same, either as back round [ɒ] or back unrounded [ɑ]; in some dialects, it may be central unrounded [a]. Others have two different vowels for these words, usually [ɒ] in *bot* and [ɑ] or [a] in *balm*. Needless to say, this part of the vowel system of English is particularly troublesome, and even many expert linguists get aspects of it wrong.

The two mid central vowels [ʌ] and [ə] are often treated as related pronunciations of the same vowel, based on whether or not they occur in a stressed syllable (again, see Sections 3.10 and 3.11 for more about syllables and stress). For now, just note that some vowels of English are pronounced louder and longer than others, which we call **stressed**, while the other softer and shorter vowels are said to be **unstressed**. We can see the difference in stress in pairs like *billow* and *below*, which differ mostly in which syllable is

stressed: the first syllable in *billow* and the second syllable in *below*. The two central vowels of English differ in stress: the first syllable of the name *Bubba* is stressed, and the second is unstressed, so we might transcribe this name as [bʌbə]. Although these two vowels sound very similar for many speakers and could easily be notated with the same symbol, there is a long tradition of notating the unstressed mid central vowel of English with [ə] and the stressed mid central vowel with [ʌ], based on historical pronunciations in which the stressed vowel used to be pronounced much farther back (and still is, in some dialects).

The symbol [ə] has a special name, **schwa**. A common joke among linguists is that their favourite vowel is schwa or that they wish they could be more like schwa, because it is unstressed, referring to a desire to avoid the typically high amounts of stress in academia. However, while schwa is always unstressed in English and in some other spoken languages, in many others, [ə] is a normal vowel like any other vowel and can be stressed. For example, stressed [ə] can be found in languages like Sḵwx̱wú7mesh (a Coast Salish language of the Salishan family, spoken in British Columbia), Romanian (a western Romance language of the Indo-European family, spoken in Romania), and Mandarin (a Sinitic language of the Sino-Tibetan family, spoken in China and nearby areas). Thus, there is nothing that requires [ə] to be unstressed in general, so you should not think of it an inherently unstressed vowel.

Finally, we consider diphthongs and **syllabic consonants**, which are phones that have consonant-like constrictions in the vocal tract but which function more like vowels within English. Some diphthongs and syllabic consonants of English are given in Table 2.7.5.

Table 2.7.5. English diphthongs and syllabic consonants.

symbol	example (stressed)	example (unstressed)	example (end)	description
[aɪ]	b**i**ter	—	s**igh**	low central unrounded to high front unrounded diphthong
[aʊ]	br**ow**ner	—	h**ow**	low central unrounded to high back round diphthong
[ɔɪ]	b**oi**ler	—	s**oy**	mid back round to high front unrounded diphthong
[ɻ̩]	b**ur**ning	int**er**val	s**ir**	syllabic rhotic
[l̩]	—	haz**el**nut	sadd**le**	syllabic alveolar lateral approximant
[n̩]	—	cal**en**dar	sudd**en**	syllabic alveolar nasal stop
[m̩]	—	bott**om**less	seld**om**	syllabic bilabial nasal stop

For the diphthongs, the symbols used here represent a rough average over where they typically start and end, but the actual pronunciation varies quite a lot from speaker to speaker and even for the same speaker. The low starting point for [aɪ] and [aʊ] may be closer to back [ɑ] or front [æ], while the mid back starting point for [ɔɪ] may be closer to tense [o]. Additionally, the hi**g**h front ending point for [aɪ] and [ɔɪ] may be closer to tense [i] or the approximant [j], while the hi**g**h back ending point for [aʊ] may similarly be closer to tense [u] or the approximant [w].

Syllabic consonants are transcribed by using the syllabic diacritic [̩] under the relevant consonant symbol. However, sometimes these are transcribed with a preceding [ə] instead, so that *hazelnut* could be transcribed either as [hezl̩nʌt] or as [hezəlnʌt]. Syllabic rhotics (also called **rhotacized vowels** or **r-coloured vowels**) are so common that they have their own dedicated symbols: [ɝ] in stressed syllables and [ɚ] in unstressed syllables. Thus, *burning* could be transcribed as [bɻ̩nɪŋ] or [bɝnɪŋ], while *interval* could be transcribed as [ɪntɻ̩vl̩] or [ɪntɚvl̩].

With all of this variation, not just in pronunciation by different speakers, but in transcription choices by different linguists, it can be difficult to figure out what is really intended by a given transcription. This is why when exact phonetic details matter, it is a good

idea not to rely solely on the IPA, but to include prose descriptions, midsagittal diagrams, and other tools that can help clarify exactly what is meant.

2.7.6: Check your understanding

2.7.7: IPA Charts for Mainstream American English, from Sarah Harmon



2.7.7.1: Video Script

Catherine Anderson does an amazing job in describing why we have IPA, the International Phonetic Alphabet, in the first place and describing the sounds. Of course, she's Canadian and so the charts that she used are all Canadian Standard English. I figured it would be important to bring in the Mainstream American English, just so that you have a little bit of context.

	Bilabial	Labiodental	Dental	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Stop	p b			t d			k g	ʔ
Nasal	m			n		(ɲ)	ŋ	
Fricative		f v	ð	s z	ʃ ʒ		(x)	h
Affricate						ʧ ʤ		
Lateral				l			L	
Rhotic				ɾ (r) ɹ				

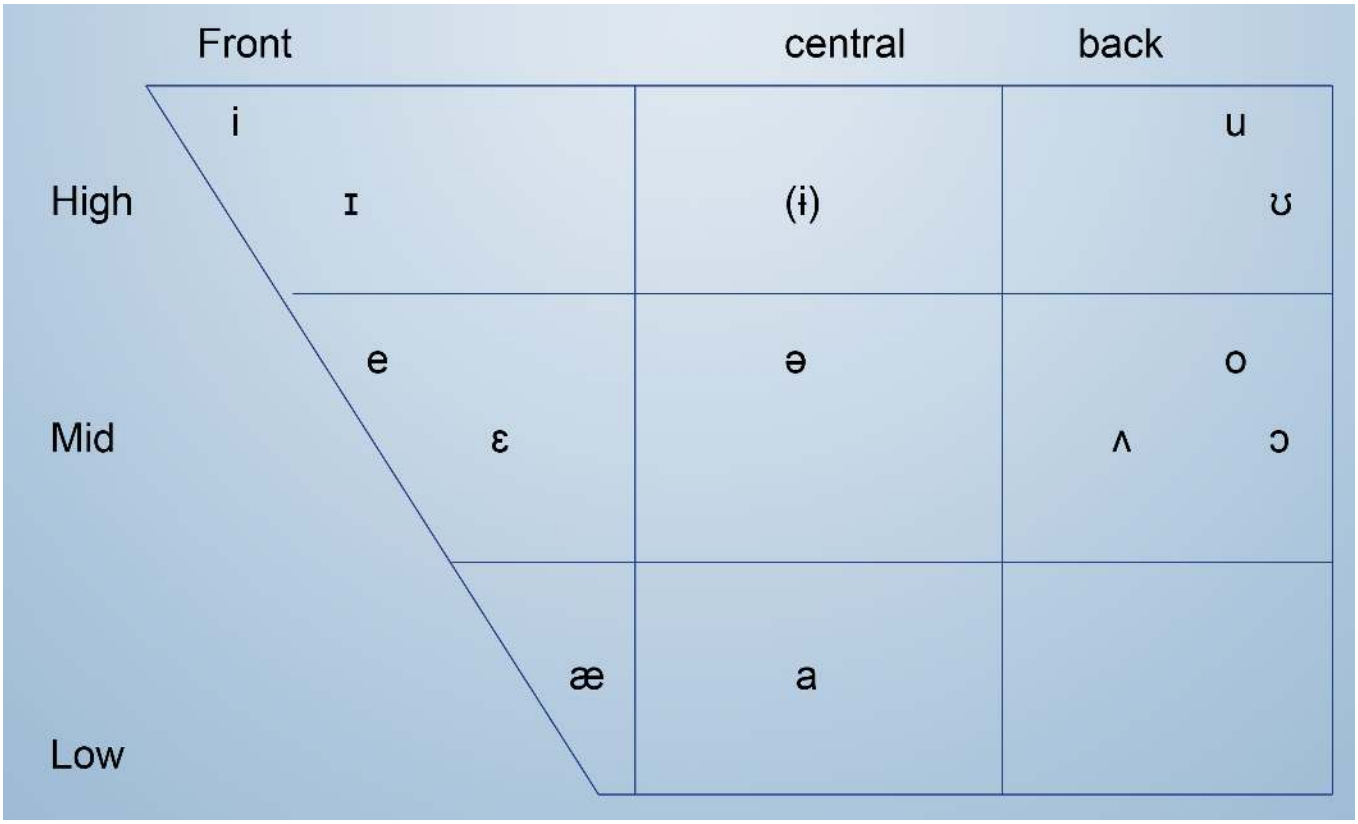
	Bilabial	Labiodental	Dental	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Glide, Semi-cons.	ʍ w					j	ʍ w	

One thing to note is that for the consonants are going to be identical; Canadian English, American English, it doesn't matter. The constants are exactly the same. What is interesting is that I would argue in Mainstream American English—or Standard American English, if you wish, but that phrasing is going out of style and for a number of reasons—has added a few other sounds. It's exactly because of its proximity to Spanish; we have so many native Spanish speakers here in the United States. In major population areas like the Bay Area, and most of California, you can argue certainly the Phoenix area, and most of Arizona, New Mexico, Texas, and throughout the entirety of the US, there are certain sounds that are starting to migrate in as official sounds of English. For example, that piece of flatbread that you have with Mexican food, you don't call it a 'tortila'; you call it a ‘tortilla’. Now, you may not go full Spanish pronunciation of 'tortilla', but you certainly don't say 'tortila'. A really common chili pepper that is used in a lot of cooking, including Mexican cooking, is not a 'jalapano'. Nobody calls it a 'jalapano'. You at the very least say ‘jalapeño’ and you do that [ɲ] to go with it. Sometimes you do a velar [x] to go with it, because in Spanish, of course, it is a 'jalapeño'.

There are certain sounds that have started to creep into Mainstream American English, and those are the ones you see in parentheses. You have the palatal [ɲ]; for example, I teach not at Canada College but at Cañada College, and anybody who's in the San Francisco Bay Area, especially in San Mateo County, you know that is Cañada College; you don't call it Canada College. That, for example, that have that we here in jalapeño in the Spanish pronunciation of that term, some people do actually use that velar fricative of instead of the glottal [h] sound. The trill [r] that you hear in Spanish, and in so many other languages, is also starting to creep in; it's not entirely they're not as entrenched just say that palatal nasal but certainly the rest of them are there.

As far as whether you call these **glides, semi consonants,** or **approximates**, they're all kind of the same thing. If you get into hardcore phonetics, then you start understanding the differences between those terms, but for here I will call them a glide or an approximate, and she tends to call them an approximate. Sometimes you will see them as semi consonants. They're all interchangeable terms as far as you're concerned. Of course, both lateral and rhotic approximates tend to be separated out on most IPA charts. I don't think she did it in hers, but I am doing it in mine, so that you can see.

In English, whether it's Canadian English American English or just about any other English, the consonants are pretty much the same. What is different is the vowels. So, you had the Canadian English vowel chart above in the Catherine Anderson work, this is the Mainstream American English sound chart for the vowels.



The barred 'i' [ɨ] that central high vowel that it is in parentheses, because not all dialects have it, although it is becoming more common west of the Mississippi River. But pretty much all of these sounds are in existence in some way, shape or form in Mainstream American English and in most American English dialects, though there is some difference, and we'll come back to that when we talk about sociolinguistics and different dialects.

What you can see here is that there is a slew of English vowel sounds. Its enormous. Most languages don't have that many sounds; they might have typically five to seven. With English, it depends on what dialect you're talking about; English can have anywhere from seven to 14 different vowel sounds. Those are just the single vowels, not even counting the diphthongs, triphthongs, quadrathongs; those would be the drawls that you see and hear.

This is a real issue when we're talking about English. For those of you for whom English is not your native language and is still a language you are acquiring, this no doubt is the hardest part about the English sound system. And if American English was not the first dialect of English that you came across, it gets complicated even more. Those would be the big differences between the various dialects of English. We'll come back to this more later when we get to sociolinguistics.

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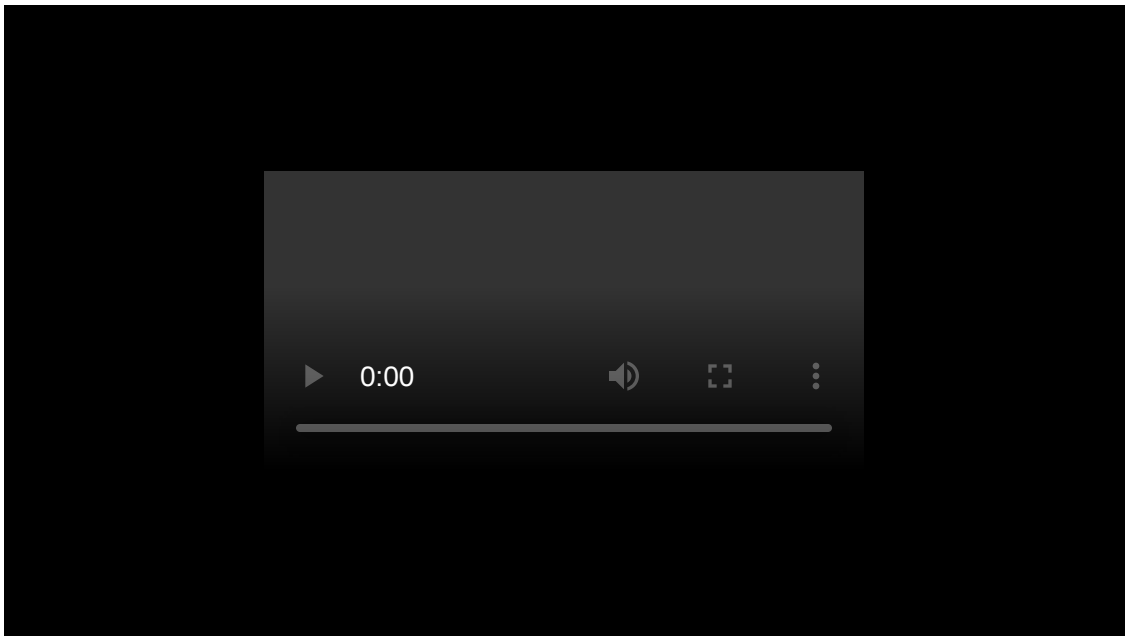
2.8: Signed language articulators

2.8.1: The phonetic units of signed languages

As discussed in Section 3.1, articulatory phonetics is concerned with how the body produces a linguistic signal, regardless of modality. We do not normally want to describe the overall articulation of an entire word in spoken language, so we break it down into phones for easier discussion. So what is the comparable unit for signed languages?

In signed languages, the basic independent meaningful unit, the equivalent of a spoken language word, is generally an individual **sign**. But signs do not seem to have a direct equivalent of phones. Phones are pieces of words that can generally be spoken on their own, completely separate from any other phones. For example, we can take any of the individual phones in the English word [bɛd] 'bed', and say each one on their own. It may be awkward, especially for plosives like [b] and [d], but it is not impossible. The independence of phones from words and each other, as well as their ability to be recombined in different ways to create new words, are key properties of spoken languages.

Now consider the corresponding sign BED in ASL in the following video clip.



Here we see that the sign is formed by configuring the hand in a particular way (flattened out with an open palm) in a particular location (at the side of the head). These traits are inseparable: if we want to shape the hand in some particular way, we must necessarily do so *somewhere*, and similarly, if we want to put the hand in some location, we must necessarily also configure the fingers *somehow*.

In this way, signs seem more like phones than strings of phones. We cannot make an articulation with the tongue tip and alveolar ridge without also deciding how far apart they are, and we cannot articulate a manner of articulation without choosing an active and passive articulator, and thus, without choosing a place of articulation. That is, individual articulatory properties of phones like place and manner are interdependent, in the same way that the shape of the hand and its location are interdependent. But an entire phone itself and an entire sign itself have independent existence from other phones and signs and can be articulated separately from others.

So, the two fundamental units of articulation in signed language that we are concerned with are signs (whole independent words) and the individual articulatory properties of a sign (how various articulators are shaped and moved). Contrast this with spoken languages, where we have three units: entire words, individual articulatory properties (place, manner, etc.), and phones (combinations of articulatory properties that are independent subunits of words). Whether or not signed languages have a corresponding third intermediate unit is a matter of debate. Such a unit may indeed exist, or we may simply be trying to hard to impose our understanding of spoken languages onto signed languages. See Section 3.10 for discussion of syllables as a possible kind of intermediate organizational unit that both spoken and signed languages seem to have.

Notation of signs

In academic writing, linguistic units from spoken languages are often given in italics, with the **gloss** (meaning) in single quotes, while signs from signed languages are often given in all capitals or small capitals. So we would write *bed* when referring to the English word and *lit* 'bed' when referring to the equivalent French word, but we would write BED or BED when referring to the equivalent sign in ASL.

When writing about ASL using English, it makes sense to use English to write ASL signs, but what should do when writing in English about a signed language like Quebec Sign Language (langue des signes québécoise, abbreviated LSQ) or Turkish Sign Language (Türk İşaret Dili, TİD), which do not have the same connection to English that ASL does?

One option is to write the sign in English (or whatever language you are writing in). So, just as we would write about the ASL sign BED, we would also write about the LSQ sign BED and the TİD sign BED. Another option is to write the sign by switching to the ambient written language most connected to that signed language, and add a gloss in English. In this case, LSQ has a connection to French and TİD has a connection to Turkish, so while we would write about the ASL sign BED, for the other two signs, we would write about the LSQ sign LIT 'bed' and the TİD sign YATAK 'bed', using the French word *lit* and the Turkish word *yatak*. Both options have advantages and drawbacks, and you will see both used in the linguistics literature, though the first option is perhaps the most common.

For signed languages, we have two main categories of articulators to analyze the properties of. The **manual articulators** are the arms, hands, and fingers, which are the primary articulators used for signing. However, most of the rest of the body is also used in signed languages, especially the torso, head, and facial features. All of these other articulators are called the **nonmanual articulators** or sometimes just **nonmanuals**.

2.8.2: Manual articulators

The manual articulators move by means of **joints**, which are points in the body where two or more bones come together to allow for some kind of movement. There are six joint types in the manual articulators: **shoulder**, **elbow**, **radioulnar joint** (or simply **radioulnar**), **wrist**, **base knuckles**, and **interphalangeal joints** (or simply **interphalangeal**), arranged as shown in Figure 2.8.1.

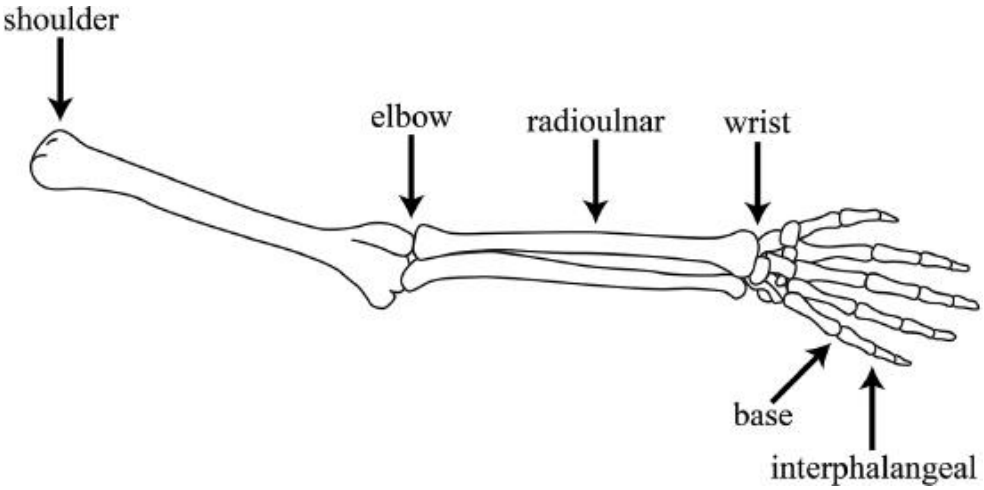


Figure 2.8.1: Joints in the manual articulators.

2.8.2.1: Shoulder articulation

The shoulder rolls around inside the shoulder blade, allowing for a wide range of motion for the upper arm, as shown in Figure 2.8.2. The motion we use for jumping jacks, with the arms making up and down arcs out to the left and right of the torso is called **abduction** (for the upward/outward direction) and **adduction** (for the downward/inward direction). The motion for raising and lowering the arm up in front of us is **flexion** (for raising) and **extension** (for lowering). Finally, the shoulder can keep the upper arm in a fixed position while changing the position of the forearm through **rotation**. Movement at the shoulder joint can be any combination of these three kinds of movement.

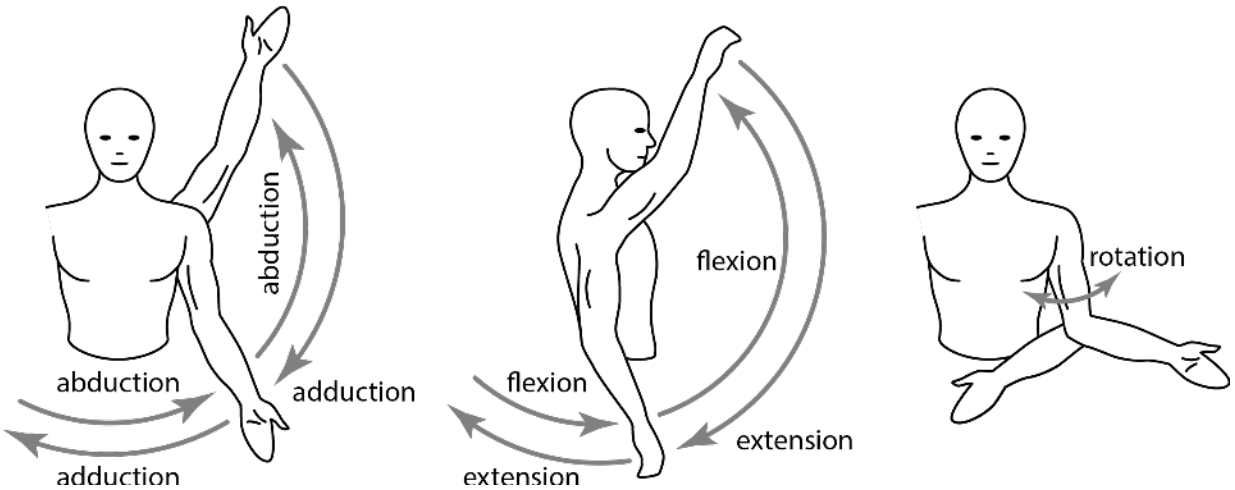


Figure 2.8.2: Shoulder movement.

2.8.2.2: Elbow articulation

The elbow is the joint between the upper arm and forearm, and it has a more restricted range of motion than the shoulder, allowing only flexion (bending to bring the forearm closer to the upper arm) and extension (bending the opposite way), as shown in Figure 2.8.3. Other kinds of movements at the elbow are heavily restricted or impossible. Note that unlike the shoulder, the elbow cannot typically extend backwards from a hanging position, only from a flexed position.

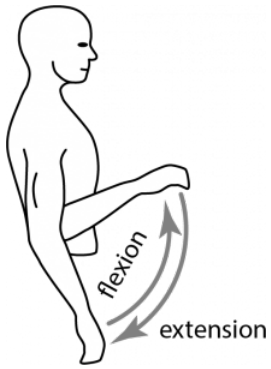


Figure 2.8.3: Elbow movement.

2.8.2.3: Radioulnar articulation

The forearm contains two large bones, the **radius** (which is on the the thumb side of the arm) and the **ulna** (on the pinky side). The radius and ulna come together in three different places for three different kinds of movement: at the elbow, at the wrist, and in the middle of the forearm. All three of these points of movement are considered radioulnar joints biologically and have separate names (the superior radioulnar joint at the elbow, the inferior radioulnar joint at the wrist, and the medial radioulnar joint inside the forearm), but in the context of signed language phonetics, we normally only need to talk about one of them, since their movements are all connected. By convention, the one we discuss is the medial radioulnar joint, where the radius and ulna pivot around each other, allowing the forearm to rotate, as shown in Figure 2.8.4.

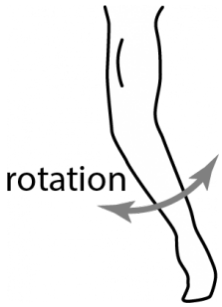


Figure 2.8.4: Radioulnar movement.

2.8.2.4: Wrist articulation

The wrist is the joint between the forearm and the hand, and it is almost as mobile as the shoulder, as shown in Figure 2.8.5, allowing for abduction (sideways towards the thumb), adduction (sideways towards the pinky), extension (bending backwards), and flexion (bending forwards), but no rotation. Note that what we might initially think of as rotation at the wrist is actually due to radioulnar articulation. Like the shoulder, the wrist can typically extend backwards from a straightened position.

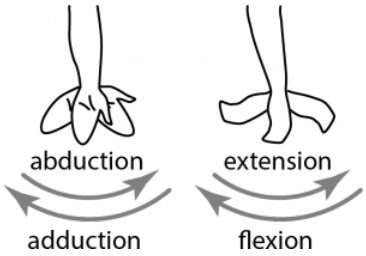


Figure 2.8.5: Wrist movement.

2.8.2.5: Base knuckle articulation

The base knuckles are the joints where the fingers connect to the palm of the hands. Like the wrist, these joints allow for abduction, adduction, extension, and flexion, but no rotation, and like the elbow, the base knuckles cannot typically extend very far backward from a straightened position. The main movements available for the base knuckles are shown in Figure 2.8.6. Each base knuckle can generally move independently of the other, though some movements are more difficult than others.

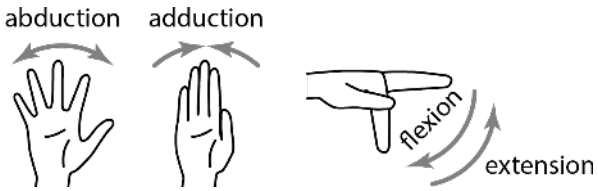


Figure 2.8.6: Base knuckle movement.

2.8.2.6: Interphalangeal articulation

The interphalangeal joints are the various joints between the individual bones within the fingers. The thumb has only one interphalangeal joint, while the other four fingers have two interphalangeal joints each. Most humans cannot easily articulate the two interphalangeal joints of the same finger separately, so they are usually analyzed together for the purpose of describing signed language articulation. Like the elbow, the interphalangeal joints can only extend and flex, as shown in Figure 2.8.7, and they typically cannot extend backward very much from a straightened position.

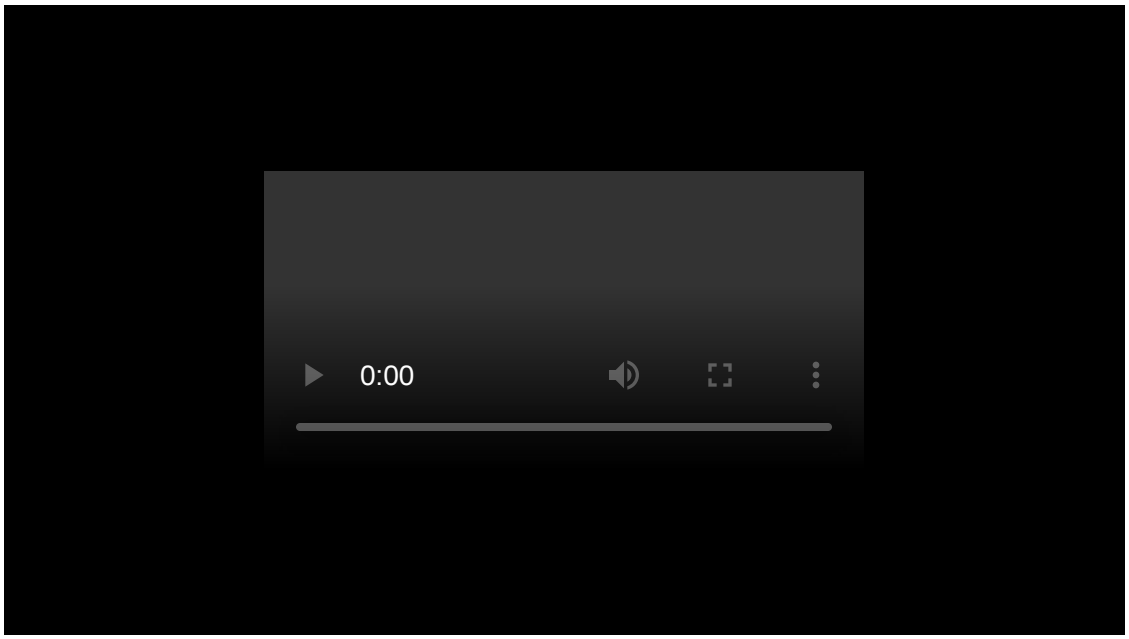


Figure 2.8.7: Interphalangeal movement.

2.8.3: Describing manual movement

An important aspect of describing manual movement in a sign is being able to identify which joints are moving and what kind of movement they are using. This can be quite difficult, because many signed language articulations involve multiple joints moving in different ways. In the following discussion, we explore a few example signs from ASL to determine what kind of movement is occurring.

Consider the ASL sign SORRY in the following video clip.



First, note that the hand must raise up to the chest before the sign begins. This movement does not really count as part of the sign. It is similar to how phones are articulated. In order to make an alveolar plosive like [t], the tongue tip must move to make full contact with the alveolar ridge. The initial movement to the alveolar ridge is not part of [t] itself, but it is necessary incidental movement to get ready to articulate [t]. We can tell that this initial movement is not an inherent part of [t] because of the behaviour of words like *ant* [ænt]. Since the tongue tip is already on the alveolar ridge for [n], we do not need to move it away and then move it back for [t]; we just keep it in place on the alveolar ridge, because that is what is inherent to [t].

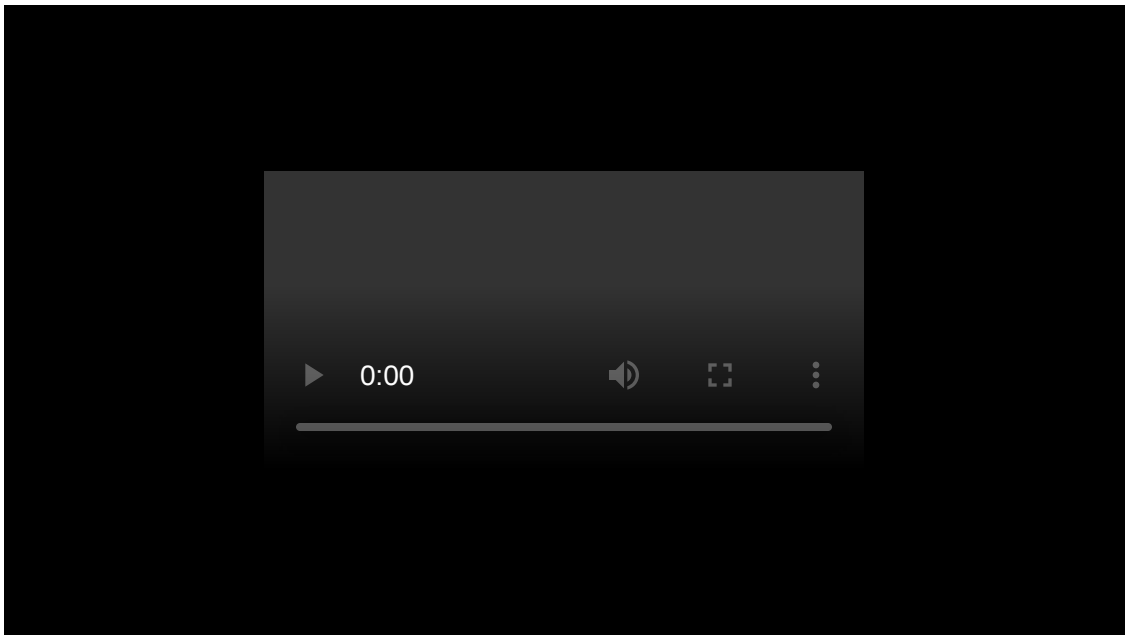
The same is true for the initial positioning movement for SORRY, as well as the final movement to return the hand to its lower starting position. When describing the articulation of a sign, we normally only care about the core movement that happens during the sign itself, not the transitional movements into or out of the sign. Sometimes, it may be difficult to determine whether a given movement is an incidental transitional movement or is instead inherent to the sign, but most of the time, it should be clear what initial and final movements can be ignored.

Now consider the articulation of the hand. It is shaped into a rigid fist, which requires flexing the base knuckles and the interphalangeal joints (except for the thumb, which is extended). However, this is a fixed configuration, not a movement, so we can ignore those joints when describing movement. The actual movement is the hand tracing a small circle on the chest. There seems to be no significant movement at the wrist or radioulnar joints, since the entire forearm down through the hand and fingers all act as a single fixed unit. Thus, we can also ignore these two joints as well.

That leaves the elbow and shoulder as our joints of interest for manual movement in SORRY. Looking carefully at the elbow, we see that it flexes and extends slightly during the circle, causing a change in the angle between the upper arm and forearm. In addition, the elbow itself also changes position in space, moving a bit out to the signer's right side and back again. This cannot be due to elbow movement, since joint movement cannot change the position of a joint itself; if a joint moves through space, it must be because some other joint is moving it. The only joint we have left is the shoulder, so this must be what is responsible for the elbow changing location. The relevant shoulder movement appears to be a small amount of abduction and adduction, perhaps combined with very slight flexion and extension as well.

So, to describe the movement in the ASL sign SORRY, we would say there is both elbow and shoulder movement, and if we need to be more precise, we would say that there is repeated flexion and extension of the elbow, and repeated abduction and adduction of the shoulder, and perhaps also some amount of repeated flexion and extension of the shoulder.

Next, consider the ASL sign APPLE in the following video clip.

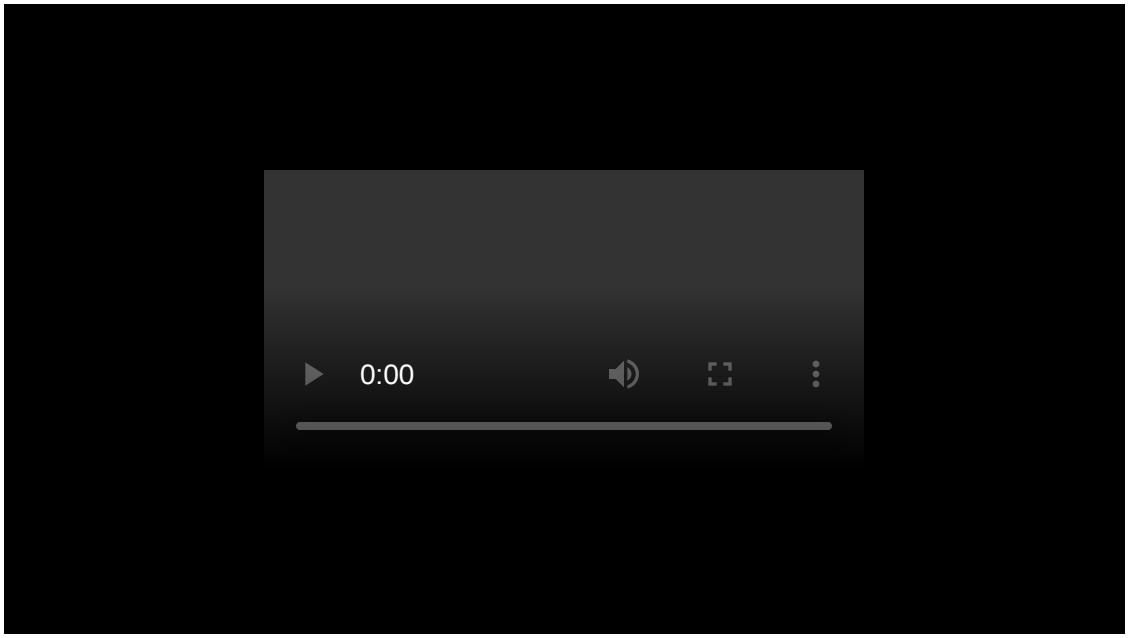


Again, we must ignore the transitional movements into and out of the sign, and as with SORRY, we see that the hand in APPLE is in a fixed shape, this time with the index finger extended at the base knuckle but flexed at the interphalangeal joints, while all of the other fingers are closed loosely together with flexed base knuckles and interphalangeal joints. All of these joints stay in their position throughout the sign, so we can ignore them for describing movement.

Where we do see movement is rotation of the forearm. We know that the wrist cannot rotate, so this must be due to radioulnar rotation. There is no other movement in APPLE, so we can ignore the elbow and shoulder joints.

Thus, for APPLE in ASL, we would say that it has radioulnar movement only, and more precisely, that it has repeated radioulnar rotation.

Finally, consider the ASL sign CHOOSE in the following video clip.



For CHOOSE, the initial transitional movement almost looks like it could be part of the sign, with the hand raising, then flicking backward, as all part of one motion. In this particular case, we will ignore this initial raising, but in general, and it can be difficult to know whether to ignore it or not.

The core movements that we are concerned with here are the movements of the fingers and the backward wrist flick. For the finger movement, we see that the index and thumb come together in a pinching motion. This requires flexion of the base knuckles to bring the two fingers together, and perhaps a very small amount of interphalangeal flexion as the finger and thumb bend very slightly rather than staying perfectly straight. The backwards wrist flick is articulated by extending the wrist backward. There is no radioulnar twisting and no notable elbow or shoulder movement.

Thus, for CHOOSE in ASL, we would say that it has base and radioulnar movement, and perhaps some minor interphalangeal movement, and more precisely, that it has non-repeated base (and maybe interphalangeal) flexion and wrist extension.

2.8.4: Nonmanual articulators

The rest of the body, the nonmanual articulators, especially the torso and the parts of the face, have complex and varied movement, such as eye gaze changes, eyelid narrowing and opening, eyebrow raising and lowering, torso leaning and rotation, head tilting and rotation, cheek puffing, lip rounding and spreading, teeth baring, etc. Nearly any other body part can be a nonmanual articulator, even the feet and buttocks in some signed languages, such as Adamorobe Sign Language in Ghana (Nyst 2007) and Kata Kolok in Indonesia (Marsaja 2008).

The ASL sign SORRY has some of these nonmanual articulations. The signer furrows his brow, pushes his lips together, slightly puffs his cheeks, and gives a slow head shake. All of these nonmanual movements are part of the sign. For any given sign, the nonmanual articulations may not all be necessary to understand the sign, but they are still part of its articulation.

Nonmanual articulation is beyond the scope of an introductory textbook like this, but it plays a crucial role in signed languages and cannot be ignored in a full analysis of signed languages. This is one of the drawbacks for tools like “signed language gloves” that supposedly translate signed language movements into text or speech. These devices regularly appear in popular media; a typical example is presented in Chin 2020. Since these gloves only capture some aspects of manual articulation, but no nonmanual articulation at all, they cannot fully translate signed languages. See Hill 2020 for further discussion of this issue, in particular, the need to directly involve deaf people when designing any kind of signed language technology, to ensure that the technology is actually useful to deaf people.

2.8.5: Check your understanding

2.8.6: References

Chin, Matthew. 2020. Wearable-tech glove translates sign language into speech in real time. UCLA Newsroom. https://newsroom.ucla.edu/releases/glove-translates-sign-language-to-speech

Hill, Joseph. 2020. Do deaf communities actually want sign language gloves? *Nature Electronics* 3(9): 512–513.

Marsaja, I. Gede. 2008. *Desa Kolok — A deaf village and its sign language in Bali, Indonesia*. Nijmegen: Ishara Press.

Nyst, Victoria. 2007. *A descriptive analysis of Adamorobe Sign Language (Ghana)*. University of Amsterdam PhD dissertation.

2.8.7: Signed language parameters

Many of the possible types of manual articulations occur so frequently in certain combinations that we can describe them in more efficient ways. We begin by dividing the various manual articulations into four main categories, often referred to collectively as **parameters** (also called **primes**):

- **handshape**: how the base knuckles and interphalangeal joints are configured
- **orientation**: the direction the hand is facing due to the configuration of the other four joints (wrist, radioulnar, elbow, and shoulder)
- **location**: where in space or on the body a sign is articulated
- **movement**: how the manual articulators move

2.8.8: Handshape

The static configuration of the base knuckles and interphalangeal joints in a sign is called its **handshape**. A handshape can be identified by which fingers have which of their base knuckles and/or interphalangeal joints flexed and by how much, as well as

whether there is any abduction or adduction of the base knuckles. For example, we could describe the handshapes in Figure 2.8.1 with the given descriptions.


all fingers: abducted base (no flexing of base or interphalangeal)


pinky, ring, middle, index: flexed base and interphalangeal
thumb: adducted base


pinky, ring, middle, index: flexed base
thumb: adducted base


pinky, ring, thumb: flexed base and interphalangeal
middle, index: abducted base


pinky, ring, thumb: flexed base and interphalangeal
middle, index: adducted base


pinky, ring, middle, thumb: flexed base and interphalangeal
index: flexed interphalangeal

Figure 2.8.1: Various handshapes and their detailed descriptions of base knuckle and interphalangeal articulation.

However, these kinds of prose descriptions are a bit cumbersome, just like constantly writing “voiceless postalveolar fricative” for the phone [ʃ]. When possible, handshapes are often graphically depicted with iconic pictures like those in Figure 2.8.1. However, these are not always easily available in certain media, so other solutions may be needed.

Since many handshapes are used to represent numbers or letters from the writing system of the ambient spoken language, a common solution is to use numbers and letters as convenient shorthand labels, somewhat like the IPA. Thus, since the first handshape in Figure 3.28 is used to represent FIVE in ASL, we could call this handshape the “5 handshape”. Similarly, the second handshape in Figure 2.8.1 is used to represent the English letter <S> in ASL, so it can be called the “S handshape”.

However, this system has to be used with caution. The S handshape is used in ASL to represent the English letter <S>, but in Swedish Sign Language (Svenskt teckenspråk, STS), the same handshape represents the Swedish letter <G>. In a discussion in English about STS, the term *S handshape* could be confusing if it has not been made clear which specific handshape it refers to. This is not an isolated problem. There are many other mismatches between these two languages, as shown in Figure 2.8.2, and of course, there are similar mismatches across signed languages generally.

handshape	English letter in ASL	Swedish letter in STS	handshape	English letter in ASL	Swedish letter in STS
	S	G		F	H
	C	S		L	T
	D	Z		R	X
	B	D			R

Figure 2.8.2: Differences between ASL and STS in handshape meanings.

This issue is further complicated by the fact that writing systems do not all use the same characters. For example, it would not even make sense to talk about an “R handshape” for Russian Sign Language, because there is no letter <R> in the Russian alphabet. There is a Russian letter that represents a rhotic, but that letter is the Cyrillic character <P>. This letter is represented in Russian Sign Language by the handshape in Figure 2.8.3, which is the handshape used for EIGHT in ASL! So when discussing many different signed languages in the same text, this way of describing handshapes can be confusing.



Figure 2.8.3: The handshape for <P> in Russian Sign Language and EIGHT in ASL.

However, even just for a single signed language, there are far more handshapes than are used for numbers and letters. For example, ASL makes frequent use of the first two handshapes in Figure 2.8.4, but these are not used to represent any number or English letter, although they are similar to the third handshape in Figure 3.31, which is used to represent the English letter <B>.

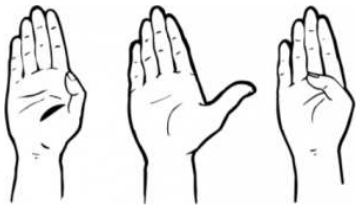


Figure 2.8.4: Similar handshapes.

For these situations, certain descriptors (*flat*, *open*, *bent*, *closed*, etc.) can be used to describe slight differences between similar handshapes, as in the examples from ASL in Figure 2.8.5.

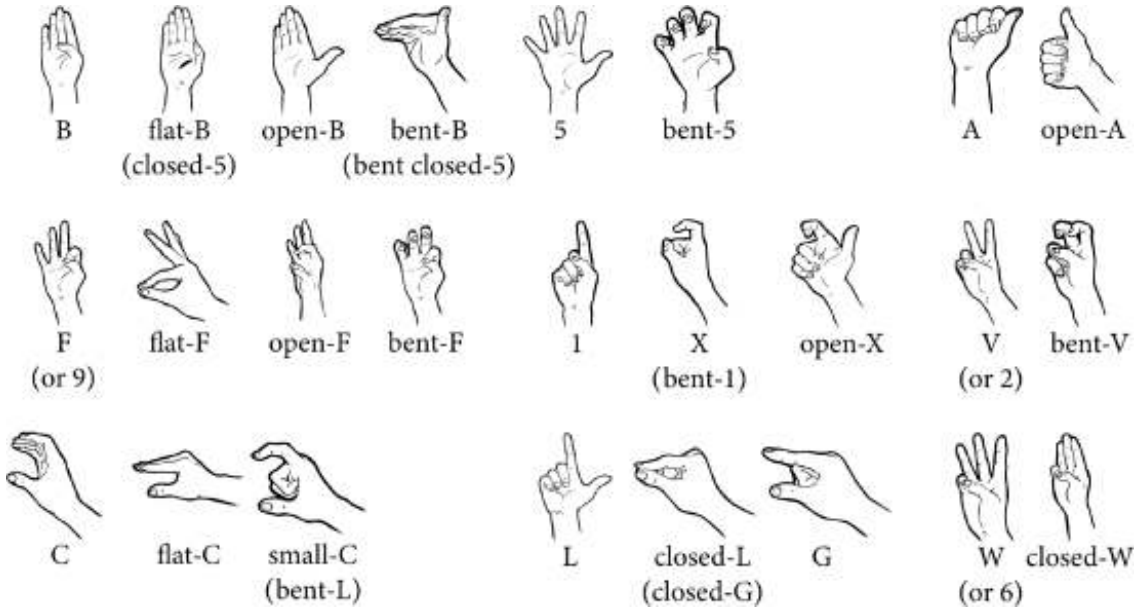


Figure 2.8.5: Various descriptions for related handshapes.

Because of the problems with this notation and terminology, we will use images where necessary, but we will also use the names typically used for describing handshapes in ASL. Just remember that these names are not universal and would not normally be appropriate when describing handshapes in other languages.

Sometimes, a distinction is made between two types of handshapes. Some of these are called **unmarked** handshapes (Battison 1978), which tend to be the most common handshapes, both across signed languages and within a single language, as well as the earliest ones acquired by children. They are typically the easiest handshapes to both articulate and visually distinguish from each other. They are also often used as default or substitute handshapes in certain circumstances. More recent work argues that the set of unmarked handshapes is probably smaller than previously thought, perhaps containing only the four in Figure 2.8.6 (Henner et al. 2013),

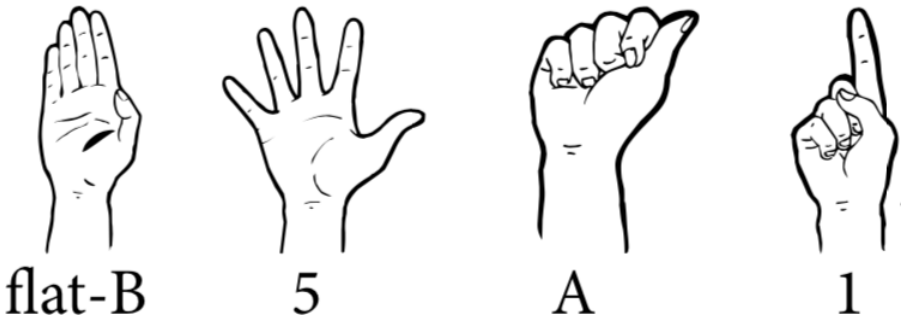


Figure 2.8.6: Unmarked handshapes.

Marked handshapes are all other possible configurations of the fingers. These are not universal, so a particular marked handshape may be used in some languages but not in others, and when it is used, it may be common in some languages and rare in others.

2.8.9: Orientation

The other four joints (wrist, radioulnar, elbow, and shoulder) can be used to change the orientation of the hand, so that it can face different directions while maintaining the same handshape. For example, the diagrams in Figure 2.8.7 show four different orientations of the flat-B handshape for the right hand as seen by the signer.

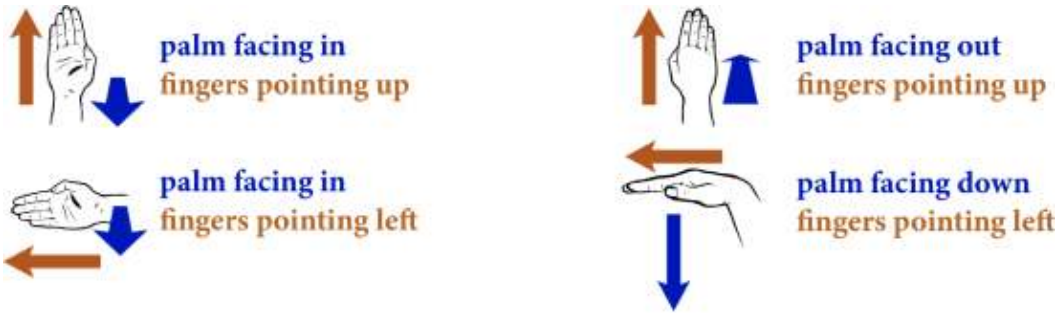
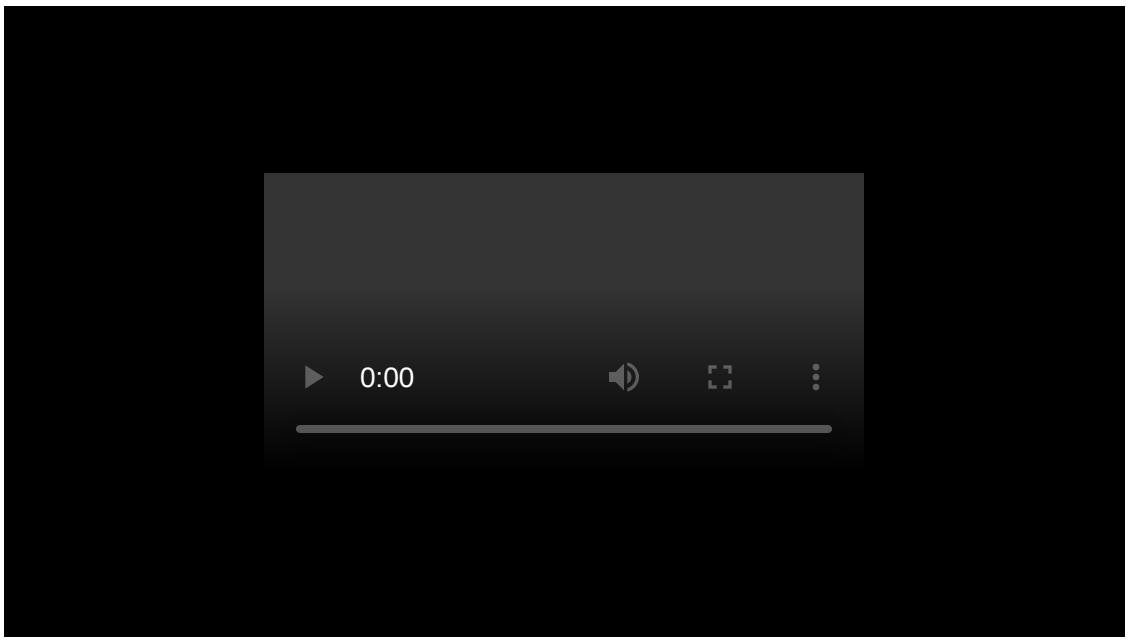


Figure 2.8.7: Different orientations of the right hand as seen from the signer's point of view.

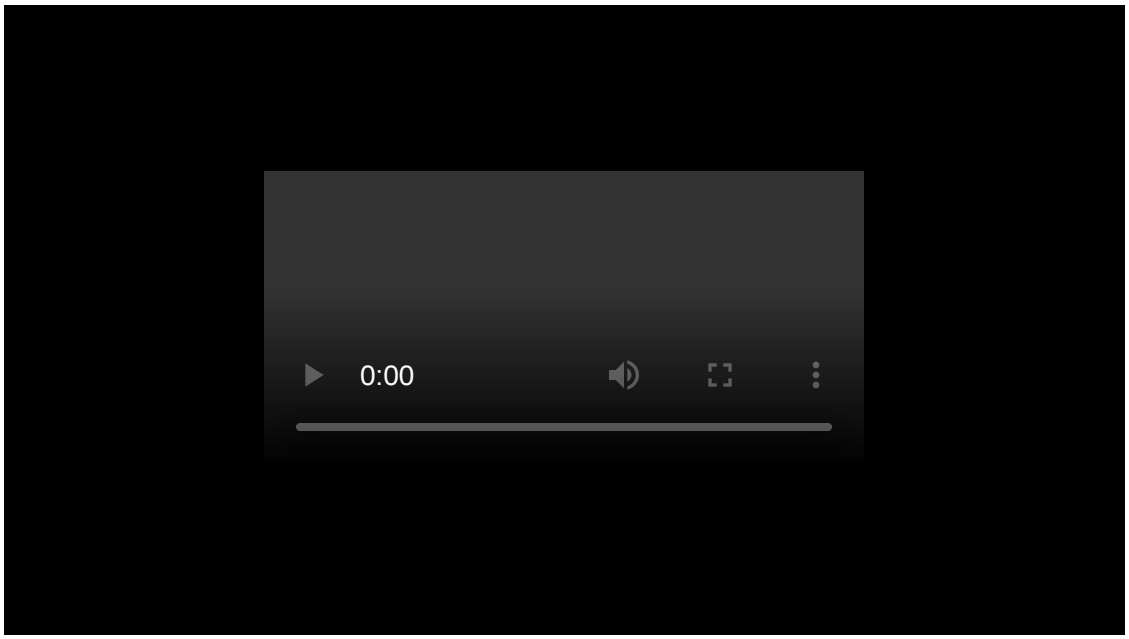
The orientation of the hand is divided into two components: the **palm orientation** (which way the palm is facing, shown in blue in Figure 2.8.7) and the **finger orientation** (the direction the bones inside the hand are pointing, which is where the fingers would point when straightened, shown in orange in Figure 2.8.7). Note that if the fingers are bent, the finger orientation may be a bit confusing, but you can determine orientation by straightening out the fingers to see where the fingertips point. Remember that handshape depends only on the base knuckles and interphalangeals, while orientation depends only on the other four joints. Bending at the base knuckles can only change handshape, not orientation.

The orientation of either the palm or the fingers may be described in absolute terms (up, down), or relative to the signer's position (in, out, left, right) or to a particular body part (face, other hand, etc.).

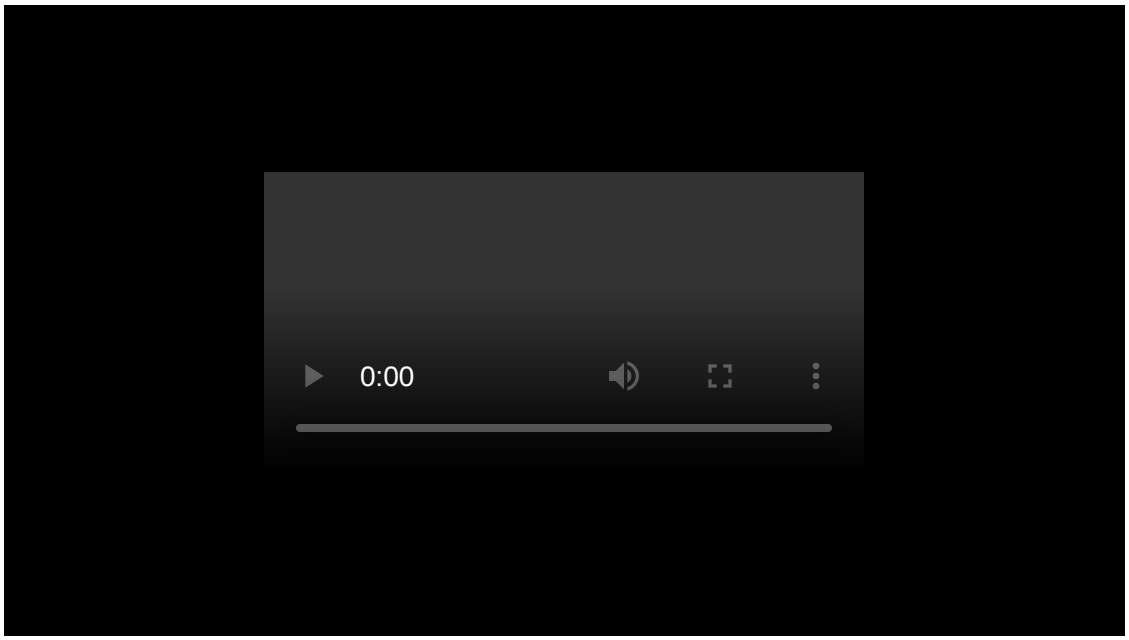
Compare the ASL signs in the following video clips, first YOUR, then THANK-YOU, and finally BED. All three of these signs use the same open-B handshape, but they have different orientations. For YOUR, the palm is oriented out from the signer, and the fingers are oriented up.



For THANK-YOU, the palm is oriented in towards to the signer, and the fingers are oriented diagonally up and to the signer's left.



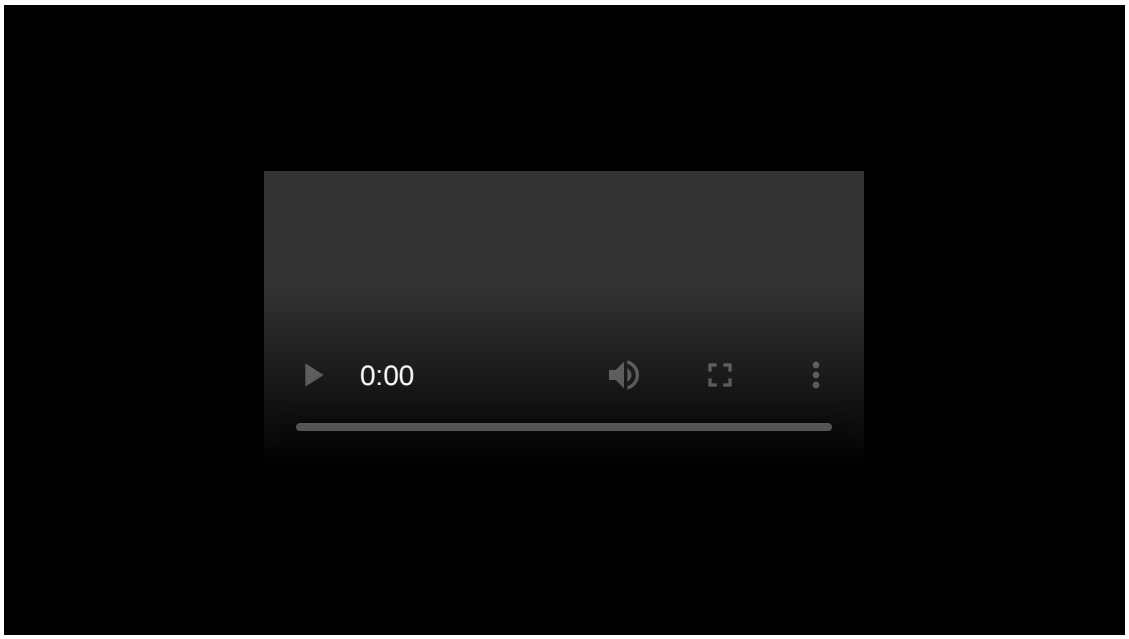
And for BED, the palm is oriented in towards the signer's left cheek, and the fingers are oriented up along the side of the signer's face:



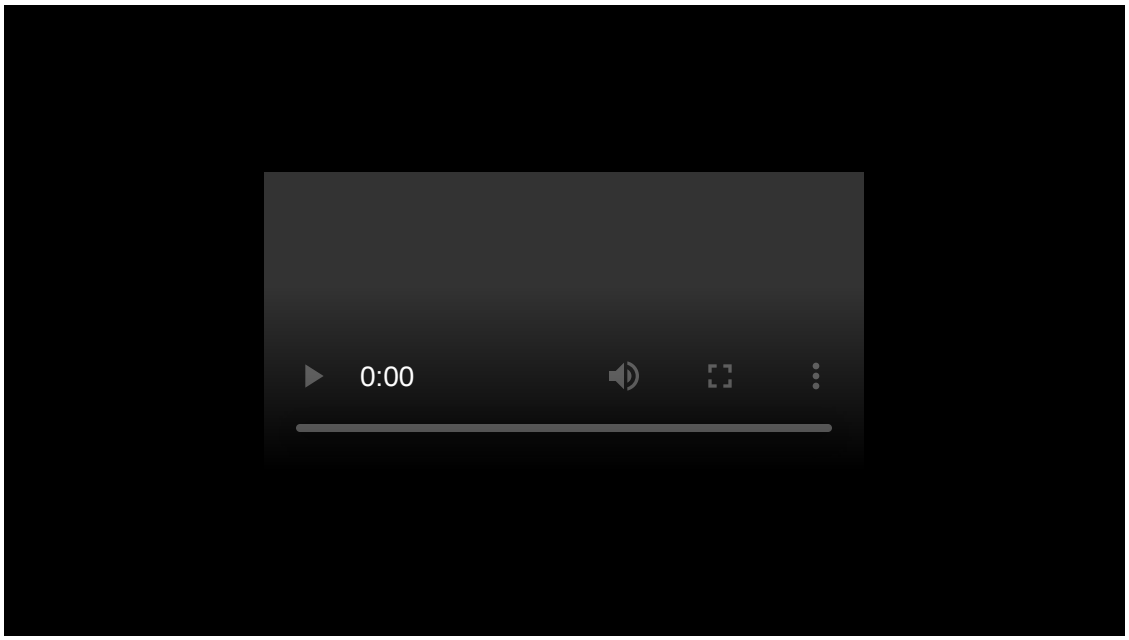
Since the head is tilted in BED, the absolute orientation of the palm and fingers in overall space is diagonal, but in signs like this, what matters is the relative orientation with respect to a specific body part, since the absolute orientation would depend on just how much the head is tilted.

2.8.10: Location

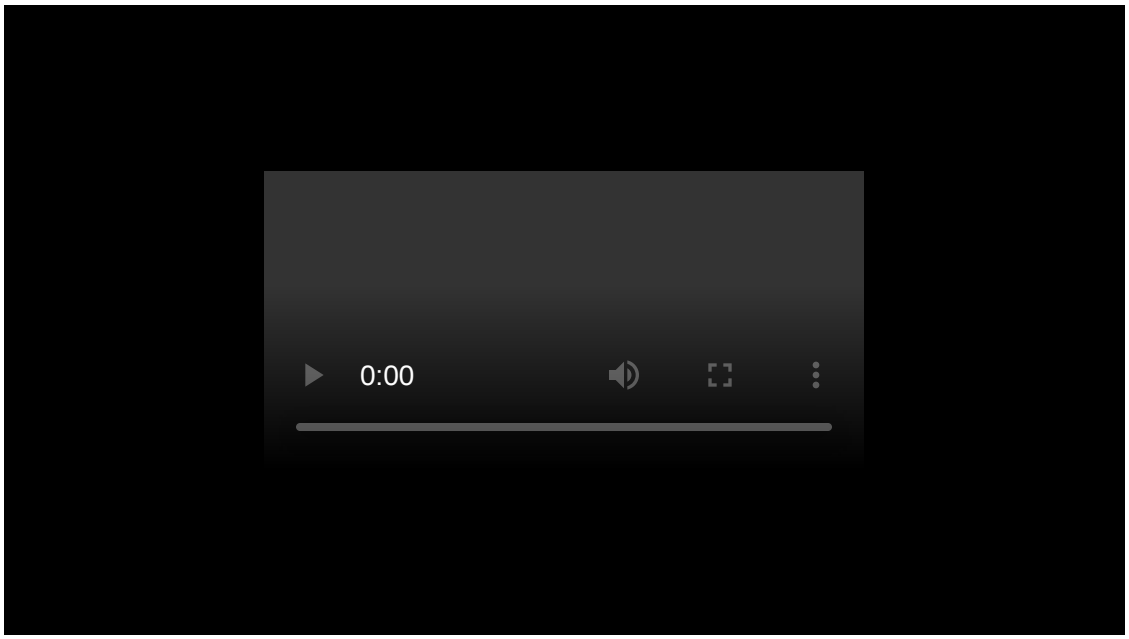
The location of a sign is where in space or on the body it is articulated. Signs can be articulated in a variety of locations. The default location is **neutral signing space**, the area just in front of the signer's torso (as in ASL YOUR), but locations can be nearly anywhere on the body. They tend to be around some specific part of the head (like the chin in ASL THANK-YOU or the side of the face in ASL BED), but other body parts are also possible locations. For example, the chest is the location for the ASL sign MY in the following video clip.



The side of the forehead is the location for the ASL sign KNOW in the following video clip.



And the left hand is used as the location for the ASL sign WARN in the following video clip.



It is very rare for signs to have a location below the waist or behind the body, but these are still possible locations in some signed languages (Nyst 2012).

2.8.11: Movement

All signs have a handshape, an orientation, and a location, and many signs also have movement, which is divided into two types: **path** and **local movement**. Path movement involves articulation at the elbow and/or shoulder, as in THANK-YOU, which starts off on the chin but moves outward along a path into neutral signing space by extending the elbow. Local movement involves articulation at the radioulnar joint, wrist, base knuckles, and/or interphalangeal joints, as in WARN, in which the signer's right hand taps the back of the left hand twice by flexing and extending the wrist.

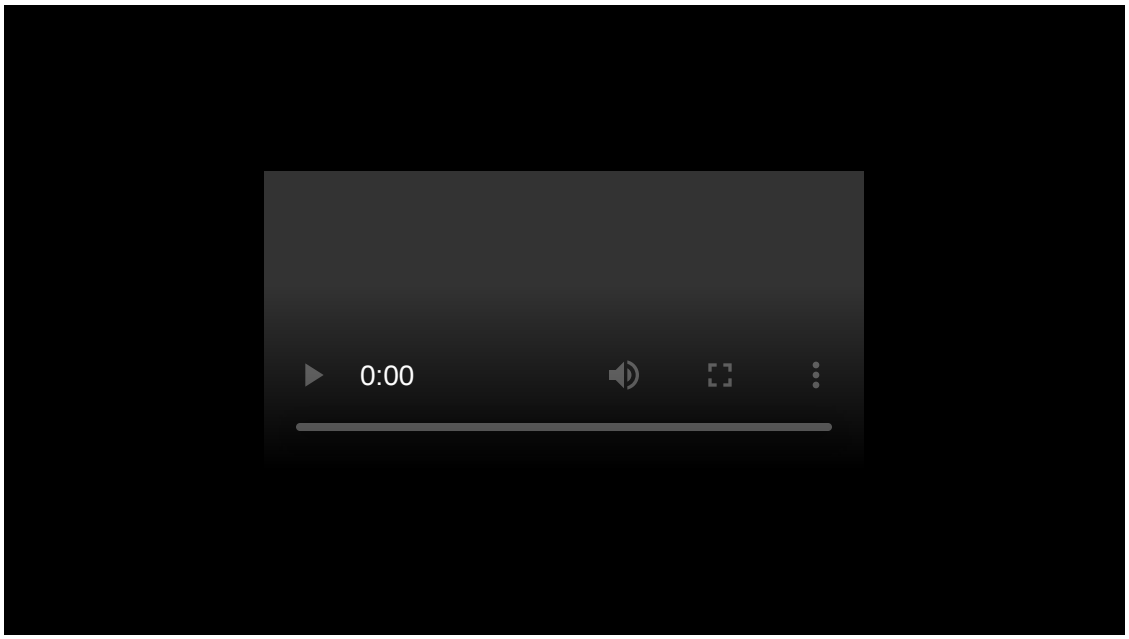
For one-handed signs, like most of those shown in this chapter so far, signers typically use their **dominant** hand, which is the hand used more than the other for many ordinary daily activities like writing and brushing teeth. The signer in these videos uses his right hand. The other hand is called the **nondominant** hand. In two-handed signs, both the dominant and nondominant hands are used. They may be used equally (for example, both moving at the same time in the same way), but in many two-handed signs, like ASL WARN, only the dominant hand moves, while the nondominant hand remains still, usually acting as the location for the sign.

Note that the base knuckles and interphalangeal joints are used for handshape, so any movement at those joints can also change the handshape of a sign. Similarly, any movement of the other four joints can change the sign's orientation or location. Thus, movement is intertwined with the other three parameters, so it can sometimes be difficult to single out how to analyze a given movement.

For example, in ASL THANK-YOU, there is outward movement due to elbow extension as well as a change in location from the chin to neutral signing space. Normally, we describe this by giving the starting location as the actual location, and describe the ending location as part of the movement. Thus, we would say that the location of THANK-YOU is the chin, and that it has an outward path movement to neutral signing space.

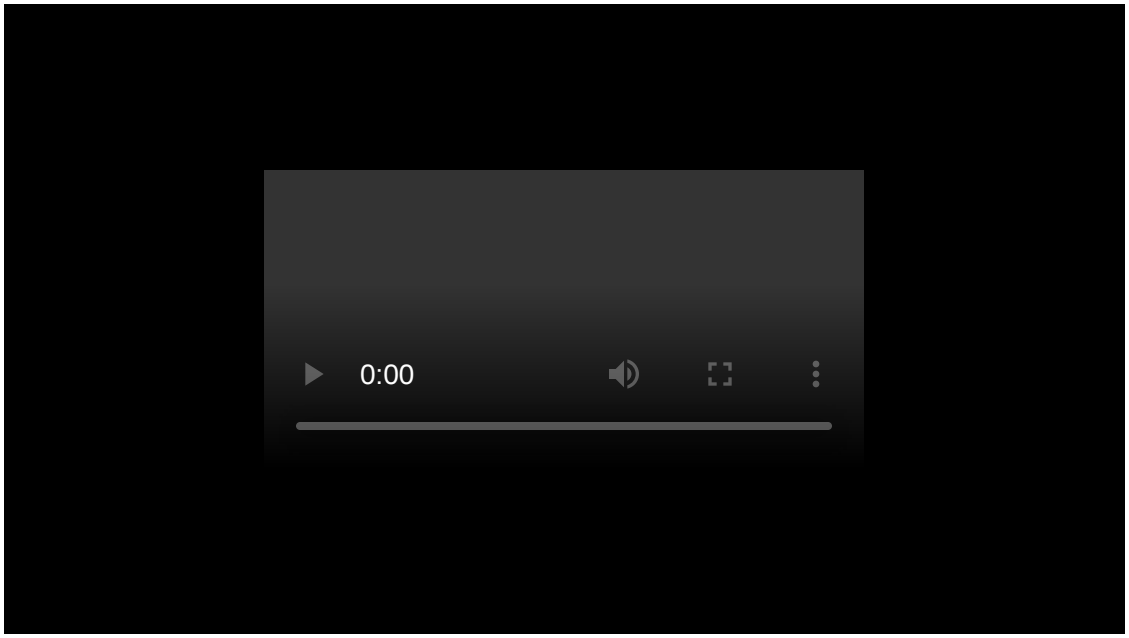
2.8.12: Minimal pairs

Signs which differ in just one parameter are called **minimal pairs**,. An example of a minimal pair in ASL is SORRY and PLEASE, as shown in the video clips below. Note for each how they have roughly the same orientation, location, and movement, but different handshapes. In SORRY, the open-A handshape is used.

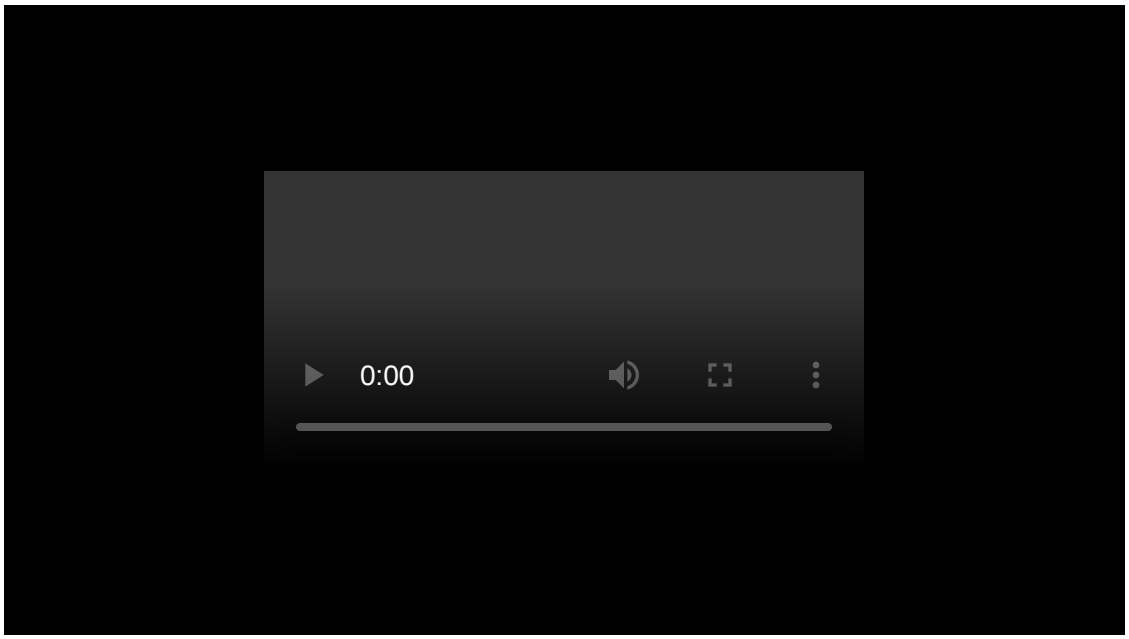


But in PLEASE, the open-B handshape is used, as seen in this linked description and video from the online Handspeak ASL dictionary (Lapiak 1995–2022).

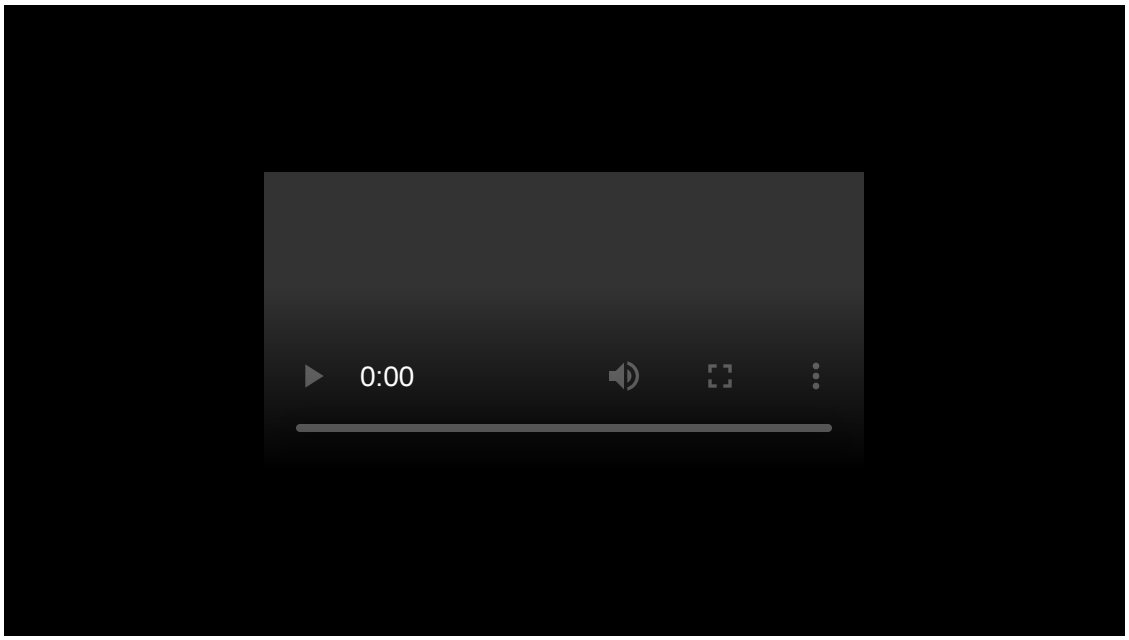
Similarly, minimal pairs also exist for differences in orientation only, such as PROOF versus STOP in ASL, as shown in the following video clips. Note that there is also a slight difference in movement due to the dominant hand bouncing back in PROOF, but otherwise, the two signs have the same handshape, the same location, and mostly the same movement. In PROOF, the dominant hand is oriented with the palm facing up.



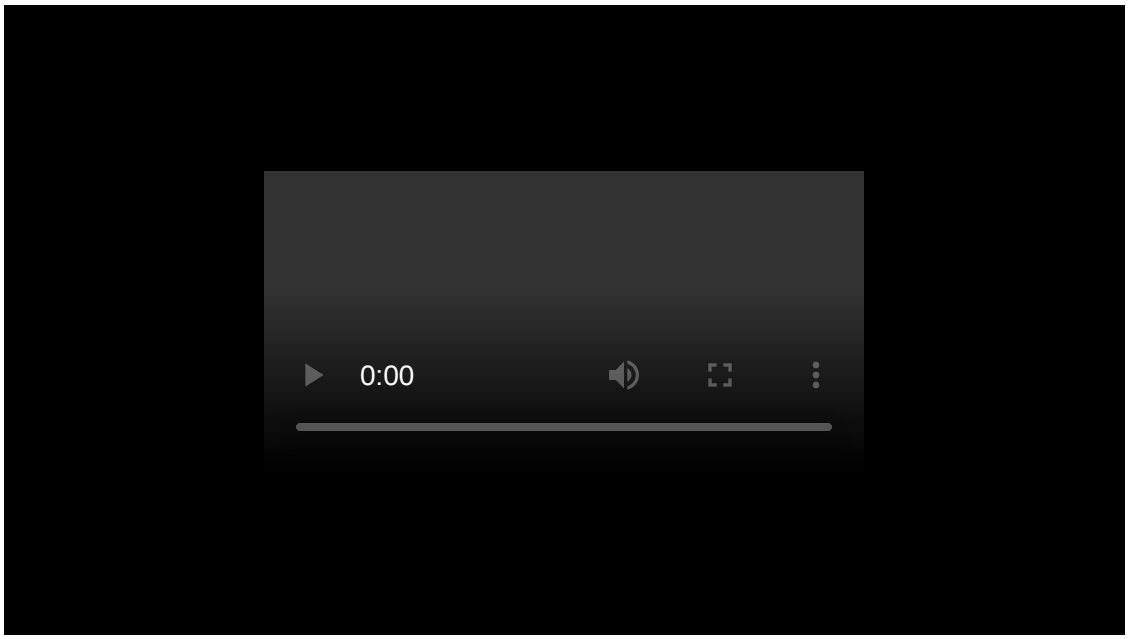
But in STOP, the dominant palm is facing to the signer's left.



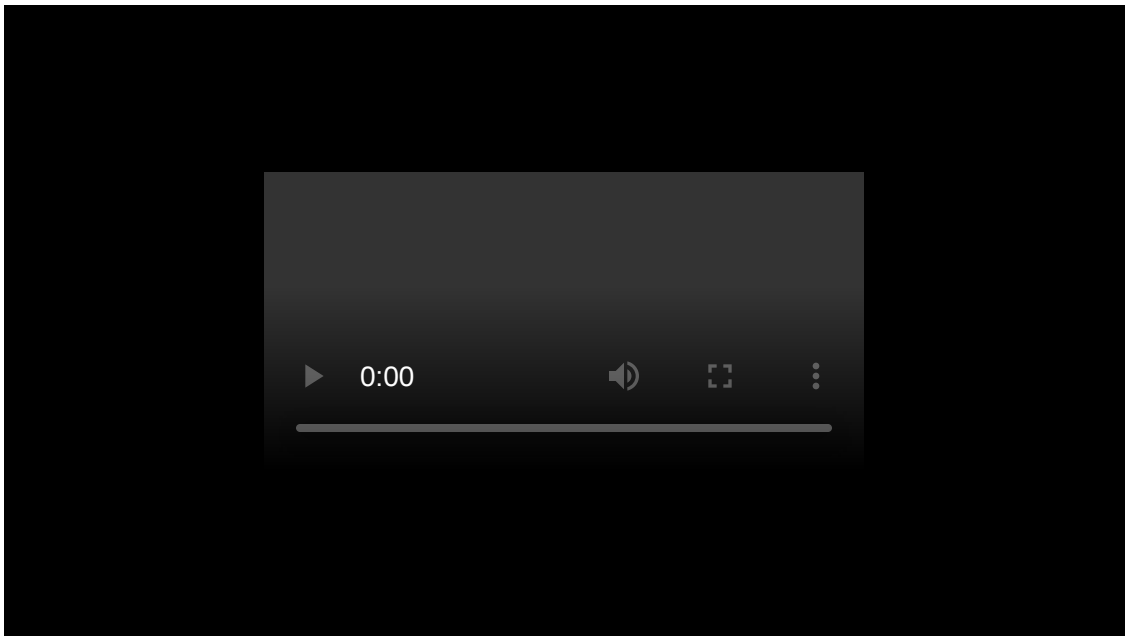
Location can also be a distinguishing factor in minimal pairs, such as with APPLE versus ONION in ASL, as shown in the following video clips. These two signs have the same handshape, the same orientation, and the same movement, but they are articulated at different locations. APPLE is articulated on the cheek.



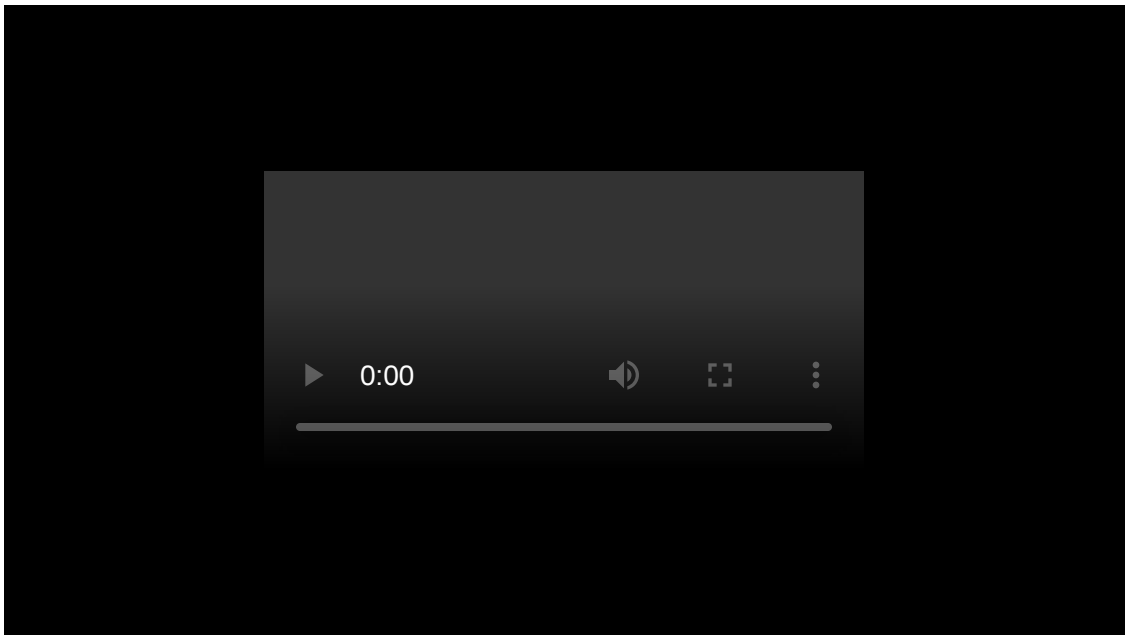
In comparison, ONION is articulated on the side of the head near the eye.



Finally, minimal pairs also exist for movement, such as with THINK versus WONDER in ASL, as shown in the following video clips. These two signs have the same handshape, the same orientation, and the same location, but they differ in how the hand moves. For THINK, the hand moves inward toward the head.



But in WONDER, the hand instead traces a circle near the head.



We will see in Chapter 4 that the concept of minimal pair can be extended to spoken languages, too.

2.8.13: Check your understanding

2.8.14: References

Battison, Robbin. 1978. *Lexical borrowing in American Sign Language*. Silver Spring, MD: Linstok Press.

Henner, Jonathan, Leah Geer, and Diane Lillo-Martin. 2013. Calculating frequency of occurrence of ASL handshapes. LSA Annual Meeting Extended Abstracts 4(16): 1–4.

Lapiak, Jolanta. 1995–2022. Handspeak. https://www.handspeak.com/

Nyst, Victoria. 2012. Shared sign languages. In *Sign language: An international handbook*, ed. Roland Pfau, Markus Steinbach, and Bencie Woll, 552–574. De Gruyter Mouton.

2.8.15: Signed Language Notation

There is no commonly accepted equivalent of the IPA for transcribing signs. The most historically significant notation system for signs was developed by **William Stokoe** (pronounced [stoki]), whose work (1960, 1965) is also notable for having demonstrated that signed languages have the same kinds of linguistic structures that spoken languages do, effectively kickstarting the entire field of signed language linguistics.

Stokoe's system of symbols, popularly called **Stokoe notation**, divides signs based on the four parameters discussed in Section 3.8, though he originally considered orientation to be a subcomponent of the handshape parameter. Battison (1978) argued that orientation should be its own distinct parameter, and this has become the standard analysis of the internal structure of signs, with nonmanual articulations sometimes considered a fifth parameter.

The Stokoe notation for a basic one-handed sign has the structure $LH_O{}^M$ where L is the symbol for the location, H is the symbol for the handshape, $_O$ is a subscripted symbol for the orientation, and ^{M} is a superscripted symbol for the movement. Various other marks and symbols can be used to indicate more complex signs (two-handed, changing handshapes, compounds, etc.). A partial list of Stokoe's original symbols is given in Figure 2.8.1.



Figure 2.8.1: Sample symbols from Stoke notation.

For example, the ASL sign THANK-YOU could be notated as in Figure 2.8.2, with the initial curved shape indicating the chin as the location, Ḃ indicating the B handshape with the thumb extended, the downward tick mark ⊤ indicating a palm orientation toward the signer, and an upward tick mark ⊥ indicated movement away from the signer.



Figure 2.8.2: One possible use of Stokoe notation for ASL THANK-YOU.

Stokoe notation was designed for ASL, so it is not suited for signed languages generally, but the concept of analyzing signs into distinct parameters that underlies this system has influenced all remotely successful subsequent notation systems, such as **SignWriting** (Sutton 1981, 1990) and **Hamburg Notation System (HamNoSys)** (Prillwitz and Schulmeister 1987, Prillwitz et al. 1987, 1989). These two systems have more iconic symbols than Stokoe notation (making them somewhat easier to understand), and they have no inherent ties to ASL (making them more universally applicable).

For example, the SignWriting and HamNoSys symbols in Figure 2.8.3 both represent the same handshape, also shown in Figure 2.8.3

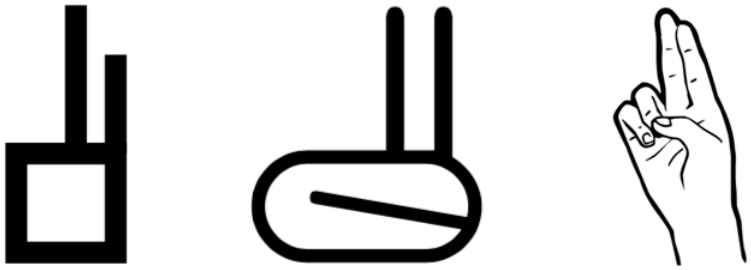


Figure 2.8.3:Notation from SignWriting (left) and HamNoSys (centre) for the U handshape (right).

Note how both the SignWriting and HamNoSys symbols iconically represent the extension of the middle and index fingers, as lines pointing out from the closed fist (represented as a square in SignWriting and an oval in HamNoSys). HamNoSys also shows the extra detail of the thumb crossing over the palm, while SignWriting shows the difference in length between the middle and index fingers.

This handshape is used to represent the English letter <U> in ASL, so it is notated by U in Stokoe notation. This relationship between letter and handshape would not transfer to other signed languages, such as Jordanian Sign Language, in which the same handshape is used for the Arabic letter <ت> (Hendriks 2008), which represents the phone [t]. This phone has no relationship to the English letter <U>, so the more iconic SignWriting or HamNoSys symbols would be more meaningful notation than Stokoe notation for representing this handshape when describing languages like Jordanian Sign Language.

Other notation systems for signed languages have been constructed (see Hochgesang 2014 for an overview), but no single consistent standard has emerged, and the systems that do exist can be difficult to work with. For example, they typically require special symbols not available in most fonts, so many people wanting to describe signed languages may not have access to the relevant symbols, and documents describing signed languages may not be reliably readable on different computers. This lack of a consistent standard notation makes the study of signed language phonetics and phonology more difficult.

2.8.16: Check your understanding

2.8.17: References

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2.9: Syllables

2.9.1: Spoken language syllables

While spoken language words can be decomposed into phones, there seem to be other layers of structure that are relevant to how spoken languages function. One such layer is made up of units called **syllables**. Thus, words can contain multiple syllables, and each syllable can contain multiple phones. Of course, some words may have only one syllable, such as the English words [bæt] *bat* and [prɪnts] *prints*, and some syllables may have only one phone, such as the English words [o] *owe* and [ɔ] *awe*.

As a unit of structure, syllables are often abbreviated with the Greek letter **sigma σ**, and within a transcription, the boundaries between syllables are notated with the IPA symbol [.], as in the transcription [kæ.nə.də] *Canada*. Note that the syllable boundary mark [.] is only needed between syllables; nothing extra is needed to mark the beginning of the first syllable or the end of the last syllable.

The loudest, most prominent position within a syllable is called the **nucleus** (abbreviated here as **Nuc**), which is usually filled by a vowel in most languages. However, some languages, like English, allow **syllabic consonants** in the nucleus, as in the English word [bɻd] *bird* and the second syllables of [bɒ.tl̩] *bottle* and [bɒ.tm̩] *bottom*. Some languages make more extensive use of syllabic consonants, such as Tashlhiyt Berber (a.k.a. Shilha, a Northern Berber language of the Afro-Asiatic family, spoken in Morocco), which allows syllabic sonorants (fairly typical in the world's languages) as well as syllabic obstruents (quite rare in the world's languages), as in the words [tɣ.fl̩] 'she surprised', [tṣ.kr̩] 'she did', [tḍ.dg̩] 'it was wet', and [tḳ.ti] 'she remembered (Ridouane 2014).

The remaining phones in the syllable (if any) make up the **margins**: the **onset (Ons)** on the left of the nucleus and the **coda (Cod)** on the right. The margins of the syllable can each be empty, or they may contain one or more consonant phones. A margin with only one phone is called **simple**, and a margin with two or more phones is called **complex**.

Thus, in the English word [ə.proʧ] *approach*, the first syllable [ə] has no onset or coda, while the second syllable [proʧ] has a complex onset [pr] and a simple coda [ʧ] (recall that an affricate counts as a single phone not two).

Syllable structure is often shown graphically in a tree diagram, as in Figure 2.9.1, with each syllable having its own σ node, connected down to the next level of onsets, nuclei, and codas, which are in turn connected down to the level of the phones that they contain. Sometimes, the word level is also shown explicitly above the syllables, abbreviated here as **Wd**.

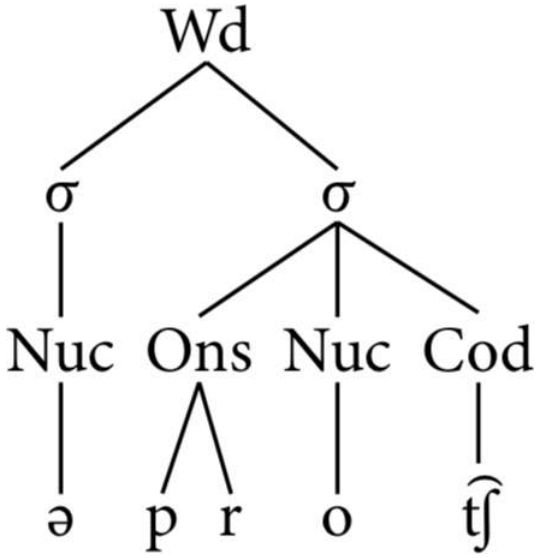


Figure 2.9.1: Syllable structure for the English word *approach*.

The most common analysis of syllables is that every syllable must have a nucleus, which always contains at least one phone. Though affricates count as a single phone in margins, diphthongs usually count as two phones, but the details of how to treat such complex phones depend on the language and the assumptions underlying the analysis.

Note that while speakers often have consistent intuitions about how many syllables a word has and where the boundaries are, the physical reality of their speech does not always match these intuitions. For example, some English speakers claim that the word

hire has one syllable [haɪr], while *higher* has two [haɪ.r̩], and yet, when these speakers hear recorded samples of their own pronunciation of these two words, they often cannot reliably distinguish one from the other. Many other English speakers think both words have one syllable or both have two syllables. There are lots of similar English words with this murky behaviour, mostly words with a diphthong followed by an approximant: [aʊr]/[paʊr] *hour/power*, [aʊl]/[taʊl] *owl/towel*, [vaɪl] *vile/vial*, etc.

Because of these and other issues, syllables have a somewhat questionable status. It seems that they are more abstract and conceptual rather than concrete and physical. They seem to be a way for speakers to organize phones into useful linguistic units for the purposes of production or processing, which may not necessarily have a consistent measurable impact on the actual pronunciation. That is, syllables may have psychological reality without having physical reality.

Syllable structure can be notated in plain text without tree diagrams using **CV-notation**, with one C for each phone in the margins and one V for each phone in the nucleus (note that V is typically used in the nucleus even if it represents a syllabic consonant). Thus, the syllable structure of [ə.pro͡ʧ] could be represented as V.CCVC rather than with a full tree diagram like Figure 3.38.

A syllable with no coda, such as a CV or V syllable, like English [si] *see* and [o] *owe*, is often referred to as an **open syllable**, while a syllable with a coda, such as CVC or VC, like English [hæt] *hat* and [it] *eat*, is a **closed syllable**. A syllable with no onset, such as V or VC, like English [o] owe and [it] eat, is called **onsetless**. There is no special term for a syllable with an onset.

2.9.2: Crosslinguistic patterns in spoken language syllable types

Spoken languages generally prefer onsets and disprefer codas. This means that it is common for languages to require onsets, but it seems like there are no languages that require codas. Conversely, it is common for languages to prohibit codas, but there are no languages that prohibit onsets. These possibilities can be notated using parentheses to show what is allowed but not required. So we find languages whose syllables are all of the type CV(C); that is, they have a required onset and nucleus but an optional coda. However, there seem to be no mirror image languages whose syllables can all be classified as (C)VC, with an optional onset but a required nucleus and coda.

In addition, spoken languages generally prefer simple margins to complex margins. Thus, in languages that allow codas, some allow only simple codas and prohibit complex codas; if a language allows complex codas, it also allows simple codas. Similarly for onsets: some languages prohibit complex onsets, and if a language allows complex onsets, it also allows simple onsets.

Finally, there seems to be no strong relationships between complex onsets and complex codas: some languages allow complex onsets, some allow complex codas, some allow both, and some allow neither. All together, these trends give us a range of possible languages based on what kinds of syllable structures they allow and prohibit.

2.9.3: Syllabification and sonority

The way that phones are associated to appropriate positions in syllable structure is called **syllabification**. Syllabification is often based at least partially on the **sonority** of the phones, which is an abstract measure of their relative prominence that corresponds roughly to loudness. A **sonority hierarchy** is an ordering of phones by their sonority. Vowels are at the top of scale as the most sonorous phones, which is why they can occupy the privileged nucleus position in a syllable, while obstruents are at the bottom of the scale as the least sonorous, so they are typically relegated to the margins of a syllable.

There are some crosslinguistic patterns in sonority, but languages can differ in how they categorize some phones by sonority, so there is no one true universal sonority hierarchy. Some languages may use sonority to distinguish plosives from fricatives, or voiceless from voiced obstruents, or nasal stops from lateral approximants, and some languages may even have some sonority categories reversed from other languages.

Based on a language's own sonority hierarchy, its syllables usually obey the **sonority sequencing principle (SSP)**, which requires sonority to rise through the onset of a syllable, hit its peak in the nucleus, and then fall through the coda. Thus, the English syllable [plænt] *plant* is a well-formed syllable according to the SSP, because obstruents have the lowest sonority in English, followed by nasal stops, followed by other sonorants, followed by vowels at the top of the sonority hierarchy. Reversing the segments in the onset and coda, to create the attempted syllable *[lpætn], violates the SSP, because the onset has falling sonority rather than rising, and the coda has rising sonority rather than falling. The difference in sonority between these two words is graphed in Figure 2.9.2.

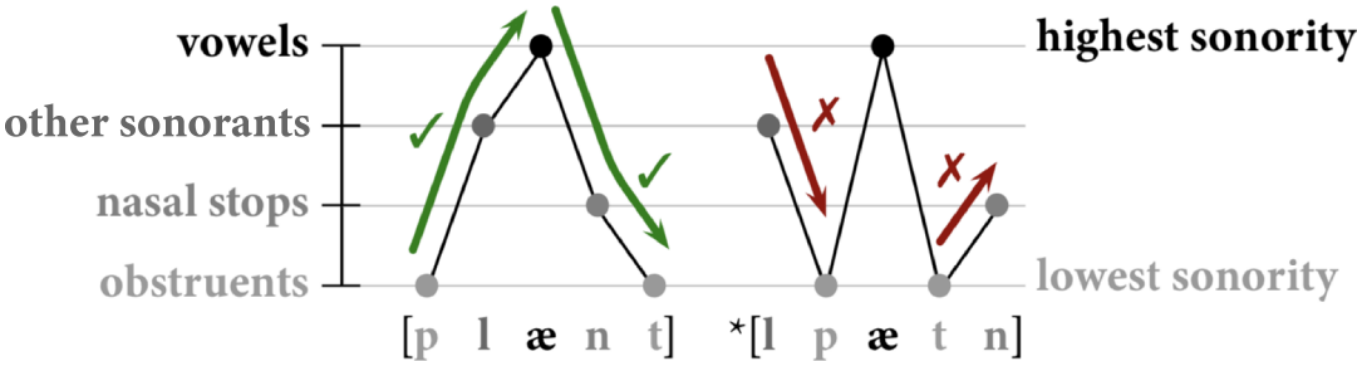


Figure 2.9.2: Representations of sonority patterns in the English word [plænt] and the attempted English word *[lpætn].

However, the SSP is not absolute. Many languages allow portions of a syllable to have a **sonority plateau** (when two adjacent segments have the same sonority, as in English [ækt] *act*, with two voiceless plosives in the coda), and some may have even looser syllable structure, allowing one or more **sonority reversals**, as in Georgian [ɡvphr͡tskhvni] გვფრცქვნი 'you (singular) are peeling us', which has a single complex onset [ɡvphr͡tskhvn-] which rises from obstruents to the rhotic [r] and then reverses direction to fall back to obstruents before rising again to the nasal stop.

2.9.4: Signed language syllables

As discussed at the beginning of Section 3.8, signs may be able to similarly be decomposed into syllable-like structures. However, it is important to note that the actual structure of signs and signed languages is not derived from spoken languages. Whatever parallels or analogies we might find between the two modalities are incidental, or perhaps derived from some deeper, more abstract cognitive principles of linguistic organization. Crucially, we cannot just directly import the theories and structures of spoken languages into the analysis of signed languages. We have to take into account the differences in modality.

A common analysis of the internal structure of signs is to treat them as sequences of two types of units: **static states** (sometimes called **holds**, **positions**, or **postures**, roughly equivalent to a combination of the location and orientation parameters) and **dynamic states** (essentially the movement parameter) (Liddell 1984, Liddell and Johnson 1986, 1989, Johnson and Liddell 2010, Sandler 1986, 1989, 1993, Perlmutter 1992, van der Hulst 1993), with handshape often being a relatively stable property over an entire syllable (Mandel 1981). The exact nature and composition of these units varies from model to model, but they generally share the same basic division between some type of static unit and some type of dynamic unit.

Many linguists additionally argue that the dynamic units are more sonorous than the static units (Brentari 1990, Corina 1990, Perlmutter 1992, Sandler 1993). In this view, the less sonorous static units are like syllable margins (and thus, comparable to consonants), while the more sonorous dynamic units are like syllable nuclei (and thus, comparable to vowels).

However, there is a lot of disagreement about what kind of syllabic model (if any) is appropriate for the analysis of signed languages. Linguists might just be forcing signed languages to fit within their understanding of how spoken languages work, or maybe there could genuinely be something more fundamental that underlies both signed and spoken languages that results in something like syllables as a natural organizational unit in both modalities. This is still a rich and open area of study in linguistics with many unanswered questions.

2.9.5: Check your understanding

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2.10: Stress

2.10.1: The phonetics of stressed syllables

As an organization unit, syllables play a role in the overall rhythm and flow of language, especially by having some syllables be **stressed**, which gives them more prominence in the linguistic signal. In spoken languages, stressed syllables are often articulated with some combination of increased loudness, longer duration, and/or higher pitch. To the extent that signed languages have syllables, they also seem to have stressed syllables, which are typically articulated with greater muscular tension, quicker movements, and/or longer holds (Supalla and Newport 1978, Klima and Bellugi 1979). However, languages can vary quite a lot in exactly which phonetic properties are used for stressed syllables.

Spoken languages are sometimes classified based on whether they are “stress-timed” or “syllable-timed”, which means that roughly the same amount of time passes between stresses or between syllables, respectively. However, despite widespread belief in this classification among non-linguists and even many linguists, it does not in fact appear to be supported by any phonetic reality, so it is best avoided. See Pamies Bertrán 1999 for an overview of the issue and data that contradict this classification.

2.10.2: Degrees of stress

Stress in signed languages is still under-researched, but since signs typically only have one or two syllables, there is not much room for complex stress patterns in signed languages. However, in spoken languages, words can easily have many syllables, such as the English word *internationalization*, which has eight syllables, or the German word *Kraftfahrzeughaftpflichtversicherung* ‘motor vehicle indemnity insurance’, which has nine syllables. Even with just three or four syllables, there is room for multiple degrees of stress within a single word. In most spoken languages, usually there is exactly one syllable per word with the highest degree of stress, which is called **primary stress** and is marked in the IPA with an **upper tick mark [ˈ]** before the onset of the syllable with primary stress.

All other stressed syllables can be said to have **secondary stress**, which marked in the IPA with a **lower tick mark [ˌ]** before the onset of the stressed syllable (note that this diacritic is distinct from the syllabic diacritic [ˌ] which always goes *under* a symbol; the secondary stress mark [ˌ] always goes *before* a symbol). The remaining syllables are **unstressed**, which has no dedicated IPA symbol.

We can see all three levels of stress in the word [ˈbʌ.ni.ˌhʌg] *bunny hug*, which is used in Saskatchewan English to refer to a hoodie. Note that the stress marks are used at syllable boundaries, so no [.] is needed to mark a syllable boundary in a position where [ˈ] or [ˌ] are used.

Stress is commonly marked instead with non-IPA diacritics, with accent marks over the nucleus (or over σ when discussing stress patterns across syllables generally): the **acute accent [ˊ]** for primary and the **grave accent [ˋ]** for secondary, and sometimes also the **breve accent [˘]** for unstressed, if it needs to be explicitly marked. Using this system, *bunny hug* could be transcribed as [bʌ́nihʌ̀g] or [bʌ́nĭhʌ̀g]. However, since these diacritics have other uses in the (see Section 3.12 for the use of [ˊ] and [ˋ] as tone diacritics), they must be used carefully to avoid ambiguity.

2.10.3: Lexical versus predictable stress

Many spoken languages have **lexical stress**, which means that the placement of stress is mostly unpredictable and must be memorized for each word. This can create minimal pairs, such as [ˈtɑɾu] ‘fast runner’ versus [tɑˈɾu] ‘batter’ and [ˈbɛɬu] ‘basket’ versus [bɛˈɬu] ‘flute’ in Khowar, a Dardic language of the Indo-European family, spoken in Pakistan (Liljegren and Khan 2017).

In other spoken languages, stress is fully predictable based on the structure of the syllables in a word, so that two words with the same syllable structures but different phones would always have the same stress pattern. In such languages, the rules governing stress assignment can be quite complicated, and a full analysis is beyond the scope of this textbook. However, there are a few broad patterns for predictable stress in spoken languages.

First, although most words usually have one and only one primary stress, short function words like prepositions or conjunctions might be unstressed within a sentence or larger conversation, as in *I’m going to the store to buy milk and eggs*, where the preposition *to* and the conjunction *and* are usually unstressed. In contrast, some complex words might have multiple syllables with roughly equal primary stress, as in [ˈklinˈʃevn̩] *clean-shaven*, which sounds a bit odd if you try to use secondary stress on one of the first two syllables.

Second, primary stress is nearly always on one of the first two or the last two syllables in a word. Stress on the first syllable is called **initial stress**, stress on the second syllable is called **peninitial stress**, stress on the final syllable is called **ultimate stress**, and stress on the second syllable from the end is called **penultimate stress**. In some languages, primary stress may be **antepenultimate**, on the third syllable from the end, allow the final syllable to be invisible to stress, as if it were not there. Interestingly, we do not seem to find the equivalent of third stress from the beginning, likely because the first syllable is very psychologically prominent, and so it cannot be ignored in the same way the final syllable can be.

Finally, secondary stress in longer words often occurs in a regular rhythm, skipping every other syllable, so that stressed and unstressed syllables generally alternate with each other. However, there is a great deal of complexity across the world's spoken languages in how secondary stress is assigned.

But despite all the complexity, there are still some consistent generalizations. We do not seem to find spoken languages that consistently have primary stress on, say, the middle syllable of every word or the fifth syllable of every long word, nor do we find languages that consistently alternate two stressed syllables with two unstressed syllables throughout every word. This suggests that there are deeper underlying principles that govern how stress is assigned, perhaps relating to the purpose of stress.

For example, stress might help with processing of the linguistic signal, so it should be relatively regular (to be more easily recognizable) and anchored to the boundaries of words (which are otherwise hard to determine in ordinary conversation). In other words, not all imaginable stress patterns are possible. Instead, there seems to be a small set of very specific restrictions on how stress works.

2.10.4: Check your understanding

2.10.5: References

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2.11: Tone and intonation

2.11.1: Pitch

During voicing, the vocal folds vibrate at some rate, which is normally called the **fundamental frequency** (typically abbreviated **F0**) when talking specifically about the actual physical vibration and **pitch** when talking about the auditory perception of that vibration. For the purposes of this discussion, we will use *pitch*, since we are usually more concerned with the more abstract, cognitive categorization rather than the actual physical implementation, which can vary quite a bit from speaker to speaker.

Pitch is often intertwined with duration and intensity for stress systems in spoken languages, but it can also be manipulated separately as part of its own system. Roughly speaking, if pitch is manipulated at the level of the word or syllable to make completely different meanings, it is called **tone**, whereas if it is manipulated at larger combinations of words (phrases and sentences) to have different kinds of conversational functions (statements versus questions, for example), it is called **intonation**. Languages with a tone system are often called **tone languages** or **tonal languages**, while languages with an intonation system are called **intonational languages**. There are some problematic cases that are not easily classified in either category or seem to be a mixture of both, but they are useful basic categories for describing how spoken languages can manipulate pitch.

2.11.2: Tone notation

Many tone languages have only two tones, normally identified as a **high tone (H)** and a **low tone (L)**. High tones have a higher pitch (with the vocal folds vibrating faster), and low tones have a lower pitch (with the vocal folds vibrating slower). There is no single consistent rate of vibration for high or low tones. A high tone in one language may consistently have faster vocal fold vibration than a high tone is a different language, and even within the same language, different speakers may have different rates of vibration for the same tone.

The IPA has two different systems for notating tone: **tone diacritics** placed above the relevant phone and separate **tone letters** placed after the entire syllable.

For languages with simple tone systems, the tone diacritics are normally used, with the **acute accent [ˊ]** representing a high tone and the **grave accent [ˋ]** representing a low tone. Tone letters iconically represent the height of the tone with a horizontal line connected to a vertical supporting base, with [˥] representing a high tone and [˩] representing a low tone.

In addition, non-IPA superscript numbers on a 1–5 scale are sometimes used instead, with the highest number [^{5}] representing a high tone and the lowest number [^{1}] representing a low tone.

All three of these notation systems are shown in Table 3.2 for the example words [lúk] ‘vomit’ (with a high tone) and [lùk] ‘weave’ (with a low tone) from Bemba, a southern Bantoid language of the Niger-Congo family, spoken in Zambia and nearby areas (Hamann and Kula 2015).

Table 3.2. Tone patterns in one-syllable Bemba words.

tone	example with IPA tone diacritics	example with IPA tone letters	example with non-IPA tone numbers	gloss
H	[lúk]	[luk˥]	[luk^{5}]	‘vomit’
L	[lùk]	[luk˩]	[luk^{1}]	‘weave’

The choice of notation depends on a combination of factors, including legibility, the complexity of the language’s tone system, the intended purpose of the transcription, and historical tradition.

Each system has problems. Tone numbers are problematic because there are many traditional tone numbering systems that differ from the tone number system presented here. For example, the high tone in Mandarin is traditionally called “tone 1”, and this traditional numbering is used in some romanizations of Chinese, such as the Wade-Giles system, in which 媽/妈 [ma^{5}] ‘mother’ is written *ma¹* or *ma1*. If you are familiar with the 1–5 tone numbers presented here, you could be confused by seeing Wade-Giles *ma¹*, since that looks like a low tone rather than a high tone.

Diacritics can also be problematic for similar reasons, since [má] ‘mother’ is written *mā* in a different romanization of Chinese called pinyin. This is not the IPA diacritic [ˊ] for a high tone, so again, if you know the IPA system but not pinyin, you could be confused into thinking this word does not have a high tone. Furthermore, recall from Section 3.11 that the diacritics [ˊ] and [ˋ] are

also sometimes used to represent primary and secondary stress rather than tone, which creates a completely different kind of confusion!

Tone letters are generally more reliably unambiguous in how they represent tone, since they are not normally used with any other meaning, but they do not have widespread font support, so like we saw with the signed language notation systems, it can be difficult to get access to the relevant characters, and we cannot be guaranteed that the symbols will be readable by someone else on a different computer.

Thus, different linguists use different systems for notating tone, and it is important to understand all three notation systems presented here, since you may encounter any of them in the linguistics literature.

2.11.3: Tone as a phonemic property

In many tone languages, each syllable can in principle have its own independent tone, as in the various tone patterns seen in the Bemba words in Table 3.3.

Table 3.3. Tone patterns in longer Bemba words.

tone pattern	example with IPA tone diacritics	example with IPA tone letters	example with non-IPA tone numbers	gloss
LH	[kùːlá]	[kuː˩la˥]	[kuː¹la⁵]	‘build’
HH	[βúːlá]	[βuː˥la˥]	[βuː⁵la⁵]	‘take’
HL	[péːlà]	[peː˥la˩]	[peː⁵la¹]	‘give’
LHL	[ùkúwà]	[u˩ku˥wa˩]	[u1ku⁵wa¹]	‘fall’
LLH	[ìnùmá]	[i˩nu˩ma˥]	[i¹nu¹ma⁵]	‘back’
HLH	[íŋòmá]	[i˥ŋo˩ma˥]	[i⁵ŋo¹ma⁵]	‘drum’
HHL	[íːn͡tʃítò]	[iː˥n͡tʃi˥to˩]	[iː⁵n͡tʃi⁵to¹]	‘work’

Here, we see that the first syllable of a word could have either a high tone, as in [βúːlá] ‘take’, or a low tone, as in [ùkúwà] ‘fall’. Then, regardless of what tone the first syllable has, the second syllable could also have a high tone, as in [βúːlá] ‘take’ and [ùkúwà] ‘fall’, or a low tone, as in [péːlà] ‘give’ and [ìnùmá] ‘back’, and so on. While not all tone languages behave this way, in general, they often allow for a wide range of possible tone combinations across syllables.

2.11.4: More tones

One of the ways that tones can be more complex is that they are often not simply binary, with just a high versus low distinction. Many tone languages have an intermediate **mid tone (M)** between high and low, such as Igala, a Yoruboid language of the Niger-Congo family, spoken in Nigeria, which has minimal triplets like those in Table 3.4, which all have a low tone on the first syllable but then one of three different tones on the second (Welmers 1973). Mid tones are represented with an IPA diacritic, the **macron accent [ˉ]**, with the IPA tone letter [˧], or with an intermediate superscript number (usually [³]).

Table 3.4. Tone patterns in Igala.

tone pattern	example with IPA tone diacritics	example with IPA tone letters	example with non-IPA tone numbers	gloss
LH	[àwó]	[a˩wo˥]	[a¹wo⁵]	‘slap’
LM	[àwō]	[a˩wo˧]	[a¹wo³]	‘comb’
LL	[àwò]	[a˩wo˩]	[a¹wo¹]	‘star’

Other intermediate tones are also possible, especially when describing more fine-grained details in how a given language’s tone system works.

2.11.5: Contour tones

So far, we have only looked at **level tones** (high, mid, low), which are relatively stable from beginning to end. However, many tone languages also have **contour tones**, which change in pitch during the course of the syllable. For example, Awa (a Kainantu-Goroka language of the Trans-New Guinea family, spoken in Papua New Guinea) has two level tones (H and L) plus two contour tones, a **falling tone (F)** that starts high and ends low, and a **rising tone (R)** that starts low and ends high (Loving 1966), as shown in the data in Table 3.5.

Falling tones are represented with an IPA diacritic, the **caret accent [ˆ]**, with a sequence of a high IPA tone letter followed by a low tone letter (usually [˥˩]), or with a sequence of superscript numbers that starts high and goes low (usually [^{51}]). Similarly, rising tones are represented with an IPA diacritic, the **hačeк accent [ˇ]**, with a sequence of a low IPA tone letter followed by a high tone letter (usually [˩˥]), or with a sequence of superscript numbers that starts low and goes high (usually [^{15}]). More complicated tones are possible, including using more intermediate tones and more than two component tones in a contour, but they are beyond the scope of this textbook.

Table 3.5. Tone patterns in Awa.

tone pattern	example with IPA tone diacritics	example with IPA tone letters	example with non-IPA tone numbers	gloss
H	[ná]	[na˥]	[na^{5}]	‘breast’
L	[nà]	[na˩]	[na^{1}]	‘house’
F	[nâ]	[na˥˩]	[na^{51}]	‘taro’
R	[pă]	[pa˩˥]	[pa^{15}]	‘fish’

Tone letters for contour tones are sometimes displayed as a single combined character rather than a sequence of separate tone letters, as shown in Figure 3.40. However, this requires a font with the combined characters properly encoded, and this is not always available.

[˥˩] = [꜒] (falling)
[˩˥] = [꜓] (rising)

Figure 3.40. Contour tones as sequences of separate tone letters (on the left of the equals sign) and as combined characters (on the right of the equals sign).

2.11.6: Intonation

Finally, we can also see changes in pitch over entire sentences as intonation, with the purpose of conveying information about the function of the sentences rather than information of which word is being used. For example, the English sentence *this is vegetarian chili* has many different possible intonation patterns, as in the examples in sentences 1–8, depending on whether it is a declarative statement (1–4) or a question (5–8), and whether there is emphasis on a particular word (indicated with italicized capitals in 1–8). Each of these sentences is appropriate in different contexts; a sample context is provided in parentheses for each sentence.

1. (What are you eating?) This is vegetarian chili.
2. *THIS* is vegetarian chili (and *THAT* is shrimp étouffée).
3. This is *VEGETARIAN* chili (not *BEEF* chili).
4. This is vegetarian *CHILI* (not vegetarian *STEW*).
5. This is vegetarian chili? (I didn’t hear exactly what you said.)
6. *THIS* is vegetarian chili? (It tastes like shrimp étouffée!)
7. This is *VEGETARIAN* chili? (I’m sure I tasted meat in it!)
8. This is vegetarian *CHILI*? (It seems more like a stew.)

Intonation is very complex, as it depends on the syntactic structure of what is being said, as well as the function of the sentence in the larger conversation. It can also interact with word-level stress or tone in various interesting ways. Intonation lies at the intersection of many different aspects of language, and a proper analysis requires a solid understanding of phonetics, phonology, syntax, semantics, and pragmatics.

2.11.7: Check your understanding

2.11.8: References

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CHAPTER OVERVIEW

3: Sounds, Part 2- Phonology

Learning Objectives

When you've completed this chapter, you'll be able to:

- Analyze linguistic data to determine the distributions of phones in a spoken language and phonological processes in signed languages,
- Categorize phones into phonemes based on their distributions, and
- Write phonological rules that show how to map phonemes and underlying representations to allophones and surface representations.

The phonetic properties of language are not entirely random. There are many repeated patterns and categories that give more abstract structure to the physical reality of the linguistic signal, both within a particular language and across languages. This chapter explores this abstract structure by looking at patterns in how the physical units of language can be combined, how they affect each other in patterned ways when they are combined, and the methods linguists can use to discover these patterns.

3.1: Phonemes and allophones
3.2: Phonotactics and natural classes
3.3: Contrastive distribution and minimal pairs
3.4: Complementary distribution
3.5: Phonemic analysis
3.6: Another example of phonemic analysis
3.7: Phonological rules
3.8: Phonological derivations
3.9: Types of phonological rules
3.10: Signed language phonology (optional)

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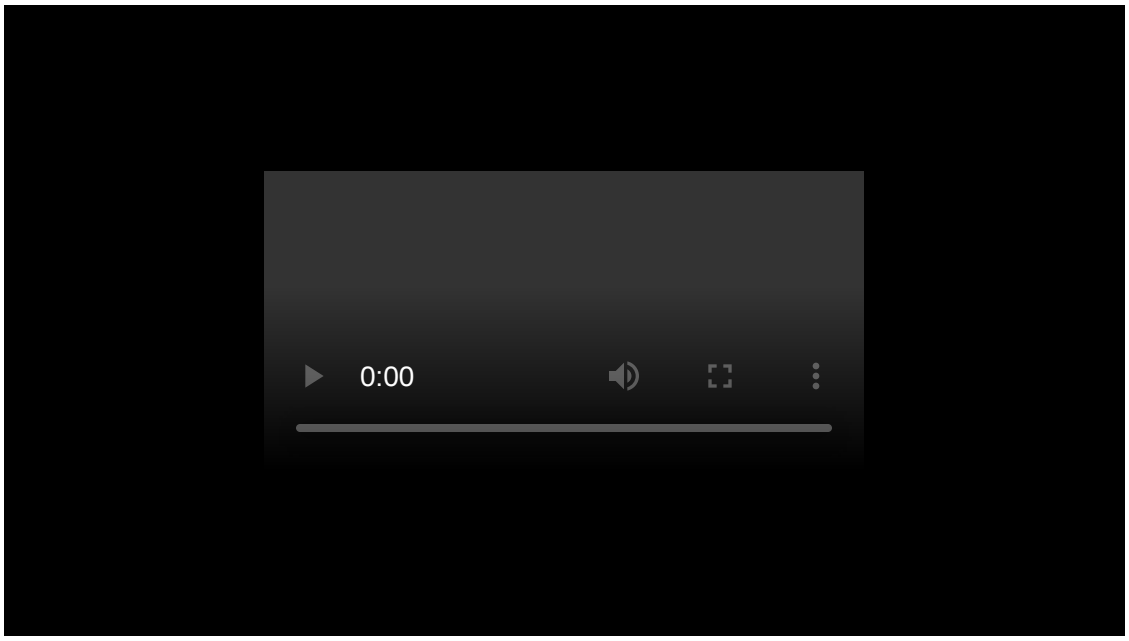
3.1: Phonemes and allophones

3.1.1: The essence of phonology

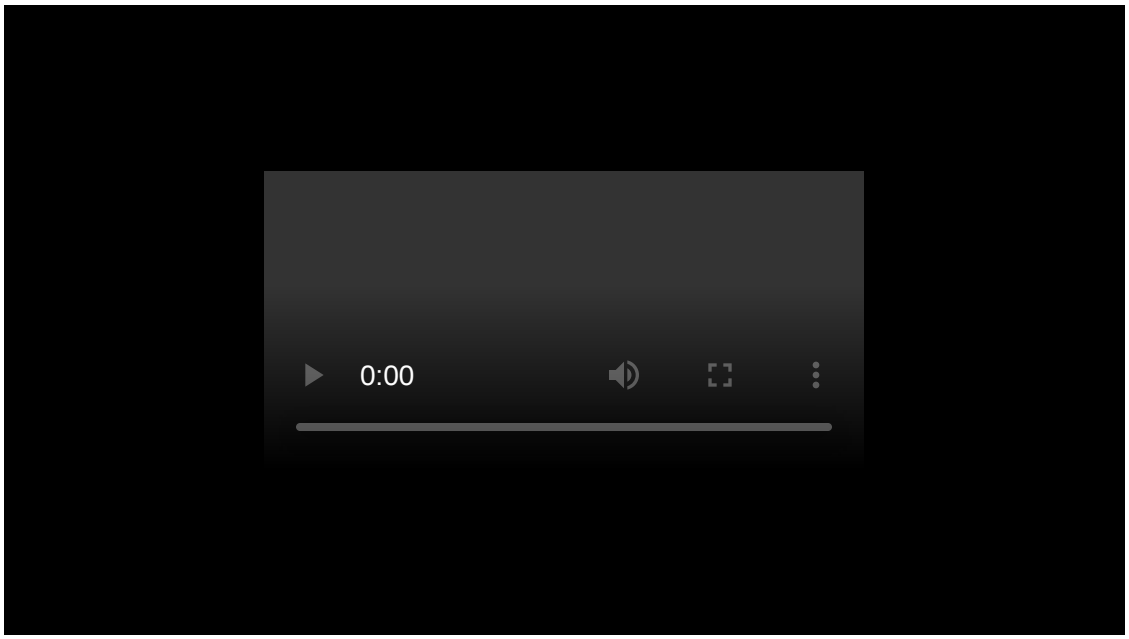
As discussed in Chapter 3, a linguistic signal is composed of smaller physical units: phones, handshapes, movements, etc. These are not combined in purely random ways. For example, the three phones [m], [i], and [k] can be combined to form the English word [mik] *meek*, but the other five possible combinations are not words of English. Four of these are normally unpronounceable by English speakers: [imk], [ikm], [mki], and [kmi]. However, the fifth, [kim], could easily be integrated into English as a new word. It is just an accident of the history of English that we do not yet have this as an actual word.

Additionally, when some of these physical units are pronounced near each other, they may affect each other's articulation. For example, in American Sign Language (ASL), the two signs FOOD and BED can be compounded to form the sign HOME, but not as a strict sequence of FOOD followed by BED. Instead, the two signs are merged into a single sign that contains properties of both of its components.

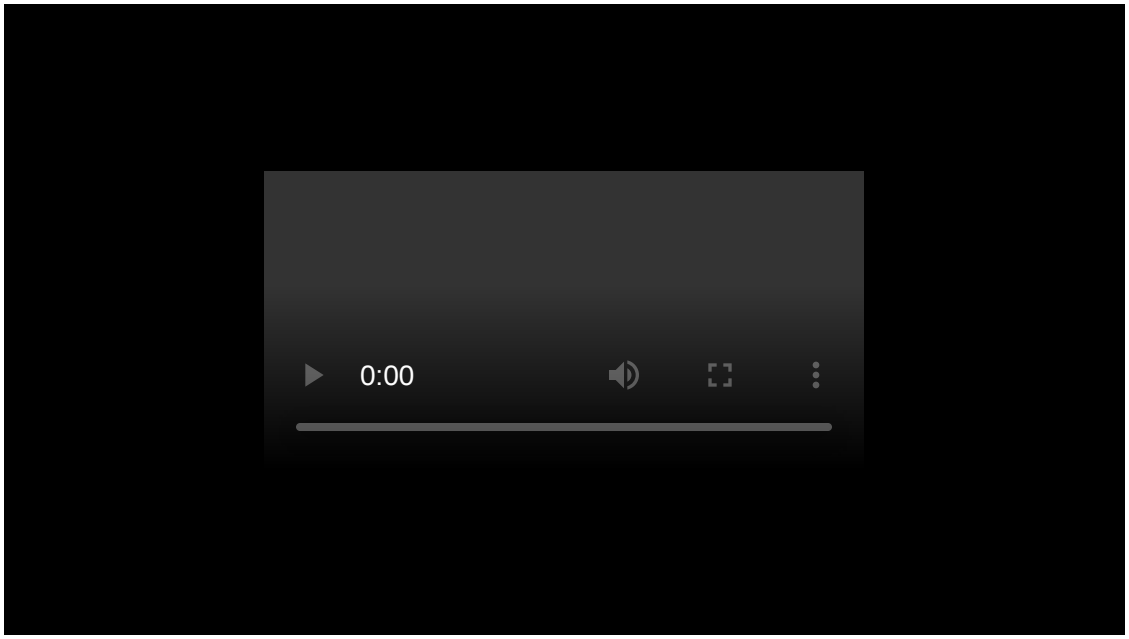
The following video clip shows the ASL sign for FOOD, with repeated tapping at the mouth with a flat-O handshape.



The following video clip shows the ASL sign for BED, with a single articulation of the open-B handshape on the side of the face, with a nonmanual head tilt.



The following video clip shows two variants of the ASL sign for HOME (note how the signer numbers each variant before signing it, by pointing to an extended finger on his nondominant hand).



Both variants of HOME blend different parameters of FOOD and BED. For example, both variants use only the flat-O handshape from FOOD, eliminating the open-B handshape from BED. However, both variants use the location at the side of the face from BED, either as a second location after movement (in the first variant) or as the only location with the mouth location of FOOD being lost (in the second variant). Additionally, the repetition from HOME is reduced, resulting in only two total touches in both variants, fewer than what is used in HOME. Finally, the nonmanual head tilt for BED is not used in HOME.

There are underlying patterns in all languages that determine which combinations of physical units are valid or invalid, as well as what kinds of articulatory changes occur when these physical units are combined. The study of these patterns is called **phonology**.

3.1.2: The phonological units of spoken language

In spoken language, one important pattern is how certain phones are pronounced differently, yet are treated as the same conceptual object by speakers. For example, consider the English words atom and atomic. In most varieties of North American English, the

consonant phone in the middle of *atom* is pronounced as an alveolar flap; recall from Section 3.4 that the alveolar flap is symbolized in the IPA by [ɾ]. But in the word *atomic*, the corresponding phone is a voiceless alveolar plosive followed by a notable puff of air, symbolized in the IPA as [tʰ], where the superscript [ʰ] represents the puff of air (called **aspiration**). However, these two words are clearly related: *atomic* is built from the word *atom*, both in pronunciation and in meaning (see Chapter 5 for more on the topic of word-building). Because of this, it is convenient to think of these two phones as being the same object on some abstract conceptual level, despite being physically different.

This object is called a **phoneme**, and its various physical realities as phones are called its **allophones**. We can think of a phoneme as a set of allophones, with each one connected to certain specific positions. So in this case, we might say that the set {[ɾ], [tʰ]} is a phoneme, with [ɾ] and [tʰ] each being allophones of that phoneme, used in different situations, called **environments**.

The most common types of environments require one or more specific phonetic properties immediately to the left, one or more specific phonetic properties immediately to the right, or a combination of both. As with most aspects of linguistics, the environments for allophones can be more complex than what is presented in the simpler cases discussed in this textbook.

By convention, phonemes are often notated with just a single symbol in **slashes / /**, because the number of allophones can get quite large, and it would be too cumbersome to continue listing out all of the allophones as a set. The choice of symbol depends on certain assumptions, but for now, we can represent this phoneme with /t/.

Both of these allophones of /t/ occur between two vowels or syllabic consonants, but the flap [ɾ] is followed by an unstressed vowel or syllabic consonant, while the aspirated [tʰ] is followed by a stressed vowel or syllabic consonant (recall from Section 3.11 that stressed syllables are typically louder, longer, and/or higher pitched than unstressed syllables). So we might conjecture that stress is at least partially responsible for determining which allophone to use for /t/.

We can test that conjecture by looking at other words where this phoneme occurs (fortunately, it is often spelled with the letter <t> in English) and seeing which allophone is used. In [ˈmɛɾ̩] *metal* and [məˈtʰælək] *metallic*, we see the same pattern as in *atom* and *atomic*, so our conjecture holds. There are other pairs of related words that show the same pattern: [ˈbæɾ̩] *battle* and [bəˈtʰæljṇ] *battalion*, [ˈkrɪɾək] *critic* and [kraɪˈtʰiriə] *criteria*, etc.

If we look beyond related words, we see the same pattern. English words with /t/ between two vowels or syllabic consonants tend to have the flap [ɾ] if the second is unstressed but aspirated [tʰ] if the second is stressed. That is, words like *data*, *writer*, and *Ottawa* have [ɾ], while words like *attack*, *return*, and *Saskatoon* have [tʰ].

3.1.3: The aim of phonology

We as linguists do not have immediate access to phonemes. They are abstractions, not concrete reality that can be directly measured in the linguistic signal. We have to look at patterns in where we find various phones and figure out whether or not they belong together as allophones of the same phoneme. This is an important part of phonology: determining what the phonemes of a language are, what each phoneme's allophones are, and which allophones are used in which environments.

Phonologists are not just concerned with the phonology of just one particular language. We also want to uncover any general universal phonological principles that might underlie all of human language. However, this is difficult. Most importantly, modality matters a great deal in phonology, because the kinds of basic units and patterns are just fundamentally different between different modalities. The parts of the vocal tract used for spoken languages behave differently than the manual and nonmanual articulators used for signed languages.

Thus, whatever universal phonological principles there may be, they must be quite abstract and independent of specific modalities. Yet, we do find some common principles specific to each modality, so it is useful to consider spoken language phonology separately from signed language phonology, as is done in this textbook.

Finally, note that different linguists may come to different conclusions about the phonology of a language, because phonemes and other phonological units are abstract theoretical constructs, which means they are sensitive to the starting assumptions we make and the theoretical framework we are using. The examples given to you here have straightforward analyses with very few assumptions, but these are not the only possible analyses, especially in more advanced theories of phonology.

3.1.4: Check your understanding

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3.2: Phonotactics and natural classes

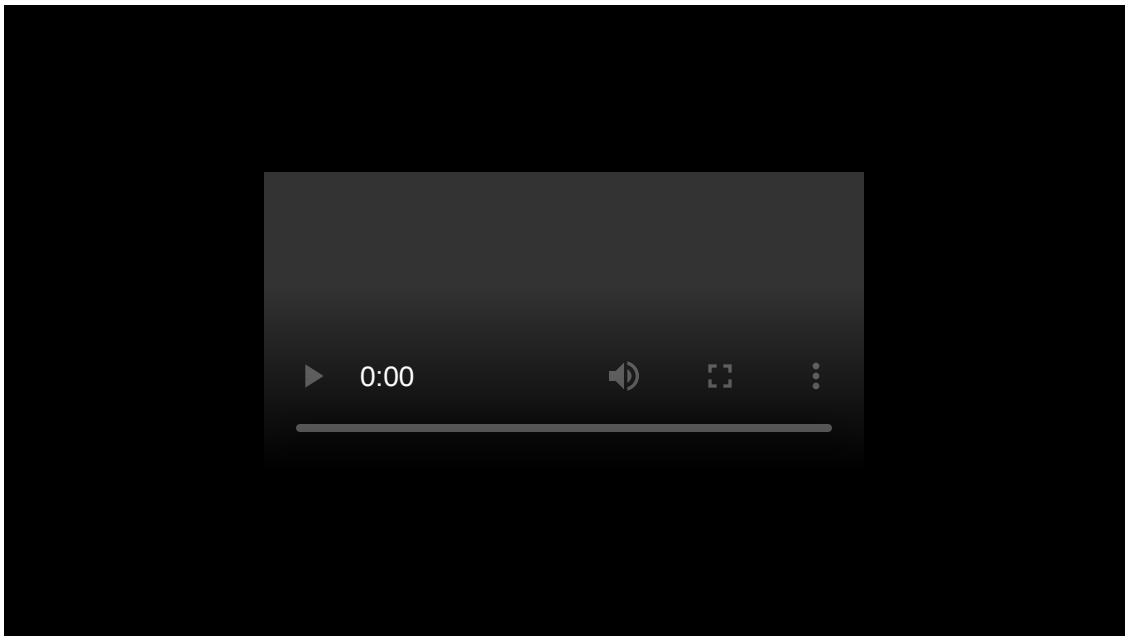
3.2.1: Phonotactics

While physical units may change their pronunciation in some environments, it is also possible that certain physical units cannot be used in some environments at all. Each language has its own set of **phonotactics**, which are language-specific restrictions on what combinations of physical units are allowed in which environments. For example, English has phonotactic restrictions that ban [tl] and [dl] in onsets, but this is not a universal restriction. Plenty of languages allow onsets with [tl] and [dl], such as Ngizim, which has words like [tlà] ‘cow’ (Schuh 1977), and Hebrew, which has words like [dli] ‘bucket’ (Klein 2020).

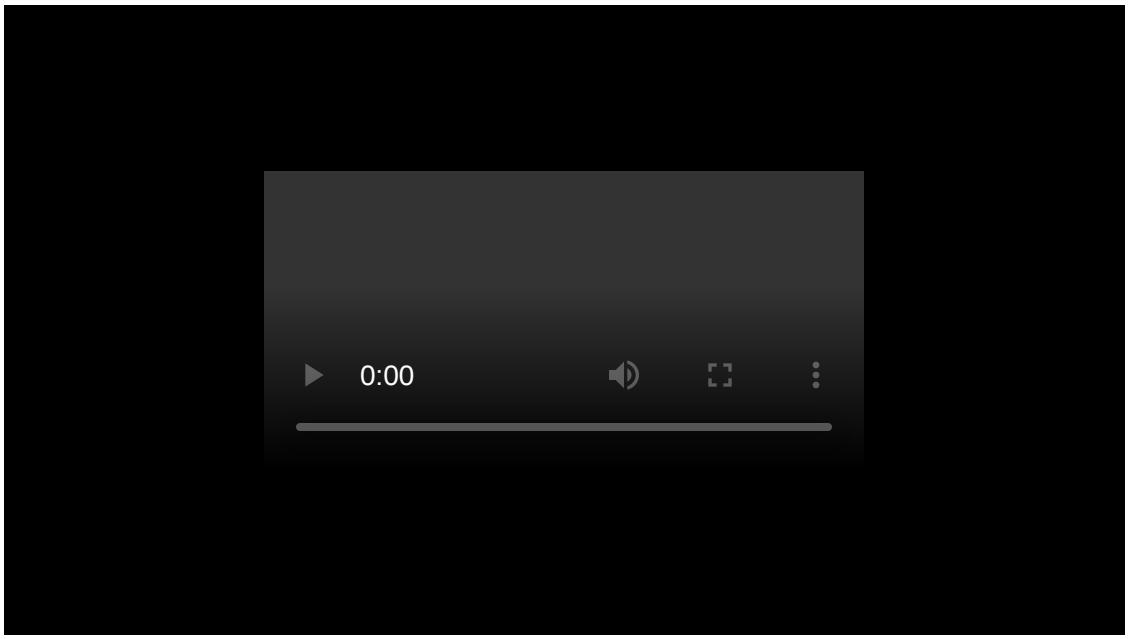
Some phonotactic restrictions may be somewhat looser than others. English generally does not have onsets containing [pw] or [vl], yet English speakers generally have no trouble pronouncing loanwords like *pueblo* [pwɛblo] and proper names like *Vladimir* [vlædəmir].

In ASL, there is a general phonotactic restriction called the **Symmetry Condition** that affects signs that have movement in both hands. The Symmetry Condition requires such signs to have the same handshape and to move in the same way (Battison 1978; see Napoli and Wu 2003 for extensive discussion and elaboration of the Symmetry Condition). That is, the two moving hands cannot generally do completely different things, which is something you may have noticed for yourself in the popular childhood challenge of trying to rub your stomach while patting your head.

The Symmetry Condition is evident in the ASL sign SENTENCE in the following video clip, in which both hands have the same F handshape and are moving in the same way, with slight radioulnar wiggling and an overall path out to the sides away from the centre of the body.



Exceptions to the Symmetry Condition are rare, but possible, such as the sign OPPRESS in the following video clip, in which both hands are moving, but with different handshapes (a 5 handshape on the dominant hand and an S handshape on the non-dominant hand) and different orientations (dominant palm facing out, non-dominant palm facing to the signer’s right).



3.2.2: Distribution and natural classes

The overall pattern of environments where a given physical unit can occur is called its **distribution**, and one of the most fundamental skills in phonology is being able to determine what the distributions are for the physical units of a language.

This may seem like a daunting task, but we can use our understanding of phonology and typology to help narrow down the options. In spoken languages, phones share various phonetic properties that are often relevant to distributions. For example, the restriction on [tl] and [dl] in English onsets is not random; [t] and [d] are both alveolar plosives. They form what we call a **natural class**, which is a set of phones that share some phonetic properties (in this case, place and manner of articulation) and also share some phonological behaviour (in this case, being governed by the same phonotactic restriction).

Using natural classes, we can more easily describe some of the other patterns in English phonotactics. English allows up to three consonants in an onset, but when there are three, the first must always be [s], the second must be one of [p], [t], or [k], and the third must be one of [r], [l], [j], or [w]. Again, these are not random: [p], [t], and [k] are the natural class of voiceless plosives, while [r], [l], [j], and [w] are the natural class of approximants. It would be unusual if instead of this pattern, English consonant clusters could contain [s], followed by one of some set that is not a natural class (such as [f], [n], [k]), followed by one of some other set that is also not a natural class (such as [r], [t], [h], [m]).

Note that the members of a natural class are language-specific, not universal. So while [p], [t], [k] form a natural class in English, they do form not a natural class in Kalaallisut (a.k.a. Greenlandic, an Inuit language of the Inuit-Yupik-Unangan family, spoken in Greenland). Kalaallisut has [p], [t], and [k], but it also has a voiceless uvular plosive [q], as in words like [iseʁaq] ‘goose’ (Schultz-Lorentzen 1945). Thus, the natural class of voiceless plosives in Kalaallisut would be [p] [t], [k], and [q], because natural classes are exhaustive, including every relevant phone in the language

3.2.3: Check your understanding

3.2.4: References

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3.3: Contrastive distribution and minimal pairs

3.3.1: Comparing distributions with minimal pairs

In addition to the individual distribution of a single phone, we are also often interested in the relative distribution of two phones. If they have overlapping distributions, such that there are at least some environments where they both can occur, the two phones are said to **contrast** with each other, and thus, they have **contrastive distribution**.

This relates to the concept of **minimal pair** from Section 3.8. Recall that for signed languages, a minimal pair is two signs that have the same articulation except for one parameter. These two signs can be said to contrast with each for that parameter. We can adapt this concept to words in spoken languages.

For example, in English, the phones [p] and [k] occur in many of the same environments, creating pairs such as [pɪl] *pill* and [kɪl] *kill*, [lɪp] *lip* and [lɪk] *lick*, and [spɪl] *spill* and [skɪl] *skill*. Each of these pairs is a minimal pair that have all the same phones in the same order, except for one position. So [pɪl] *pill* and [kɪl] *kill* both have the form [_ɪl], with [p] in one word and [k] in the other.

The existence of just one such minimal pair is all it takes to prove that two phones have contrastive distribution, so minimal pairs play an important role in figuring out the distribution of phones in a language and how they may be grouped into the same or different phonemes.

However, in many cases, it may be difficult or even impossible to find minimal pairs. In English, the phone [ʒ] is the rarest consonant and has a limited distribution, occurring in words like [ruʒ] *rouge*, [gərɑʒ] *garage*, [vɪʒn̩] *vision*, and [mɛʒr̩] *measure*. It is almost never word-initial in English, except in some proper names (perhaps most famously, Hungarian-American actress Zsa Zsa Gabor) and in the neologism [ʒʊʒ] *zhoozh* ‘improve the appearance of someone or something with a small change’. This makes it difficult to find minimal pairs where [ʒ] is a crucial phone, especially when comparing it to another relatively rare phone like [ʃ], though there are a few examples of minimal pairs for [ʒ] and [ʃ] involving unusual or rare words, such as [əluʒn̩] *allusion* versus [əluʃn̩] *Aleutian* and [mɛʒr̩] *measure* versus [mɛʃr̩] *mesher*.

3.3.2: Near-minimal pairs and nonce words

But if no minimal pairs can be found, we usually have to rely on **near-minimal pairs** instead. A near-minimal pair looks almost like a minimal pair, except there are one or more additional differences elsewhere in the word besides the crucial position. For example, the English pair [plɛʒr̩] *pleasure* and [prɛʃr̩] *pressure* form a near-minimal pair for [ʒ] and [ʃ]. In the position of interest, we have [ʒ] versus [ʃ], which seem to be contrastive because nearly all of the rest of the phones are the same in both words, except for [l] versus [r], which prevents these words from being a true minimal pair.

While a single minimal pair is very powerful, a single near-minimal pair is not. We may have simply stumbled upon a weird example where the apparent meaningless difference is actually relevant to the distribution of the phones we are interested in. We cannot immediately determine whether or not a given near-minimal pair is useful, so it is important to find multiple examples. As we collect more near-minimal pairs, we can be more confident that the small differences are incidental rather than crucial to the distribution of the phones in question.

This is where speaker competence can also be useful, by asking them to evaluate **nonce words**, which are words that we make up for one-time use, such as for linguistic experimentation. We can construct nonce words that fill in minimal pair gaps, and if speakers agree that the nonce word is a valid hypothetical word of the language, then we can be more sure that the phones in question do in fact contrast with each other.

For example, rather than looking for more near-minimal pairs for [ʒ] and [ʃ], we could instead take an existing word with [ʒ] in it, like [beʒ] *beige*, then create a nonce word that is the same, except replacing [ʒ] with [ʃ], giving us a pair like [beʒ]-[beʃ]. Then we could ask English speakers whether the nonce word [beʃ] could be used as a completely different word with a different meaning from [beʒ]. Most speakers would agree, so we would be reasonably sure that [ʒ] and [ʃ] do indeed contrast with each other, despite not having a true minimal pair of actual existing English words.

Depending on the structure of the language and what resources we have access to, we may use one or more of these three tools (minimal pairs, near-minimal pairs, nonce words) to determine whether two phones contrast with each other. We would also need to do this work for every pair of phones in the language, but in some cases, we may get lucky, and there may be minimal triplets, minimal quadruplets, or even larger minimal n-tuplets.

For many speakers, English *beet*, *bit*, *bait*, *bet*, *bat*, *but*, *bot*, *bought*, *boat*, and *boot* form a minimal 10-tuplet (a decuplet!), showing simultaneously that the ten vowels [i], [ɪ], [e], [ɛ], [æ], [ʌ], [ɒ], [ɔ], [o], and [u] all contrast with each other. This cuts down on the work needed to demonstrate patterns of contrast in the language. But in many languages, even minimal pairs can be hard to find, so finding near-minimal pairs and testing nonce words may be the only options.

3.3.3: Check your understanding

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3.4: Complementary distribution

3.4.1: Phones without contrastive distribution

Two phones may instead have **complementary distribution**, with environments that never overlap. This means there is one set of environments for one phone and a completely different set of environments for the other.

For example, the phones [h] and [ŋ] are in complementary distribution in English for many speakers. For these speakers, [h] can only appear at the beginning of a word, as in [həˈræs] *harass*, or at the beginning of a stressed syllable, as in [ˌkɒmprəˈhɛnd] *comprehend* and [ˈt͡ʃaɪldˌhʊd] *childhood*. We can even see [h] appear and disappear in related words that have different stress patterns: there is an [h] in the stressed syllable of [vəˈhɪkjulɻ] *vehicular*, but there is no [h] in the corresponding unstressed syllable in [ˈviəkl̩] *vehicle*.

Conversely, for the same speakers, [ŋ] can never appear in those positions. It can only appear exactly where [h] cannot, such as in a coda, as in [lɒŋ] *long* and [fɪŋ.gɻ] *finger*, or at the beginning of an unstressed syllable, as in [ˈsɪ.ŋɻ] *singer*.

Further, if we try to replace [h] or [ŋ] with each other in any word, the resulting nonce words would be judged ungrammatical: *[ŋəræs], *[kɒmprəŋɛnd], *[lɒh], *[fɪhgɻ], etc. Thus, we can never find or create minimal pairs for [h] and [ŋ], so they appear not to contrast with each other.

And yet, [h] and [ŋ] still seem to function as fundamentally different consonants in English, because they seem to belong to different phonemes, despite being in complementary distribution. No one would confuse one for the other, and in a broad transcription, we would notate them with different symbols. Thus, while contrastive distribution is enough to determine that two phones are allophones of separate phonemes, it is not a requirement.

Now consider the vowels in most North American pronunciations of English [bid] *bead* and [bit] *beat*. In broad transcription, we would normally use the same symbol [i] for both vowels, but in a more narrow transcription, we might want to indicate that the vowel of *bead* is longer, with [biːd] versus [bit]. Long [iː] and short [i] are different phones in English, with [iː] consistently being about 1.2–1.5 times as long as [i], and if we swap them, pronouncing *bead* as [bid] and *beat* as [biːt], it sounds very odd.

Like [h] and [ŋ], [iː] and [i] are in complementary distribution. Long [iː] must be followed by a coda with only voiced consonants, as in [biːd] *bead*, [fliːz] *fleas*, and [biːrd] *beard*. Compare these to words where one or more of the following consonants in the following coda is voiceless, where we instead find short [i]: [bit] *beat*, [flis] *fleece*, and [pirs] *pierce*.

So we have two pairs of phones, [h] and [ŋ] versus [iː] and [i]. In each pair, the two phones have complementary distribution, but the pairs behave differently. Despite the complementary distribution, we conceive of [h] and [ŋ] as somehow completely different consonants, needing to be represented differently even in broad transcription, just like any pair of contrasting phones: [p] and [b], [i] and [ɪ], etc. However, [iː] and [i] just seem to be variants of the same fundamental vowel phoneme.

That is, we want to treat [h] as belonging to a phoneme distinct from [ŋ], while treating [iː] and [i] as two allophones of the same phoneme. So, the phoneme corresponding to [h] would be notated as /h/, the phoneme corresponding to [ŋ] would be notated as /ŋ/, and the single phoneme corresponding to both [iː] and [i] would be notated as /i/.

3.4.2: Phonetic similarity of allophones

Why should we treat these two pairs differently? We often make the decision based on **phonetic similarity**, which is how much the relevant phones have in common in terms of their articulation. The phones [h] and [ŋ] are both consonants, but that is where their phonetic similarity ends: they differ in phonation, place of articulation, and manner of articulation, which are the main properties that define a consonant. This lack of phonetic similarity is a good reason to think that [h] and [ŋ] belong to different phonemes, despite being in complementary distribution.

In comparison, [iː] and [i] have a lot of phonetic similarity: they have the same vowel quality in all four respects (height, backness, rounding, and tenseness), and they differ only in vowel length. Complementary distribution and phonetic similarity together are strong evidence that [iː] and [i] are allophones of the same phoneme.

Of course, we have to be careful when looking at phonetic similarity. The two allophones [ɾ] and [tʰ] of the phoneme /t/ discussed in Section 4.1 are both alveolar consonants, but they are other wise very different in phonation and manner of articulation.

A key result of phonology is that if two phones are in contrastive distribution, then they are allophones of different phonemes. But as we see here, if two phones are in complementary distribution, they could be allophones of different phonemes, as with [h] and

[ŋ], or the same phoneme, as with [iː] and [i]. Knowing how to decide which is which is another fundamental skill in phonology.

3.4.3: Check your understanding

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3.5: Phonemic analysis

3.5.1: Phonemecization

Phonemic analysis is the process of analyzing a spoken language to figure out what its phonemes are, what the allophones are of those phonemes, and what each allophone's distribution is. The resulting overall analysis is called a **phonemicization** of the language.

Note that a given phonemicization represents only one of many possible analyses. Languages do not generally have one single unique phonemicization, because there are many possible ways of dividing up the phones of a language into phonemes.

In addition, since phonemes are theoretical, abstract concepts, we have no direct way to see if our analysis is correct. Indeed, some linguists reject the notion of phonemes completely, since it is possible to analyze the phonology of a language without them. However, there is experimental evidence that speakers do make use of something phoneme-like, and until we are able to open up the human brain and find exactly how language is represented, phonemes are a reasonable analysis (see Chapter 13 for more information).

3.5.2: Simplicity

Even though we cannot know whether a given phonemicization, or any phonemicization at all, is correct, we can still compare different analyses and see which one is a better fit for the data and our assumptions.

In particular, if we have two competing phonemicizations that both account for all of the available data, we will generally prefer the simpler analysis (if there is one). This is the **principle of simplicity**. However, there is no single objective measure of simplicity, and it is sometimes possible to come up with two competing analyses that are seemingly equal in simplicity. In such cases, we might rely on other factors, but ultimately, we would normally be left in an ambiguous state.

Fortunately, the data sets you typically see in an introductory linguistics course have been carefully selected to have one obvious optimal phonemicization. But out in the real world, when we are working with raw linguistic data, there are often no obvious optimal analyses, so we may be less confident in whatever analyses we do come up with.

3.5.3: An example of phonemic analysis: Georgian laterals

To demonstrate phonemic analysis, consider the following data from Georgian, a Karto-Zan language of the Kartvelian family, spoken in Georgia (data adapted from Kenstowicz and Kisseberth 1979).

[vxle͡tʃh]	'I split'	[saxɬʃi]	'at home'
[t͡ʃe͡tʃxli]	'fire'	[kaɬa]	'tin'
[zarali]	'loss'	[pepeɬa]	'butterfly'
[t͡ʃoli]	'wife'	[kbiɬs]	'tooth'
[xeli]	'hand'	[ɬxena]	'joy'
[kleba]	'reduce'	[erthxeɬ]	'once'
[leɬo]	'goal'	[xoɬo]	'however'
[ɬamazad]	'prettily'		

3.5.3.1: Step 1: Identify and organize the phones of interest

If we don't have a particular set of phones in mind or want to phonemicize the entire language, we can start by searching for minimal pairs, or begin analyzing some small, simple natural class, such as the voiceless plosives or the front vowels. In introductory phonology assignments, you will normally be given the specific phones of interest.

For this demonstration, we have two specific phones of interest: an alveolar lateral approximant [l] (often called **clear** or **light** [l]) and a velarized alveolar lateral approximant [ɬ] (often called **dark** [ɬ]), which has the tongue back raised somewhat towards the velum as a secondary articulation along with the normal primary alveolar articulation. Many speakers of English have both of these two phones, with clear [l] at the beginning of a word and dark [ɬ] at the end, as in [lif] *leaf* versus [fiɬ] *feel*. For English, these two

phones can be shown to be allophones of a single lateral approximant phoneme due to their complementary distribution and phonetic similarity, so we might wonder if the same holds true for Georgian.

Once we have selected a set of phones to study, we may want to organize them by natural classes. With only two or three, no grouping is normally necessary. But if we have four or more, we may find it helpful (we need to do this in Section 4.6 for an example from French).

For the Georgian lateral approximants, we should also keep in mind what makes them different. Here, the difference is between a raised tongue back for dark [ɬ], and no tongue back raising for clear [l]. Very often, we find that the distribution of a phone depends on properties related to its articulation, so if [l] and [ɬ] have complementary distribution, we might expect tongue backness of neighbouring phones to matter. Sometimes, however, there is no apparent phonetic relationship between phones and their environment, so we cannot rely on this as a universal strategy. Thus, while we should keep an eye on tongue backness in the environment, we should be open to other factors.

3.5.3.2: Step 2: Identify the individual environments of the phones of interest

With an understanding of how the phones of interest are related to each phonetically, we can create a diagram with the phones of interest listed across the top, and then, under each phone, we list out the individual environments it occurs in, word by word.

Most of the time, we can just look at what occurs immediately to the left and right of a phone to determine its environment, though sometimes, we may need to consider other information, such as syllabic position, stress, tone, or even phones that are farther away. The vast majority of the time, however, just looking at the immediate right and left will work.

For the purposes of compactness in notation when building such lists of environments, it is common to use the **hash symbol #** (a.k.a. number sign, pound sign, octothorpe, etc.) to mark a word boundary and an **underline _** to represent the position of the phone of interest. Thus, "#_a" for [ɬ] indicates that there is some word in the data in which [ɬ] is at the beginning of the word and is followed by [a], in this case, [ɬamazad] 'prettily'. Using this method for [l] and [ɬ] in Georgian, we would get the following lists of environments.

[l]	[ɬ]
x_e	e_o
x_i	#_a
a_i	x_ʃ
o_i	a_a
e_i	e_a
k_e	i_s
#_e	#_x
	e_#
	o_o

Each entry in these lists comes from one or more words. The very first word in the data is [vxleʧ͡ʃh] 'I split', which contains [l] in the environment x_e, that is, it occurs between [x] and [e], so we enter x_e in the column under [l]. The second word in the data is [ʧ͡ʃeʧ͡ʃxli] 'fire', which contains [l] in the environment x_i, so we enter x_i in the same column.

We continue in this way, word by word, entering all of the environments where we find each of the phones of interest. Note that if a word contains multiple instances of any of the phones of interest, we enter all relevant environments in the appropriate column. We see this with the word [leɬo] 'goal', which has the environment #_e for [l] and e_o for [ɬ], so both of those get entered into their respective lists.

3.5.3.3: Step 3: Determine overlap in environments

We first want to make sure that the phones are not in obvious contrastive distribution. If both phones have some of the exact same environments, then there is a good chance they are allophones of separate phonemes. Consider instead if we have constructed similar lists for English [p] and [k]. At some point, we would likely have entries like #_ɪ and s_u for both of them, due to words

like *pit*, *kit*, *spoon*, and *school*. In that case, we would likely conclude that the phones are contrastive and should be analyzed as allophones of separate phonemes. We could then stop our analysis of those phones!

But for Georgian, we have to keep going, because there is no apparent overlap. We could still come to the conclusion that [l] and [ɬ] all allophones of separate phonemes, but we cannot base that decision on any overlap in environments in the data we have here.

3.5.3.4: Step 4: Simplify the environments

Looking at the left side of the environments for both phones, we see many of the same symbols: [x], [a], [e], [o], and #. There is not a lot of consistency on the left side, with no obvious natural classes in the left environment of one phone versus the other. However, on the right side of these phones, we see some repetition of phones and some natural classes within each phone's list, rather than between the two lists, so it looks like the right environment may be crucial for discovering complementary distribution. Thus, we can simplify our analysis by ignoring the left environment. We can rewrite the lists by leaving off the left environment and removing any repeated entries, which gives us the following much simpler list of environments.

[l]	[ɬ]
_e	_o
_i	_a
	_ʃ
	_s
	_x
	_#

Now it is much easier to see what the distributions of these two phones are: [l] occurs only before the front vowels [e] and [i], while [ɬ] occurs only before the back vowel [o], the central vowel [a], the voiceless fricatives [ʃ], [s], and [x], and the end of the word. This is classic complementary distribution, because these are exactly opposite environments: front vowels are not back or central vowels, they are not voiceless fricatives, and they are not word boundaries. Neither phone of interest seems able to appear in the environment of the other.

Note how this pattern also fits our preliminary conjecture in Step 1 that the distribution of these two phones might have something to do with tongue backness, since that is precisely the property some of these environments differ in, specifically front versus back vowels.

3.5.3.5: Step 5: Organize the phones into phonemes

Since [l] and [ɬ] seem to be in complementary distribution, we might suspect they are allophones of the same phoneme. The question is, do they behave more like English [h] and [ŋ] (which speakers would normally conceptualize as belonging to different phonemes) or like English [iː] and [i] (which speakers would conceptualize as belonging to the same phoneme)? It is not always clear what to do in a given case, but we typically want to look for phonetic similarity.

The Georgian laterals have a lot of phonetic similarity: they have the same phonation (voiced), the same place of articulation (alveolar), and the same manner of articulation (lateral approximant); they differ only in secondary articulation (velarized or not). Thus, we have both complementary distribution and a high degree of phonetic similarity, so it seems reasonable to analyze [l] and [ɬ] as allophones of the same phoneme.

3.5.3.6: Step 6: Identify the default allophone and finalize the analysis

The **default** allophone of a phoneme is the one that occurs in the widest variety of environments, what we sometimes call the **elsewhere case**. For Georgian lateral approximants, the default is clearly [ɬ], since it occurs in many distinct environments that are all dissimilar from each other. By convention, we normally use the symbol of the default allophone to represent the phoneme unless there is good reason to do otherwise, so here, we would represent the phoneme containing [l] and [ɬ] as /ɬ/, since [ɬ] is the default allophone.

Note that the phoneme /ɬ/ and the phone [ɬ] are different kinds of objects, so this notation difference is crucial. Phonemes are theoretical abstractions that might also correspond to some kind of mental representation, while allophones are phones, which

means they are concrete measurable sounds that are physically produced. The phoneme /ɬ/ corresponds to the set of allophones [l] and [ɬ], with [l] occurring before front vowels and the default [ɬ] occurring elsewhere.

Phonemes and their allophones are often depicted graphically in a tree-like diagram like the diagram for /ɬ/ in Figure 3.5.1. Here, we informally abbreviate "before front vowels" as _front V to save space in the tree.

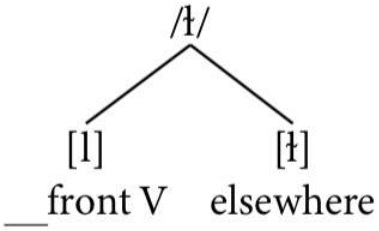


Figure 3.5.1: Phoneme diagram for/ɬ/ in Georgian.

3.5.4: Predictions

This analysis makes predictions about laterals in Georgian beyond what we see in the given data. We would expect every clear [l] in Georgian to be followed by a front vowel, and we would expect every dark [ɬ] in Georgian to be followed by something other than a front vowel. All of the data we looked at agrees with these predictions, though we could still be wrong if we find new evidence that contradicts our analysis.

For example, we predict that [ɬ] should be able to occur before any consonant, not just voiceless fricatives, because it is the default case and should be appear in the widest variety of environment, while clear [l] is restricted to only appearing before front vowels. This is a testable prediction! We can look for more Georgian words and see what kind of lateral we find before other consonants. Fitting our prediction, we find only dark [ɬ] before consonants, as in [aɬq'a] 'siege', which cannot be pronounced *[alq'a] with a light [l].

3.5.5: Check your understanding

3.5.6: References

Kenstowicz, Michael, and Charles Kisseberth. 1979. *Generative phonology: Description and theory*. New York: Academic Press.

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3.6: Another example of phonemic analysis

3.6.1: More than two phones of interest

The Georgian case is a pretty straightforward example, with only two phones of interest and fairly obvious distributions and phonetic similarity. However, we often encounter more difficult cases, maybe because there are many phones of interest or because the distributions and/or phonetic similarity may be less clear.

Consider the following data for how some speakers pronounce French (a Western Romance language of the Indo-European family, spoken in France and elsewhere in the world; data adapted from Katamba 1989). The phones of interest are the voiced sonorants [m], [l], and [ʀ] and the voiceless sonorants [m̥], [l̥], and [ʀ̥]. Note that [ʀ] represents a voiced uvular trill and the diacritic [̥] indicates that the phone is voiceless rather than voiced.

[ʀym]	‘cold/flu’	[il]	‘island’
[mɛʀ]	‘mother’	[tabl]	‘table’
[tɛʀm]	‘term’	[kasabl]	‘breakable’
[film]	‘film’	[ɛl]	‘she’
[limite]	‘limited’	[klemã]	‘merciful’
[liʀ]	‘to read’	[simetʀikmã]	‘symmetrically’
[lɛvʀ]	‘lip’	[ɛtʀ̥]	‘to be’
[plɛziʀ]	‘pleasure’	[ʃifʀ̥]	‘number/figure’
[tʀivjal]	‘trivial’	[mɛtʀ̥]	‘to put’
[ʀali]	‘race-meeting’	[mɛkɔnɛtʀ̥]	‘to fail to recognize’
[ʀymatismal]	‘rheumatic’	[pœpl̥]	‘people’
[ʀɔ̃fle]	‘to snore’	[ɔ̃kl̥]	‘uncle’
[ekʀiʀ]	‘to write’	[tãpl̥]	‘temple’
[tɔʀdʀ]	‘to wring’	[ʀitm̥]	‘rhythm’
[pɛʀs]	‘Persian’	[ʀymatism̥]	‘rheumatism’

Now we just follow the same steps we did for Georgian.

3.6.1.1: Step 1: Identify and organize the phones of interest

Here, we have a lot of data to sort through, and six phones to consider. But the phones neatly separate into either three pairs ([m]-[m̥], [l]-[l̥], and [ʀ]-[ʀ̥]) or two triplets ([m]-[l]-[ʀ] and [m̥]-[l̥]-[ʀ̥]). Since it’s usually easiest to analyze a pair, we can start with just one pair and see if we can find any patterns. We will choose [m] and [m̥] first.

3.6.1.2: Step 2: Identify the individual environments of the phones of interest

For each phone in our chosen pair, we write down the individual environments it occurs in, word by word (again, at an introductory level, we will normally only ever need to consider the immediate right and left environment). So for [ʀym] ‘cold/flu’, we would write down y_# in the column for [m], because [ʀym] has [m] between [y] and the end of the word. Then for the next word [mɛʀ] ‘mother’, we would down #_ɛ in the column for [m]. And so on, until we have the following full list of environments:

[m]	[m̥]
y_#	t_#
#_ɛ	s_#
ʀ_#	

[m]	[m̥]
l_#	
i_i	
y_a	
s_a	
e_ã	
i_e	
k_ã	

3.6.1.3: Step 3: Determine overlap in environments

To check whether the phones are in contrastive distribution, we need to see if there is any overlap in the environments on the two lists. If both phones have some of the exact same environments, then there is a good chance they are allophones of separate phonemes.

There are no exact matches, but we do see some similarities in some left and right right environments. For example, we see that both [m] and [m̥] occur after [s]. However, voiced [m] only does so when followed by the vowel [a], as in [ʀymatismal] 'rheumatic', while voiceless [m̥] only does so at the end of the word, as in [ʀymatism̥] 'rheumatism'.

Similarly, we see that both [m] and [m̥] occur at the end of the word, but with restrictions. Voiced [m] is only word-final when it is preceded by [y] or [l], as in [ʀym] 'cold/flu' and [film] 'film', while voiceless [m̥] is only word final when preceded by [t] or [s], as in [ʀitm̥] 'rhythm' and [ʀymatism̥] 'rheumatism'. It is probably no coincidence that the difference in the voicing of the two phones of interest happens to match the voicing on the phone on its left in these cases.

Since there are apparent patterns to how these two phones are distributed, rather than them being able to occur in the same environments, they appear not to be in contrastive distribution, so we would continue on to Step 4.

3.6.1.4: Step 4: Simplify the environments

This is not a lot to go on, because there is so little data for [m̥], but it seems like both the left and right sides matter for the distribution of [m̥], since it consistently has a natural class on the left (voiceless obstruents) and a word boundary on the right. There is not much of a pattern to the distribution of [m], since it has a mix of various natural classes on both sides. So as a first guess, we might say that [m̥] occurs only word-finally when immediately preceded by a voiceless obstruent, while [m] occurs instead either after voiced phones (regardless of what comes after) or before any phone at all (that is, it is not word-final). This is complementary distribution.

3.6.1.5: Step 5: Organize the phones into phonemes

Since [m̥] and [m] seem to be in complementary distribution and are phonetically similar (they are both bilabial nasal stops, differing only in phonation), it seems reasonable to analyze [m̥] and [m] as allophones of the same phoneme.

3.6.1.6: Step 6: Identify the default allophone and finalize the analysis

The default allophone appears to be [m], since it occurs in two distinctly different environments, while [m̥] only occurs in one. Thus, we would propose a single phoneme /m/ with two allophones: [m̥] occurring word-finally when immediately preceded by a voiceless obstruent (abbreviated vls obs_# here) and [m] occurring elsewhere as the default.

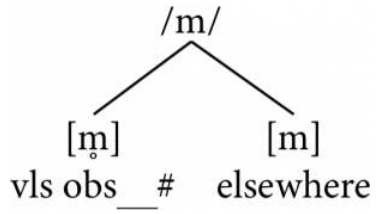


Figure 3.6.1: Phoneme diagram for /m/ in French.

3.6.2: Repeat Steps 2–6 for [l] and [l̥]

This seems like a reasonable analysis, so we can continue working through the phones of interest in pairs. The next pair to analyze is [l] and [l̥], so we cycle back and repeats Steps 2–6. This gives us the following list of environments for [l] and [l̥]:

[l]	[l̥]
i_m	p_#
#_i	k_#
#_ɛ	
p_ɛ	
a_#	
a_i	
i_#	
b_#	
ɛ_#	
k_e	
f_e	

We see the same pattern of complementary distribution as for the bilabial nasals: the voiceless lateral [l̥] occurs word-finally when immediately preceded by a voiceless obstruent, while the voiced lateral occurs everywhere else, either after any voiced phone, or before any phone (to prevent it from being word-final). We would end up with a parallel analysis to the nasals, with /l/ as the phoneme, having a voiceless allophone [l̥] in one environment (word-final while immediately after a voiceless obstruent) and a default voiced allophone [l] everywhere else:

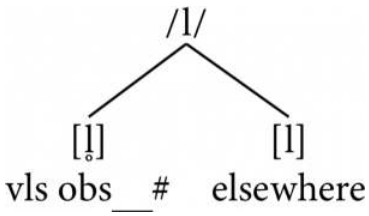


Figure 3.6.2: Phoneme diagram for /l/ in French.

3.6.3: Repeat Steps 2–6 for [ʀ] and [ʀ̥]

Then we do the same for [ʀ] and [ʀ̥], but first, note how /m/ and /l/ have the same basic pattern: one exact same kind of allophone (voiceless) in the exact same environment (word-final immediately after a voiceless consonant), and the exact same kind of default allophone (voiced). Note only that, /m/ and /l/ are part of a natural class: they are both sonorant consonants. But the remaining pair of phones we need to analyze, [ʀ] and [ʀ̥], are also sonorant consonants.

This is unlikely to be a coincidence, so we can make a prediction, even before we look at the data. We predict that [ʀ] and [ʀ̥] should pattern just like the other two pairs of sonorants, with the two phones being in complementary distribution, and with the voiceless phone occurring only word-finally immediately after a voiceless obstruent and the voiced phone occurring elsewhere (after a voiced phone or before any phone at all). In the following list of environments for [ʀ] and [ʀ̥], the predicted pattern is exactly what we find:

[ʀ]	[ʀ̥]
#_y	t_#
ɛ_#	f_#
ɛ_m	

i_#	
v_#	
t_i	
#_a	
#_ɔ̃	
k_i	
ɔ_d	
d_#	
ɛ_s	

Thus, we end up with the same basic analysis as for the previous pairs: the two phones of interest [ʀ] and [ʀ̥] are allophones of /ʀ/, with the voiceless allophone occurring word-finally immediately after a voiceless obstruent and the voiced allophone as the default, occurring everywhere else:

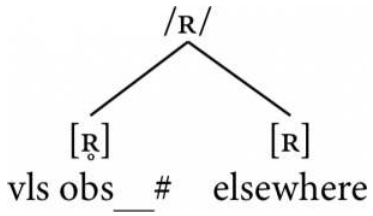


Figure 3.6.3: Phoneme diagram for /ʀ/ in French.

3.6.4: Is there more?

This analysis is nice, but it still seems like we are missing something. Why do these three phonemes have the same basic pattern for their allophones? Why do they have a voiceless allophone in this particular environment and not somewhere else? Is there a reason the environment for the voiceless allophone also mentions voicelessness? Recall how the environment for one of the Georgian laterals similarly shared a phonetic property with the allophone that occurred there. Can we somehow represent the larger pattern in the overall distribution of French sonorants generally? Right now, the distributions are still specified for each individual phoneme separately, creating a lot of redundancy in our analysis. The next stage of our phonological analysis in Section 4.7 will help answer these questions!

3.6.5: Check your understanding

3.6.6: References

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3.7: Phonological rules

3.7.1: Eliminating redundancy with faithfulness

If we write out our analysis of the French sonorants as descriptions of how to pronounce the three phonemes, we get statements like the following:

- /m/ is pronounced as [m̥] word-finally after a voiceless obstruent
- /m/ is pronounced as [m] elsewhere
- /l/ is pronounced as [l̥] word-finally after a voiceless obstruent
- /l/ is pronounced as [l] elsewhere
- /ʀ/ is pronounced as [ʀ̥] word-finally after a voiceless obstruent
- /ʀ/ is pronounced as [ʀ] elsewhere

Note the massive amount of redundancy in these statements. First, every phoneme /X/ has a statement of the same exact form: "/X/ is pronounced [X] elsewhere". This is because of how we chose to represent the phoneme, using the same symbol as the default allophone. If we consistently do this for every phonemicization, then we will always have this kind of statement for the default pronunciation for every phoneme.

Since we will always have this default statement, we don't need to list it explicitly. Instead, we can simply treat it as an inherent part of how phonology works: every phoneme is always pronounced as its matching default allophone "elsewhere". This is sometimes called the **principle of faithfulness**: if a phoneme occurs in an environment not covered by any other statement for the pronunciation of that phoneme, then it is pronounced the same (its pronunciation is "faithful" to its phoneme). Thus, we can remove every instance of this default statement, relying instead on the principle of faithfulness to universally give us the default allophones for every phoneme in every spoken language. This leaves us with the following three statements for French:

- /m/ is pronounced as [m̥] word-finally after a voiceless obstruent
- /l/ is pronounced as [l̥] word-finally after a voiceless obstruent
- /ʀ/ is pronounced as [ʀ̥] word-finally after a voiceless obstruent

3.7.2: Eliminating redundancy with natural classes

There is still some remaining redundancy. All three of these statements have the same form: "/X/ is pronounced [X̥] word-finally after a voiceless obstruent". This is another pattern, and part of phonology (and linguistics in general) is finding patterns and reducing them down to simpler descriptions and explanations.

Note that /m/, /l/, and /ʀ/ are all sonorants. This has the beginnings of a natural class, but natural classes need to be exhaustive, and there are other sonorants in French. For example, we see [n] and [j] in the data, and these are presumably allophones of /n/ and /j/, which would need to be included in any natural class of sonorant phonemes. This leaves us with two options: either there are three independent statements about some sonorants as above, one for each of /m/, /l/, and /ʀ/, that coincidentally all have the exact same basic form, or there is a single statement we can construct that covers all sonorants, including /n/ and /j/.

Each option makes a different prediction about the pronunciation of French. If /m/, /l/, and /ʀ/ behave completely independent of /n/ and /j/, then we predict that /n/ and /j/ would not have voiceless allophones if they are word-final after a voiceless obstruent. If instead there is a single pattern that applies to all sonorants, we predict that /n/ and /j/ should have voiceless allophones in exactly the same environments that /m/, /l/, and /ʀ/ do.

Nothing in the given data can help us decide between these two options, because there are no words with /n/ or /j/ in the relevant environment in data. In fact, French phonotactics prevent that from ever happening anyway, so can unfortunately never test our predictions!

3.7.3: Eliminating redundancy with simplicity

Since we have two competing analyses that both account for the given data, and no other data can be found to contradict either analysis, we can follow the principle of simplicity and pick the analysis with the fewest statements. This allows us to simplify our three statements down to just one, something like the following:

- a sonorant is pronounced as voiceless word-finally after a voiceless obstruent

Note that this says nothing about what happens to the place and manner of articulation of the sonorants, just their phonation. We should assume that statements like these only affect exactly what they say; everything else must remain faithful (unchanged). We do not want /m/ turning into any random voiceless phone! We specifically want it to be pronounced as [m̥], so only its phonation differs.

3.7.4: Writing phonological rules

→ (3.7.1)

This gives us the following shorthand rule:

- sonorant → voiceless / voiceless obstruent _ #

There are more advanced ways we can simplify phonological rules, but for the purposes of this textbook, this form will be sufficient. We now have the following basic template for a phonological rule, containing three key components: the target (indicated here by *A*), the change (*B*), and the environment (*C* _ *D*).

→ (3.7.2)

The **target** of a phonological rule is the natural class of phonemes that are changed into their appropriate allophones. The **change** caused by a phonological rule is the list of all phonetic properties that describe how the allophones consistently differ from the target phonemes. Finally, the **environment** is the same as what we used for talking about the distribution of allophones. As we have seen, most environments typically only reference something on the immediate left and/or immediate right, though more complicated environments are possible.

3.7.5: Generative phonology and levels of representation

In some versions of phonology, phonemes, allophones, and phonological rules are not just convenient descriptions of patterns, but crucial objects in the theory, sometimes proposed to represent some aspect of cognitive reality. One of the most common such versions of phonology is **generative phonology**, initially developed in the 1950s and 1960s (Chomsky 1951, Chomsky et al. 1956, Halle 1959, Chomsky and Halle 1968), building upon ideas developed in the first half of the 20th century (Saussure 1916, Bloomfield 1939, Swadesh and Voegelin 1939, Trubetzkoy 1939, Jakobson 1942, Harris 1946/1951, Wells 1949) and ultimately reflecting ideas from the work of Dakṣiputra Pāṇini, a grammarian in ancient India (ca. 500 BC) who developed concepts and methods for the analysis of Sanskrit that can still be seen in modern linguistics.

In generative phonology, words have at least two distinct phonological forms. One is an approximation of the pronunciation (narrow or broad, as needed), which we have been representing in square brackets with phones. This representation is called the **surface representation (SR)** or **phonetic representation**. Because it is made up of phones, the SR is a relatively concrete representation, something directly observable and measurable. Here, all of the data we have been looking at are given SRs.

The second representation is made up of phonemes and is called the **underlying representation (UR)** or **phonemic representation**. Because the UR is made up of phonemes, it is an abstract object in our theoretical analyses of a language. As with phonemes, there is debate about whether URs also correspond to any sort of cognitive reality, but whether or not they do, they are useful tools for describing the phonology of a language. Here, we would have to rewrite all of our data using phonemes instead of allophones.

Thus, for every word in Georgian, we would replace every clear [l] with its phoneme /ɬ/. So the URs for [t͡ʃoli] ‘wife’ and [xeli] ‘hand’ would be /t͡ʃoɬi/ and /xeɬi/.

Similarly, to get the URs for the French data, we would replace all of the voiceless sonorants with their corresponding phonemes: the UR of [ɛtʁ̥] ‘to be’ would be /ɛtʁ/, the UR of [pœpl̥] ‘people’ would be /pœpl/, and the UR [ʁitm̥] ‘rhythm’ would be /ʁitm/. Note URs are enclosed with slashes, because they are made up of phonemes.

In generative phonology, the relationship between URs and SRs is not just a static link. Instead, URs are treated as inputs to a process that “generates” the SRs as output, by actively changing the phonemes into their appropriate allophones. This model is designed to mimic how language presumably works: we begin with some mental representation of a word in our mind, and then sometime later, we articulate that word. This overall process is called a **phonological derivation**, and the individual components of this process that change the phonemes are our phonological rules. This model is represented graphically in the following diagram.

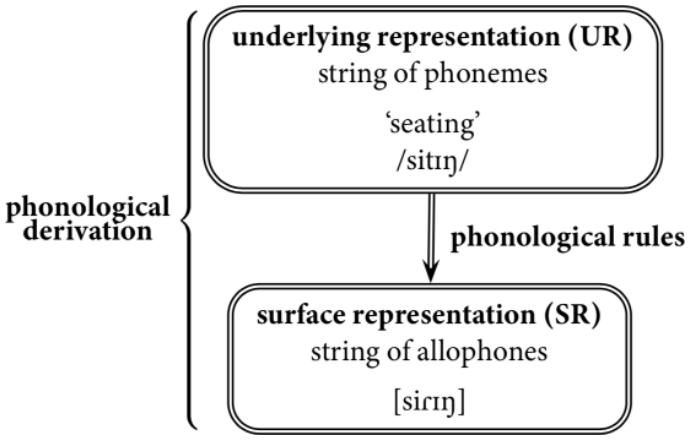


Figure 3.7.1: Model of generative phonology.

3.7.6: Check your understanding

3.7.7: References

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3.8: Phonological derivations

3.8.1: Choose examples showing rule application

Once we have finished the phonemic analysis of a language and determined what phonological rules we need, we can demonstrate how the analysis works by showing sample derivations of a few critical words. When doing this, it is important to demonstrate a few things. First, we should give examples showing how the rule correctly applies when the target is in the environment, and we should do so for a representative set of phonemes in the target natural class.

For French, this means we should demonstrate the rule applying to at least three words, one with /m/, one with /l/, and one with /ʀ/. We could pick [ʀitm̥] ‘rhythm’, [ɔ̃kl̥] ‘uncle’, and [ɛtʀ̥] ‘to be’. If we are dealing with a particularly large target natural class (for example, all obstruents or all vowels), we usually only need to show a few examples, with enough diversity that they can be taken to be representative of the full natural class. Do not pick /t/, /s/, and /ʃ/ to represent all obstruents! Use something like /p/, /z/, and /ɡ/ instead.

3.8.2: Choose examples showing lack of rule application

We should also show a few examples of how the rule will not apply when the target phonemes are in the wrong environment. So we might want to show an example with a word-final sonorant preceded by something voiced, such as [tabl] ‘table’, as well as an example with a sonorant after a voiceless obstruent but not at the end of the word, such as [ekʀiʀ] ‘to write’.

Finally, we often might want to also show examples with phonemes that are similar to the target natural class and which are in the right environment but are not affected by the rule. The only similar phonemes that we can find in the right environment are vowels, so we could pick an example like [limite] ‘limited’, which has a vowel in the correct environment of the rule, but which does not change, because vowels are not sonorant consonants.

3.8.3: Determine URs

Then for each of the example words we are going to use in our demonstration, we need to determine their URs. Because of the principle of faithfulness, we know that the UR and SR should look the same, except specifically only in those places where a rule applies. In this case, the only rule we have creates voiceless sonorants, so to build the URs for our sample words, we should replace all the voiceless sonorants in the SRs with the underlying voiced phonemes they are derived from. This gives us the following set of example URs:

/ʀitm/	‘rhythm’
/ɔ̃kl/	‘uncle’
/ɛtʀ/	‘to be’
/tabl/	‘table’
/ekʀiʀ/	‘to write’
/limite/	‘limited’

3.8.4: Demonstrate the derivation

Finally, we can construct a **derivation table** which visually demonstrates the the phonological derivation of one or more words. Derivations are commonly formatted as follows, with the URs and glosses of the example words listed horizontally across the top, all of the relevant phonological rules listed vertically down the left, and the SRs listed horizontally across the bottom. In each column, the output of each phonological rule is given, showing how the word changes. We can use a **dash —** to indicate that the rule does not apply to a particular word. It is also useful to give rules a meaningful name as a reminder of what the rule is. Here, we will call the rule for French sonorants “devoicing”.

gloss UR	‘rhythm’ /ʀitm/	‘uncle’ /ɔ̃kl/	‘to be’ /ɛtʀ/	‘table’ /tabl/	‘to write’ /ekʀiʀ/	‘limited’ /limite/
devoicing	ʀitm̥	ɔ̃kl̥	ɛtʀ̥	—	—	—

SR	[ʀitɱ]	[ɔ̃kl̥]	[ɛtʀ̥]	[tabl]	[ekʀiʀ]	[limite]

3.8.5: Check your understanding

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3.9: Types of phonological rules

3.9.1: Phonation assimilation

There are many types of rules that languages may have. Perhaps the most common general type of phonological rule we find is **assimilation**, when a phoneme changes to an allophone that matches some aspect of its environment. That is, one or more of the properties in the rule's change are also present somewhere in the rule's environment. We see this with French devoicing, where the sonorants become voiceless in an environment that also involves voicelessness.

Phonation assimilation can also cause voicing rather than devoicing, as in Wemba Wemba (an extinct Kulinic language of the Pama–Nyungan family, formerly spoken in Australia), in which voiceless plosives are voiced after nasal stops, as in the following data (adapted from Hercus 1986).

/panpar/ → [panbar] 'shovel'

/jantaŋ/ → [jandaŋ] 'I'

/taɳʈa/ → [taɳɖa] 'touch'

We can write the relevant rule as follows:

- plosive → voiced / voiced nasal stop _

In both the French and Wemba Wemba assimilation rules, the crucial part of the environment containing the assimilating property is on the left, but phonation assimilation can also depend on the right side of the environment, as in Polish (a West Slavic language of the Indo-European family, spoken in Poland). In Polish, voiced obstruents become voiceless if followed by a voiceless obstruent (data adapted from Stanisławski 1978 and Rubach 1996).

/dxu/ → [txu] 'of breath'

/rɪbka/ → [rɪpka] 'little fish'

/vçi/ → [fçi] 'of village'

/vɪkaz pism/ → [vɪkas pism] 'list of journals'

The relevant phonological rule can be written as follows:

- obstruent → voiceless / _ voiceless obstruent

3.9.2: Place assimilation

Phonation is not the only phonetic property that can assimilate. In Persian (a Southwestern Iranian language of the Indo-European family, spoken in Iran and surrounding areas), we see assimilation of place, with alveolar stops becoming postalveolar before a postalveolar (data adapted from Bijankhan 2018).

/ʔætʃɒn/ → [ʔæʧʃɒn] 'parched'

/χædʃe/ → [χæʤʃe] 'flaw'

/ʔenʃɒ/ → [ʔeɲʃɒ] 'essay'

The relevant phonological rule can be written as follows:

- alveolar stop → postalveolar / _ postalveolar

3.9.3: Nasality assimilation

Nasality is also another common property that assimilates, as in Ka'apor (a.k.a. Urubú-Kaapor, a Wayampí language of the Tupian family, spoken in Brazil). In Ka'apor, vowels are nasalized after a nasal stop (data adapted from Kakumasu 1986).

/uruma/ → [urumã] 'duck'

/tamui/ → [tamũi] 'old man'

/mɨra/ → [mɨ̃ra] 'wood'

/nino/ → [nĩnõ] 'lie down'

/niʃoi/ → [nĩʃoi] ‘none’

/ne/ → [nẽ] ‘you (sing.)’

The relevant phonological rule can be written as follows:

- V → nasal / nasal stop _

3.9.4: Other kinds of rules

Most any phonetic property can assimilate, and there are also many rules that do not involve assimilation at all.

[more examples coming soon!

3.9.5: Using common rules types

Knowing what kinds of phonological rules we are likely to find helps narrow down our options when trying to determine what phones are allophones of the same or different phonemes. For example, for the French sonorants, we see that there are natural pairs of voiced and voiceless sonorants, so it would be reasonable to see if the distribution of these match what we know about rules that affect voicing, such as assimilation.

By taking advantage of our knowledge of common types of rules, this allows us to avoid focusing on likely irrelevant factors. For example, for French, we would know not to worry too much about vowel rounding or place of articulation, since these are not normally triggers for changing phonation. We can also begin looking for patterns based on common rules without even knowing which phones of interest we should examine: maybe there is a pattern in vowel nasality based on the presence or absence of an adjacent nasal stop (indicating assimilation of nasality). Of course, the language we are analyzing won’t have all of these rules, but it might have one, so we can get a head start on analyzing its phonology.

This means that phonemic analysis and rule discovery go hand in hand. Sometimes, we may use known phonological rules to help uncover distributional patterns in phones, and other times, we may find the distributional patterns first, leading us to posit a phonological rule. Working on a language from both directions can be much more productive than trying to do phonemic analysis directly. This is a method that permeates all of linguistics, not just phonology. Every language we analyze tells us something about how language itself works, and that broader knowledge of how language works helps us to analyze the next language.

3.9.6: Check your understanding

Coming soon!

3.9.7: References

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3.9.8: Aspirated Stops in English, in Anderson's *Essentials of Linguistics*



3.9.8.1: Video Script

We know now that we can use the IPA to transcribe speech sounds, and that our transcription can be either broad or narrow. When we make a **narrow transcription**, we're including as much detail as possible about how speakers produce sounds, which often means including diacritics. To give an accurate narrow transcription of Canadian English, we would have to include a property that is part of nearly every variety of English – **aspiration** on voiceless stops.

To illustrate what aspiration is, I'm going to ask you to say a silly sentence: *The spy wanted to buy a blueberry pie*.

Now say it again, and hold your hand in front of your mouth. *The spy wanted to buy a blueberry pie*.

Did you feel any differences between the words *spy*, *buy* and *pie*? For native speakers of English, the word *pie* is produced with a little puff of air as the [p] is released. That puff of air is called **aspiration**. English speakers systematically produce aspiration on voiceless stops at the beginning of a stressed syllable, but not on voiced stops. To understand why we have to think about voicing and about the manner of articulation.

Remember that voiced sounds are produced by vibrating the vocal folds, whereas voiceless sounds have the vocal folds held open so air can pass freely between them. Remember also that producing a stop involves closing off the vocal tract completely for a moment, then releasing the obstruction and allowing air to flow freely again.

Think about the voiced stop at the beginning of the word *buy*. The lips are closed – that's the stop closure – and the vocal folds start vibrating for the voiced [b]. Then the lips open and the stop is released, and the vocal folds keep vibrating for the diphthong [aɪ].

But in the word *pie*, things work differently. The lips are closed for the bilabial stop. But because [p] is a voiceless stop, the vocal folds are not vibrating. We open the lips to release the stop, but 30 or 40 milliseconds pass before we start vibrating the vocal folds. That 30-40 milliseconds between when the stop closure is released and the voicing begins is called the **voice onset time** or **VOT**. In English, voiceless stops in certain positions have a VOT of 30-40 milliseconds, so we say that they're aspirated. But voiced stops have a much shorter VOT, of about 0-10 milliseconds. In other words, the vocal folds start vibrating at almost exactly the same time as the stop closure is released, so voiced stops in English are unaspirated. The diacritic to indicate aspiration on a stop is a little superscript h, like so: [p^h, t^h, k^h].

But to make matters even more complicated, it's not all voiceless stops that get aspirated in English – only voiceless stops at the beginning of a **stressed syllable**. In words like *appear* and *attack*, the voiceless stop isn't the first sound in the word, but it comes at the beginning of a stressed syllable so it gets aspirated. [əp^hiɹ] [ət^hæk]

But in the words *apple* and *nickel*, the voiceless stop comes after a stressed syllable and before an unstressed syllable, so it doesn't get aspirated. [æpəl] [nɪkəl]

We don't aspirate voiceless stops at the ends of words, like in *brick*. [bɹɪk]

And we don't aspirate voiceless stops following an [s], even if they're at the beginning of a stressed syllable:

Aspiration of voiceless stops is something that native speakers do so regularly and so automatically that it's very hard for us to perceive it because it's just always there. To convince you, I'm going to record someone saying this sentence and show you the waveforms. This program is known as a waveform editor. And here's Kendrick's voice saying that sentence.

> *The spy wanted to buy a blueberry pie.*

Here's the waveform: this is a visual representation of the sound waves that Kendrick just produced. See that I can select certain parts of the sentence and play them back. *spy, buy, pie*

Look first at *buy* – you can see that there's very a brief silence: that's where Kendrick's lips were closed for the bilabial stop. Then when he releases his lips the waveform gets nice and big for the sonorous vowel [aɪ].

Look over here at *pie*. You see the same silence where the lips are closed, and the same big waveform for the vowel [aɪ] but before the vowel, there's this noisy burst of turbulence – that's the aspiration.

And now look at *spy*. We see the turbulence at the beginning for the fricative [s], followed by the silence while the lips are closed and the nice sonorous vowel. But there's no burst of noise following the release of the lips because the [p] in *spy* was not aspirated. In fact, if I select just the *-py* portion of *spy*, what does it sound like? To a native speaker of English, this part sounds like *buy*, because the [p] is unaspirated.

When you're transcribing words with the voiceless stops [p t k], your challenge will be to figure out if the stops are aspirated or unaspirated, so you can indicate the aspiration in your narrow transcription. In most varieties of English, aspiration happens in these predictable environments.

- Voiceless stops are aspirated at the beginning of a word, and at the beginning of a stressed syllable.
- Voiceless stops are unaspirated at the beginning of an unstressed syllable. They're also unaspirated in any other position, like at the end of a syllable or the end of a word.
- And even if a syllable is stressed, a voiceless stop is unaspirated if it follows [s].
- In English, voiced stops are never aspirated. They're always unaspirated.

One thing that I want you to remember is that this pattern of aspiration is particular to the grammar of English, but stops behave differently in other languages. In French and Spanish, for example, voiceless stops are almost always unaspirated. And some languages, like Thai, actually have a three-way distinction between voiced, unaspirated voiceless, and aspirated voiceless stops.

3.9.8.2: Check Yourself

? Exercise 3.9.1

The following city names all contain the letter 't' within the word. In which of them is the letter 't' pronounced as [t^h]?

- Victoria.
- Ottawa.
- Edmonton.

Answer

"Victoria"

Hint: [t^h] has to occur at the beginning of a stressed syllable.

? Exercise 3.9.2

The following words all contain the segment /k/. In which of them is it pronounced as the allophone [k^h]?

- Actually.
- Accomplish.
- Attic.

Answer

"Accomplish"

Hint: [k^h] has to occur at the beginning of a stressed syllable.

Exercise 3.9.3

The following words all contain the segment /p/. In which of them is it pronounced as the allophone [p^h]?

- Appearance.
- Zipper.
- Application.

Answer

"Appearance"

Hint: [p^h] has to occur at the beginning of a stressed syllable.

3.9.9: Other Articulatory Processes, in Anderson's *Essentials of Linguistics*



3.9.9.1: Video Script

In our last unit, we talked about **assimilation**, when speech segments become more similar to nearby sounds because of coarticulation. There are other **articulatory processes** that shape the words that we say. Some of these processes occur simply as a result of speaking quickly and naturally. Some of them make speech more clear for a listener. Some of them happen over time within a dialect, as speakers start unconsciously changing the way they produce sounds.

While we were learning to do IPA transcription we talked about **vowel reduction**. It's a very common process in rapid, natural speech. In English, the vowel in an unstressed syllable often gets reduced to the mid-central vowel schwa [ə]. This happens in lots of words. For example, we don't usually pronounce this word *electric* as [ilɛktɹɪk]. Instead, because the first syllable is unstressed, the vowel gets reduced, and we say [əlɛktɹɪk]. Likewise, this word *today* doesn't get pronounced as [tudeɪ]. The vowel in the first, unstressed syllable gets reduced and we say [tədeɪ].

In fact, sometimes an unstressed vowel gets reduced so much that it disappears altogether! This process is called, obviously, **deletion**. In some varieties of English, reduced vowels are systematically deleted in certain predictable environments, like in *police* or *garage*. Deletion can also occur within consonant clusters. It's pretty common for speakers to delete the first [ɹ] in *surprise* or the [d] in *Wednesday*. Deletion also happens when we borrow words from other languages. For example, take the Greek word *pteron*, which means "wing". When we borrow this word and incorporate it into *helicopter*, we pronounce both the [p] and the [t]. But when it comes at the beginning of a borrowed word, like *pterodactyl*, we just delete the [p] altogether, since English doesn't allow two stops in a syllable onset.

Sometimes when we're speaking, extra segments find their way into our words, as a result of coarticulation. Can you guess what word I'm saying? [pʰɹɪnts] Was it *prince* or *prints*? Only one of them is spelled with a "t", but we pronounce them both the same way. In *prince*, an alveolar stop appears between the alveolar nasal and the alveolar fricative. The articulatory process that inserts an extra sound is called **epenthesis**. In English, this tends to happen between nasals and stops or between nasals and fricatives. Another example is in the word *something*, where we often epenthesize a little bilabial stop [p] between the bilabial nasal [m] and the voiceless fricative [θ]. Or when George W. Bush famously pronounced the word *nuclear* as [nukjəlɚ], he was epenthesizing a [j] between the [k] and [l].

Some articulatory processes result from speech errors. Some of these errors are characteristic of children's speech, and some of them just occur in everyday rapid speech. Children's speech often includes the process of **metathesis**, exchanging the position of speech segments. When my niece was little, she used to pronounce the word *hospital* as [hɑstɪbəl], exchanging the positions of the two stops. Metathesis can also happen when we borrow words from another language. When English speakers want to buy a burrito from the restaurant chain called *Chipotle*, we often metathesize the [t] and [l] and say, [tʃəpolti], because the "tl" sequence is rare in English.

Many of these articulatory processes are frequent and systematic in natural speech. In the next chapter, we'll see that they play an important role in our mental grammar.

3.9.9.2: Check Yourself

? Exercise 3.9.4

What articulatory process is at work when the word *idea* is pronounced as [aɪdijɚ]?

- Reduction.
- Deletion.
- Metathesis.
- Epenthesis.

Answer

"Epenthesis."

Hint: There is an extra sound produced or added to the sequence.

? Exercise 3.9.5

What articulatory process is at work when the word *gorilla* is pronounced as [gɹɪlʌ]?

- Reduction.
- Deletion.
- Metathesis.
- Epenthesis.

Answer

"Deletion."

Hint: There is a vowel that was deleted.

? Exercise 3.9.6

What articulatory process is at work when the word *you* is pronounced as [jə]?

- Reduction.
- Deletion.
- Metathesis.
- Epenthesis.

Answer

"Reduction."

Hint: The diphthong was reduced to a single vowel sound.

3.9.10: Other Phonological Rules, from Sarah Harmon



3.9.10.1: Video Script

Now that we've talked about assimilation and dissimilation, let's talk about other types of phonological rules. To be clear, they're actually quite a few, but we're only going to focus on a certain number of them.

To start off, we're going to do a kind of easy one, in the sense that these are both types of assimilation rules. For example, **neutralization**. Those of you who are experienced English speakers, you do not actually say 'rider' and 'rider'; you do not pronounce that clearly the end in the middle of those lexicon. Rather, you say both of them exactly the same [ɹajɾəɹ]. And notice that you do the same with 'later' and 'ladder'; you frequently just say [læɾəɹ]. What happened to that [t] and that [d]? Well, they neutralized, and specifically in English it happens in the middle of the word when there's two vowels on either side of that stop. They're neutralizing to something very similar but lower in the sound hierarchy. Think about it: the highest position on that sound hierarchy, was a voiceless stop. A voiced stop was pretty high up as well, and are exactly the same sound; it's just a matter of whether your vocal cords are moving or not. They have to neutralize to something that's very similar, just lower on the sound hierarchy. A tap is always going to be lower; it's not quite as an as occlusive, it doesn't stop the air quite as much. It's also in the same place of articulation; it's also an alveolar sound, just like [t] and [d]. They neutralize that position. This is possibly one of the most common assimilation rules.

The other most common assimilation rule is something called **palatalization** and it's exactly what you think it is. The sound is moving to the palatal region of the mouth. Experienced English speakers, ‘I bet you' is not how we usually say that is it; we usually say 'I betcha'. So what's going on? That [t] in 'bet' is getting pulled from the alveolar region to the palatal region because of the [j] that's coming next to it. That's a palatal glide or palatal approximate. So, because of that we're going to pull that sound. Why does it happen? Well, there's a lot of theories, although none are really proven. Suffice it to say, think about the natural resting place of your tongue when you're not talking, you're not eating, you're not doing anything with your tongue. Where is your tongue? It's in the middle of your mouth, near your palate. That could be the reason that palatalization is the most used assimilation rule there is.

Let's talk about a few others.

While **feature subtraction** is fairly rare, **feature addition** is not; it happens quite often. When we talked about aspiration in English, how [p^h, t^h, k^h] are aspirated and there's an extra puff of air when you are putting them at the beginning of a stress syllable. That (feature addition) is something fairly common to do, to add an aspiration, add nasalization, add some kind of feature.

What is also really common, though, is not just adding a feature but adding a segment (**segment addition**), an extra sound or two. I'm going to go back to Spanish because most all of you have some experience with a native Spanish speaker; maybe you yourself are native Spanish speaker. You know that in Spanish, for anything having to do with writing the verb root is 'scribir'. 'Inscribir', to inscribe; 'transcribir', to transcribe; 'suscribir', to subscribe. Notice we use them in English as well it's a cognate. But the verb meaning to write is not 'scribir'; it is 'escribir'. In Spanish, you have to stick an [e] in front of a certain combination; that combination specifically is an [s] and a consonant. You cannot start a word with an [s] sound and a consonant; it just can't happen in Spanish, so the rule is you **epenthesize**, you add in that in. By the way, French used to have this rule, too, but then the [s] dropped. Notice the verb in French for writing is also 'écrire', it's also a cognate, but then 'to write' is not 'escrire'; it's a 'écrire'. It's just that the S deleted along the way.

Speaking of French, we cannot talk about French without talking about **apocope**. Apocope is another word for segment subtraction, so getting rid of something. If you have studied French or you are a native speaker French, you know that you drop consonants at the end of a word regularly. In fact, it's one of the jokes of learning French is to look at the how the word is spelled and then not pronounce half the consonants. There's some truth to that joke and it's because of apocope. 'Petite' is the term for small, like petite in English. This is the word for 'rose', you probably guessed that this is the word for a 'sheep'. But how you pronounce the word for small is going to change, depending on whether the word that comes afterwards starts with a consonant or not. If it does, you delete that so you do not say [pɛtit ʀoz], you say [pɛti ʀoz]. You just don't, say that second [t]. Notice that with 'agneau' you do: [pɛtit aɲø]. Apocope is an interesting phenomenon, and if epenthesis is common, apocope is almost as common.

Finally, let's look at **metastasis**. Sometimes is called **permutation**; metastasis is the more common term. It's when you reorder sounds. [lehit] in Hebrew is the reflexive pronoun it means 'self'. If you want to say 'to arrange yourself' or 'to use yourself' or 'to apologize to yourself', instead of [lehit] always being the form, it's going to change if the verb it goes with starts with a sibilant, an [s] like sound. Instead of [lehit sader] you switch the [s] and the [t]: [lehis tader]. Instead of [lehit ʃsameʃ] you switch the [s] and the [t]: [lehiʃ tameʃ]. Instead of saying [lehit tsadek], you're going to switch the [t] and the affricate [ts]: [lehts tadek]. Pretty cool right? Lest you think that this doesn't exist in languages like English…it does. For example, the verb 'to ask' well that's Standard American English or Mainstream American English. If you go to African American English, as well as Appalachian English and a number of other dialects, it is [æks]. You might think that [æsk] is the original, but it's not. In Old English, the verb was [aksjan], so clearly in certain dialects of English, including Queen's English and Standard British English some time ago, there was a metastasis between that [k] sound and the [s] sound so that it is [æsk] versus [æks]. However, many dialects continue with the older pronunciation.

Finally, let's talk about **sequential constraints**. sequential constraints are when a specific language has rules as to what combinations are allowed, and what are not allowed. For example, English cannot start a stressed syllable with a consonant that is not plosive, not aspirated and not voiceless; that refers to the aspiration rule we talked about earlier. You cannot say, for example, [to^{w}me^{j}to^w], without pronouncing that aspiration. It doesn't make sense, and it sounds weird. Likewise, we talked about the epenthesis rule in Spanish, that you cannot start a word with an [s] and a consonant; it has to have an [e] in front of it. For those who have studied German, you know that it cannot have a word end with a voiced consonant; it's always going to devoice, no matter how it's spelled. There are always **accidental gaps**, meaning possible words that follow the sequential constraints of phonemes for that language but that just don't exist. They haven't been used yet in the lexicon. That doesn't mean they won't get used in the future, and in many cases, this is where marketing gurus have fun. They use those accidental gaps to think of different names for different types of products.

But what this all points to is the fact that we have some kind of **universal grammar**. That grammar is not just how we put words together or how we put phrases together, it also includes how we put sounds together and that this template, this early set of rules

gets massaged and added to as we learn our individual native language or native languages.

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3.10: Signed language phonology (optional)

There is no video for this chapter. Below is a recording of the information presented below. It was created using Eleven Labs, using the Matilda voice. Note that any comprehension sections (or 'Check Your Understanding' questions) are not included in the recording.

3.10.1: Modality differences in phonological rules

Finally, we might wonder whether signed languages have phonological rules, since they have fundamentally different modalities. In some sense, signed languages do have phonological rules, but not quite in the same way that spoken languages do. Phonological rules in spoken languages are typically fully **productive**, which means they apply to every word that satisfies the target and environment. So French devoicing of sonorants applies to absolutely every single sonorant that is in the correct environment; there are no exceptions.

But signed languages do not seem to have these kinds of productive phonological rules. There are many theories why this might be the case. Perhaps it is because signed languages do not have levels of analysis equivalent to phonemes or phones. There are parameters (handshape, movement, etc.) and syllable-like structures, but maybe there is nothing in between. A combination of phonetic properties in signed languages yields a syllable or even an entire sign, while in a spoken language, a combination of phonetic properties just yields a phone. This may mean that there simply is not the right kind of phonological unit to be targeted by phonological rules in signed languages the way we have seen for spoken languages.

It should not be a surprise that something so intimately connected to modality might differ between spoken and signed languages, and this is a good reminder that we cannot simply import spoken language linguistic analysis into signed languages. They need to be analyzed in their own right.

3.10.2: Weak hand freeze

Regardless, there are phonological processes in signed languages that are somewhat rule-like, they just only affect individual signs rather than all signs that match the requirements for the rule. Two-handed signs in particular are often subject to phonological processes because they involve so much articulatory complexity and effort. If both hands are moving, the nondominant hand may undergo **weak hand freeze**, which causes it not to move. We can see this in the ASL sign SENTENCE, which has two two-handed forms, one in which the nondominant hand moves and one in which the nondominant hand has been frozen.

SENTENCE (two-handed movement) https://www.signingsavvy.com/media2/mp4-ld/8/8611.mp4

SENTENCE (with weak hand freeze) https://www.signingsavvy.com/media2/mp4-ld/8/8612.mp4

3.10.3: Weak hand drop

Another phonological process that can affect two-handed signs is **weak hand drop**, in which an immobile nondominant hand is simply not used at all. We can see this in the ASL sign CHOOSE, which has two forms, a two-handed version with an immobile nondominant hand and a one-handed version in which the nondominant hand has been dropped.

CHOOSE (two-handed) https://www.signingsavvy.com/media2/mp4-ld/22/22784.mp4

CHOOSE (with weak hand drop) https://www.signingsavvy.com/media2/mp4-ld/30/30828.mp4

3.10.4: Lowering

Signs may also undergo **lowering**, in which the sign is articulated at a lower location to reduce the effort of moving the hands all the way to the original higher position. Lowering can be seen in the ASL sign KNOW, which is sometimes articulated at the forehead but can instead be lowered to a location under the eyes.

KNOW (at forehead) https://www.signingsavvy.com/media2/mp4-ld/21/21554.mp4

KNOW (with lowering) https://www.signingsavvy.com/media2/mp4-ld/30/30441.mp4

3.10.5: Distalization and proximalization

Signs can also shift which joints are used. If the joints shift down the arm towards the fingers, the sign has undergone **distalization**, while if they shift up the arm towards the shoulder, the sign has undergone **proximalization**. Without knowing the original version of a sign, it may be difficult to tell whether two variants represent distalization or proximalization. The ASL sign CHAT has two variants, one that is more proximal (with elbow and a bit of shoulder movement) and one that is more distal (with radioulnar movement).

CHAT (proximal) https://www.signingsavvy.com/media2/mp4-ld/22/22579.mp4

CHAT (distal) https://www.signingsavvy.com/media2/mp4-ld/22/22578.mp4

3.10.6: Check your understanding

Coming soon!

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CHAPTER OVERVIEW

4: Words- Morphology

Learning Objectives

When you've completed this chapter, you'll be able to:

- Identify morphologically complex words, and the morphemes within them
- Distinguish between inflectional morphology, derivational morphology, and compounds
- Explain how a word's morphology interacts with its lexical category
- Analyze the structure of complex words

In this chapter, we look at words and at the meaningful pieces that combine to create words. We will see that languages vary in how words are built, but that nonetheless we can find **structure** inside of words in all languages. In linguistics, the study of word forms is known as **morphology**.

4.1: Back to the Arbitrary
4.2: What is morphology?
4.3: Roots, bases, and affixes
4.4: Morphology beyond affixes
4.5: Allomorphy
4.6: Lexical categories
4.7: Derivational morphology
4.8: Inflectional morphology
4.9: Compounding
4.10: Structural ambiguity in morphology
4.11: Morphophonology
4.12: Morphosyntax
4.13: How to draw morphological trees
4.14: How to solve morphology problems
4.15: Exercise your linguistics skills

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4.1: Back to the Arbitrary

4.1.1 Back to the Arbitrary, from Sarah Harmon



Video Script

We're going to talk about how these little puzzle pieces of language, these morphemes, combined together in a given language and how they work in a language. First, we have to take a minute to revisit that one hallmark of language that I brought up earlier that I said was probably the most important piece to understand what, at least with respect to language, and that has to do with arbitrariness. Let's go back to the arbitrary, and let's talk about what this means really.

When I say arbitrariness, I'm referring to the **Principle of the Arbitrary**; we'll get more into this when we get to the chapter on Meaning, specifically Semantics. Just to give you a little taste of what is to come, the Principle of the Arbitrary was set up by Ferdinand de Saussure about 120 years ago. He was a Swiss mathematician who focused on logic and philosophy; of course, logic, philosophy, and mathematics all are tied together. He is considered the true founder of what we now call linguistics; Noam Chomsky is the modern renovation, shall we say, but even he said, if it weren't for Saussure and his initial statements and theories about language, we would not have linguistics at all. That is true; his work inspired generations of linguists. Those of us that have read his work understand the importance of it, especially given that he was working just simply with math. He was looking at language as if it were well a math problem. I'll get more into him later, but really quickly, let's focus on the Principle of the Arbitrary. It states that there is no particular reason why a specific sound is associated with a specific meaning; in this case, we're going to focus on morphemes.

That means a few different things. For example, the fact that we even have synonyms—two terms that mean pretty much the same thing, if not in fact two terms that mean exactly the same thing—that is an example of the Principle of the Arbitrary. For example, in most dialects of North American English *woodchuck* and *groundhog* are the exact same animal, there is no difference in some dialects there is a preference for one term versus the other but in most dialects of English certainly North American English, there is no difference between those two terms.

How about that piece of furniture that is in most North American living rooms or sitting rooms or family rooms, and it's kind of long and pretty comfy; we frequently lay out on it, and probably take a nap. The fact that you have two, or even sometimes three different terms for that same piece of furniture, is arbitrary. Why should there even be two, let alone three? The fact that most dialects of English, you can use two of those interchangeably—certainly out here in California. In fact, most of the Western U.S., *sofa* and *couch* are 100% interchangeable; there is no difference. For many in the eastern half of North America, chances are you can use *davenport* along with either *sofa* or *couch*. Two, if not all three of those terms are in your native dialect of English.

How about the fact that those three most important things to human life—air, water, food—are completely different in every single language. Even in related languages, they get pronounced differently, even if they come from the same root. The fact that, for

example, I have here water in English, the fact that in Spanish and Portuguese it is *agua*, depending on your dialect depends on what flavor of vowel that might have too, and the fact that their sibling language, French, has the same term, but it's not because it's pronounced differently and is spelled differently. Even though it comes from the same root, you do not say *agua* the same way that you say *eau*.

Why? Why is that the case? That really comes back to this concept of arbitrariness. There is no particular reason why a given term is linked to a given meaning; it just happens. Certainly, this is true with respect to things that we create, technology (remember, 'technology' is not only smartphones; it's more than that). The fact that we give a name to a given item that we create, yet that name does not necessarily get used in every single culture or speech community that uses that technology, is an example of arbitrariness. What we might call an English a (computer) *mouse*, first of all doesn't look much like a mouse anymore. Second, that term is not necessarily used in any other language beyond English. It could be used as-is, or it could be just tweaked a little bit, but that's arbitrary. It could be a totally different term, and it may not have anything to do with that rodent animal that is being used to describe this thing. All of that is arbitrary. Every single language, every single speech community could call it a totally different thing.

Arbitrariness also connects to this concept whereby we have the same sound, but you referring to multiple entities. For example, in English, that sound combination that gets written in English, as b-a-n-k, *bank*. That could refer to two totally different things. It could refer to a financial institution or it could refer to the side of a river. Those are unrelated in every way and yet the same sound combination, [bæŋk], is referred to two totally different things that is arbitrary. Why should English have that setup?

Just to take this one step further, if I give you a sound combination [ni]. In English that refers to a specific part of the body; in Spanish means 'not' or 'neither'; in French, its sibling language, it refers to a 'nest'. How can the same sound combination in three different languages, two of them very closely related? How can that be referring to three completely different concepts? That is arbitrariness.

Already arbitrariness is one of those concepts that we have to understand. As we analyze a language, the reason is straightforward. When we understand that a given language or even a given dialect has an arbitrary connection between sound and meaning, we then allow ourselves to analyze the language or the phenomenon in an objective way. We are not imposing our own biases; we're not imposing our own language on to that. We don't say that something is weird or odd. We just say that it is arbitrary. "It seems to happen here." "Why?" "Well, sometimes we have an answer, but frequently, we do not."

When we talk about arbitrariness, it's important to bring up that while the vast majority of the aspects of language are in fact arbitrary, there are a couple of exceptions with respect to the principle of the arbitrary. What I refer to as the fact that there are sometimes sound symbolisms. One of them, of course, is **onomatopoeia**, as we talked about in the introduction chapter. Onomatopoeia, of course, is when we say that a given term represents a sound. It could be a sound in nature or a sound that is caused by some process. Either way, it is called an onomatopoeic sound. It is true that there is some symbolism, some connection between the term and the meaning, but it's not exactly the case. Think back to that chart that I showed you where you have all of these different terms for the same types of sounds, but the representation was not the same across the board. In fact, there were a number of differences, even in sibling languages. Sometimes there was a difference in syllables, in the types of sounds being used to represent that other sound, but it really depended on a number of things. I'll go one step further: the fact that the sound of a dog barking in English has at least three different representations is still arbitrary, we can say 'bow wow', we can say 'wuff wuff', and we can say 'arf arf'. All three of those are onomatopoeics, so why should we have three different ones that don't necessarily share anything in common with respect to their sounds. That is arbitrary, and that is where we see that the Principle of the Arbitrary really does rule everything with respect to language.

There is also a semi universal where the sound [i], that high front vowel. It tends to show up with respect to more themes that are diminutive. A diminutive is a type of morpheme that make things small and cute; think *eenie*, *-ity*, etc. Those kinds of more things in English, if you speak Spanish or French or Portuguese or Italian or any of the other Romance languages tend to be something in the *-ito*, *-ico*, *-ino* variety; there's lots of different versions. It is the case that in a large number of languages, and not just Indo-European languages, but throughout the world, we do see this high vowel get inserted into the morpheme for the diminutive.

Why is that the case? When you think about how you pronounce that sound, it is a high front bow and in the very top corner front corner of your mouth, so the sound is made in a very small place. There's a really small area where that sound is produced. Is that the reason? Maybe, but maybe not. There are plenty of languages that have a diminutive that do not have [i], as a part of that sound combination, in fact, may not even have front vowels at all. It's not a universal; it's a semi universal and, to be honest it's still arbitrary. Why should that sound [i] represents something small? Either way, onomatopoeics and even this diminutive rule,

represent a very small fraction of all the possible combinations of sound and meaning, puzzle pieces putting together different words in any given language. Overall, arbitrariness really does rule the day.

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4.2: What is morphology?

In linguistics, **morphology** is the study of how words are put together. For example, the word cats is put together from two parts: *cat*, which refers to a particular type of furry four-legged animal (🐈), and -s, which indicates that there's more than one such animal (🐈‍⬛ 🐈).

Most words in English have only one or two pieces in them, but some technical words can have many more, like *non-renewability*, which has at least five (*non-*, *re-*, *new*, *-abil*, and *-ity*). In many languages, however, words are often made up of many parts, and a single word can express a meaning that would require a whole sentence in English.

For example, in the Harvaqtuurmiutut variety of Inuktitut, the word *iglujjualiulauqtuq* has 5 pieces, and expresses a meaning that could be translated by the full English sentence "They (sg) made a big house." (*iglu* = house, *–jjua* = big, *–liu* = make, *–lauq* = distant past, *–tuq* = declarative; this example is from a 2010 paper by Compton and Pittman).

Not all combinations of pieces are possible, however. To go back to the simple example of *cat* and *-s*, in English we can't put those two pieces in the opposite order and still get the same meeting—*scat* is a word in English, but it doesn't mean "more than one cat", and it doesn't have the pieces *cat* and *-s* in it, instead it's an entirely different word.

One of the things we know when we know a language is how to create new words out of existing pieces, and how to understand new words that other people use as long as the new words are made of pieces we've encountered before. We also know what combinations of pieces are not possible. In this chapter we'll learn about the different ways that human languages can build words, as well as about the structure that can be found inside words.

4.2.0.1: What is a word?

If morphology is the investigation of how words are put together, we first need a working definition of what a **word** is.

For the purposes of linguistic investigation of grammar we can say that a word is the **smallest separable unit in language**.

What this means is that a word is the smallest unit that can stand on its own in an utterance. For example, content words in English (**nouns**, **verbs**, **adjectives**, and **adverbs**) can stand by themselves as one-word utterances when you're answering a question:

(1)	a.	What do you like to eat?
		Answer: cake (noun)
	b.	What did you do last night?
		Answer: sleep (verb)
	c.	What colour is the sky today?
		Answer: orange (adjective)
	d.	How did you wake up this morning?
		Answer: slowly (adverb)

Words are also **syntactically independent**, which means they can appear in different positions in a sentence, changing their order with respect to other elements even while the order of elements inside each word stays the same.

In everyday life, in English we might think of a word as something that's written with spaces on either side. This is an **orthographic** (or spelling-based) definition of what a word is. But just as writing isn't necessarily a reliable guide to a language's phonetics or phonology, it doesn't always identify words in the sense that is relevant for linguistics. And not all languages are written with spaces in the way English is—not all languages have a standard written form at all. So we need a definition of "word" that doesn't rely on writing.

The definition of "word" is actually a hotly debated topic in linguistics! Linguists might distinguish **phonological words** (words for the purposes of sound patterns), **morphological words** (words for the purposes of morphology), and **syntactic words** (words for the purposes of sentence structure), and might sometimes disagree about the boundaries between some of these.

Though words are the smallest *separable* units, that doesn't mean that words are the smallest unit of language overall. As we already saw earlier in this section, words themselves can have smaller pieces inside them, as in the simple cases of *cats* (*cat–s*) or

international (*inter–nation–al*)—but these smaller pieces can't stand on their own.

To refer to these smaller pieces within words, we use the technical term **morpheme**. A morpheme is the smallest systematic pairing of both form (sign or sound) and meaning or grammatical function. (We say "meaning or grammatical function" instead of just "meaning" because while some morphemes have clear meanings, of the type that will be discussed in Chapter 7 in the context of lexical semantics, other morphemes express more abstract grammatical information.)

Words that contain more than one morpheme are **morphologically complex**. Words with only a single morpheme are **morphologically simple**.

Ask yourself if the word "morphology" is morphologically complex. Can you identify morphemes within this word, systematic pairs of form and meaning? Historically, this word is built from two morphemes borrowed from Classical Greek: *morph-* "shape" and *-ology* "study of". People who know English don't necessarily know Classical Greek, though. Regardless of a word's etymology (the history of a word), the question of whether it is morphologically complex is a question about how people who know that word use it today. A word might be morphologically complex for some people, but morphologically simple for others. Neither of those options is "correct" or "incorrect", they just represent different grammars.

In linguistics *morphology* is the study of word shapes. In biology, *morphology* is the study of the shape of animals and other organisms, and if you do an internet search for "morphology", the first hits often relate to the biological meaning.

Our goal in morphology is to understand how words can be built out of morphemes in a given language. In the this chapter we will first look at the shapes of different morphemes (and morphological processes); in later sections we will review different functions that morphology can have, looking at divisions between **derivational** morphology, **inflectional** morphology, and **compounding**.

4.2.1: Check your understanding

4.2.2: References

Compton, Richard, and Christine Pittman. 2010. Word-formation by phase in Inuit. Lingua 120:2167–2192

4.2.3: Morphological Definitions, from Sarah Harmon



4.2.3.1: Video Script

I'm going to add a little bit more with respect to the morphological definitions that Catherine Anderson has posted above. This just gives a little more clarity when we're talking about what these definitions are, as we analyze morphology.

In the previous section use the term **morpheme**. What is a morpheme? It is the smallest unit in a language that has meaning there's minimal matching of sound and meaning. That's a very fancy definition so let's break that down a little bit more. If I have the term *preschool*, it is a lexicon; it is a minimal free form. In this case, *preschool* has two different morphemes, two different puzzle pieces that combined to create that lexicon. There is the morpheme *school*, and that is the root, and there is the morpheme *pre-*, a prefix that is a type of affix. They combine their two puzzle pieces to building blocks to combine to make the lexicon *preschool*.

You'll notice I keep saying **lexicon**; I'm not using the term 'word' and there's a good reason, as we saw in Chapter 1. 'Lexicon' is just a little bit more precise. We often use 'term' or 'terminology' as the same concept; 'lexicon' is used in linguistic circles. The term 'word' is not exactly precise enough, because in a given language, a word could have just a couple different morphemes put together and is an entire lexicon of a specific part of speech—it's all a noun or a verb or an adjective, etc. The problem is that in many languages, that is not the case that a word is frequently multiple pieces put together multiple parts of speech, all combined; we'll see examples of that later on. We use the term 'lexicon' to denote that this is a unit, a free-standing unit doesn't have to be combined with anything else; maybe it is, but it doesn't have to be it can stand alone. A lexicon can have only one single morpheme, or it can have multiple morphemes.

Remember that arbitrariness is always going to be a factor, that we are combining morphemes in a certain way, and that is language specific. Why a given language combines morphemes in one way versus another, that's arbitrary. Most of you have experienced in learning a second language, whether it was English or another language and, in many cases they had very different rules as far as how to put lexicon together, how to put morphemes together, and how to put sentences together. All of those rules are arbitrary; those no real reason why North American English does one thing, but South Asian English does a different thing. There's no reason why English does one thing, but Japanese does a different thing, and Kikuyu does a third thing, and Cherokee does a fourth thing. It simply is the way the languages work; they're put together in different ways.

One more term that I think will be very crucial, not just for morphology but as we go further, and especially in semantics and pragmatics when we get to Meaning, and that is a **mental lexicon**. I think of a mental lexicon as a type of mental dictionary, but it does so much more than a dictionary does. A dictionary tells you the definition, it might tell you the part of speech, it may give you the pronunciation, but it really doesn't give you much more. A mental lexicon gives you all of that, plus the slew of grammatical functions, a very large corpus of synonyms, antonyms, maybe relational memory and meaning. We'll come back to this when we get to Meaning and, specifically, having to refer to an ontology but more on that late. For now, as we go through morphology, just remember that these are mental lexicon are our storage units, or a box of knowledge with respect to a given language or even a given dialect. It includes all the possible entries of lexicon and the relationships.

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4.3: Roots, bases, and affixes

4.3.1: Affixes vs roots

Morphemes can be of different types, and can come in different shapes. Some morphemes are **affixes**: they can't stand on their own, and have to attach to something. The morphemes *-s* (in *cats*) and *inter–* and *-al* (in international) are all affixes.

The thing an affix attaches to is called a **base**. Just like whole words, some bases are morphologically simple, while others are morphologically complex.

For example, consider the word *librarian*. This word is formed by attaching the affix *-ian* to the base *library*.

We can ignore the fact that 'y' turns into an 'i' when a suffix attaches to *library*. There's a convention of English spelling that 'y' becomes 'i' before an affix; it doesn't reflect any change in phonological shape.

Librarian can then itself be the base for another affix: for example, the word *librarianship*, the state or role of being a librarian, is formed by attaching the affix *-ship* to the base *librarian*.

There is a special name for simple bases: **root**. A root is the smallest possible base, which cannot be divided, what we might think of as the *core* of a word. Roots in English we've seen so far in this chapter include *cat*, *library*, and *nation*.

If you look at the history of the words *library* and *nation*, they both trace back to Latin (by way of French), and in Latin the relevant words were morphologically complex: *library* traces back to the Latin root *libr-* (meaning "book"), and *nation* traces back to the Latin root *nat-* (meaning "be born"). When a child first encounters a word like *library* or *nation*, however, the word doesn't come annotated with this historical information! In the minds of most contemporary English speakers, it is likely that *library* and *nation* are treated as simple roots; in Chapter 13, you'll learn about how this kind of hypothesis could be tested experimentally.

Turning back to affixes, an affix is any morpheme that needs to attach to a base. We use the term "affix" when we want to refer to all of these together, but we often specify what *type* of affix we're talking about.

A **prefix** is an affix that attaches **before** its base, like *inter-* in *international*.

A **suffix** is an affix that **follows** its base, like *-s* in *cats*.

A **circumfix** is an affix that attaches **around** its base.

An **infix** is an affix that attaches **inside** its base.

A **simultaneous affix** is an affix that takes place at the **same time as** its base.

Prefixes and suffixes are very common, not only in English but also in other languages. Circumfixes, infixes, and simultaneous affixes are less common, and so we'll look at examples of each in order.

4.3.1.1: Circumfix

An example of a **circumfix** can be found in the marking of **plural possessors** in many Algonquian languages. The following examples are from Meskwaki, spoken in parts of the Midwest of the US and in Northern Mexico; the source of these examples is Oxford (2020), who adapted them from an in-preparation grammar by Amy Dahlstrom (*A grammar of Meskwaki, an Algonquian language*). These examples are presented in Meskwaki orthographi; "a·" indicates a long vowel.

(2)	a.	ne-ta·nes-aki
		1-daughter-AN.PL
		"my daughters"
(2)	b.	**ne**-ta·nes-**ena·n**-aki
		1-daughter-**1PL**-AN.PL
		"**our** daughters"

What you can see here is that the singular possessor in "my daughters" is marked only by a prefix, but the plural possessor in "our daughters" is marked by the combination of the prefix *ni-* and the suffix *-ena·n*—or, in other words, by a **circumfix**.

These examples have **morpheme-by-morpheme glosses**, which means that the morphological analysis has been done for you; in Section 5.11 we'll discuss how we figure out the boundaries between morphemes in a language we aren't already familiar with.

Glossed examples include at least three lines: the first line gives the example in the original language, usually in either a phonetic transcription or the language's own orthography. The second line gives the meaning or function of each word or each morpheme (if the words are divided into morphemes). The third line gives a translation of the whole example into the language the author is writing in, which in this textbook is English.

Morpheme-by-morpheme glosses use standard abbreviations:

- **1** stands for "first person" (I, me, my / we, us, our)
- **PL** stands for "plural" (so **1PL** means "we, us, our")
- **AN** stands for "animate". Algonquian languages distinguish all nouns as "animate" or "inanimate", and this is reflected in its morphology.

4.3.1.2: Infix

Infixes are affixes that appear **in the middle of another morpheme**. For example, in Tagalog (a language with about 24 million speakers, most of them in the Philippines) the infix -um- appears immediately after the first consonant of the base to which it attaches. This infix expresses perfective aspect for verbs. Perfective aspect indicates completed action, usually translated with the English simple past:

(3)	a.	[takbuh]	*run*	[tumakbuh]	*ran*
	b.	[lakad]	*walk*	[lumakad]	*walked*
	c.	[bili]	*buy*	[bumili]	*bought*
	d.	[kain]	*eat*	[kumain]	*ate*

For an affix to be an infix, it must appear inside another another morpheme, not just in the middle of a word. If you look at the word *unluckiness* (*un-luck-y-ness*), for example, *-y* is a suffix that just happens to appear in the middle of the word because another suffix (*-ness*) attaches after it. But *-y* still isn't an infix, because it attaches after its base (*luck*), not inside its base.

4.3.1.3: Simultaneous affix

Simultaneous affixes are common in signed languages and in languages with tone. When signing, it's possible to do things with multiple articulators (a second hand, or your face), or to add motion on top of a sign, in a way that is not possible with oral articulations in spoken languages.

For example, in ASL there is a morpheme that attaches to verbs to express **continuative aspect** (the meaning that something happens continuously for a while, or for a long time). This morpheme involves adding a particular circular motion to the base sign for the verb; this circular motion doesn't happen before or after the verb, but simultaneously with it. You can see the application of this affix in the first and last videos for the verb STUDY in this linked article from the online Handspeak ASL dictionary (Lapiak 1995–2022) (the second video in that post shows the application of a different simultaneous affix, one for iterative aspect).

There is morphology in some spoken languages that has a similar profile. For example, languages with tone sometimes have tonal morphemes, where a change in tone expresses grammatical information, while the consonants and vowels of the base stay the same.

English isn't a tonal language, but we have some pairs of words that clearly involve the same root, but where the stress has shifted. These are noun-verb pairs where the noun has stress on the first syllable, but the verb has stress on the second syllable.

(4)	a.	They used to use **ré**cords to re**córd** music.
	b.	I have a **pér**mit that per**míts** me to drive.
	c.	I receive mail at my home **ádd**ress, at least when it's add**réssed** properly.

Not all English speakers have stress shift in the same pairs of words. For example, while I pronounce *address* with stress on the first syllable when it's a noun, many people pronounce it with stress on the second syllable (*addréss*) for both the noun and the

verb.

4.3.2: Free and bound morphemes

Another way to divide morphemes is by whether they are **free** or **bound**. A **free** morpheme is one that can occur as a word on its own. For example, *cat* is a free morpheme. A **bound** morpheme, by contrast, can only occur in words if it's accompanied by one or more other morphemes.

Because affixes by definition need to attach to a base, only **roots** can be free. In English most roots are free, but we do have a few roots that can't occur on their own. For example, the root *-whelmed*, which occurs in *overwhelmed* and *underwhelmed*, can't occur on its own as **whelmed*.

By contrast, in many other languages all (or most) roots are **bound**, because they always have to occur with at least some morphology. This is the case for verbs in French and the other Romance languages, for example; it was also the case for Latin, which is why the roots *nat-* and *libr-* were shown with hyphens above.

We show that morphemes are bound by putting hyphens either before or after them, on the side that they attach to other morphemes. This applies to bound roots as well as to affixes.

4.3.3: Check your understanding

4.3.4: References

Lapiak, Jolanta. 1995–2022. Handspeak. https://www.handspeak.com/

Oxford, William R. 2020. Algonquian. In Routledge handbook of North American languages, ed. Daniel Siddiqi , Michael Barrie, Carrie Gillon, and Éric Mathieu. Routledge.

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4.4: Morphology beyond affixes

There are some morphological patterns that don't obviously involve affixes at all. In this section we discuss a few examples: **internal change**, **suppletion**, and **reduplication**.

4.4.1: Internal change

Internal change is one name for the type of change found in many **irregular** English noun plurals and verb past tenses.

For example, for many speakers of English the plural of *mouse* is *mice*; the plural of *goose* is *geese*. The past tense of *sit* is *sat*, and the past tense of *write* is *wrote*

These are all relics of what used to be a regular pattern in English. By **regular** we mean that they were phonologically predictable based on the general pattern of the language, and automatically applied to new words. For speakers of English today, changes like "*mouse* becomes *mice* when it's plural" have to be memorized, and are therefore **irregular**.

4.4.2: Suppletion

Suppletion is an even more irregular pattern, where a particular morphological form involves entirely *replacing* the form of a morpheme, and is always irregular—you can never predict what the result of suppletion will be, it always has to be memorized. For example, the past tense of the verb *go* is *went*—there is no amount of affixation or internal change that will get you from one to the other. This type of total replacement is also found in English in the comparatives and superlatives of *good ~ better ~ best* and *bad ~ worse ~ worst*, throughout the paradigm of the verb *to be*, and on some pronouns.

If a language has suppletion (and not all languages do!) it is commonly found on some of the most frequent words in the language, just as we see in English. The reason for this is that children acquiring a language tend to assume patterns are regular and predictable until the weight of the evidence convinces them otherwise—and they're more likely to get enough evidence to reach the conclusion that something is suppletive if a word is incredibly common. The relevance of frequency for certain types of patterns in language is something we'll see again in Chapter 11 on Child Language Acquisition and Chapter 13 on Psycholinguistics and Neurolinguistics.

Suppletion is a type of **allomorphy**, which we will learn more about in the next section of this chapter

4.4.3: Reduplication

Finally, **reduplication** involves repeating part or all of a word as part of a morphological pattern. In Halq'eméylem, a Salish language spoken in British Columbia, one pattern of reduplicating a verb produces an adjective meaning that something or someone is likely or disposed to do the action. The examples below come from Shaw (2008), and the links go to pages on FirstVoices, an online platform for community-based language resources, where you can listen to recordings of the unreduplicated verbs pronounced.

(1)	a.	kw'élh	'to capsize'	[kʼʷə́ɬ]	→	[kʼʷə́ɬkʼʷəɬ]	'likely to capsize'
	b.	qwà:l	'to speak'	[qʷél]	→	[qʷélqʷel]	'talkative'

This is not the only pattern of reduplication in Halq'eméylem; languages in the Salish family have many patterns of reduplication, which are associated with several patterns of meaning and grammatical function.

English does have one pattern of reduplication, which can apply to phrases as well as words. This type of reduplication carries the meaning of something being a prototypical example of the type; it is often called *salad-salad* reduplication by linguists. For example, in my variety of English I can say: "Tuna salad is a salad, but it's not a *salad-salad*."—in other words, tuna salad isn't a prototypical salad because it doesn't involve lettuce or other leafy green vegetables.

4.4.4: Morphological typology

Looking at different languages, we can divide them **typologically** into different morphological types.

At one end we have what are called **isolating** or **analytic** languages. No human language is *perfectly** isolating—this would be a language where **all** words are morphologically simple. Chinese languages like Mandarin and Cantonese are highly isolating,

because in these languages inflectional information is typically expressed by small function words ("particles") rather than by affixes. However there are nonetheless many **compound** words in the language—compounds are words built out of more than one root, discussed more below in Section 5.7.

English is less isolating than Mandarin, but still very analytic.

The opposite of analytic is **synthetic**. Synthetic languages have a lot of morphological complexity in words, and are often characterized by having no (or very few) free roots.

Languages that are more synthetic fall into different types. The main division is between **agglutinative** and **fusional** languages. In highly **agglutinative** languages, words are built from many easily separated affixes, each of which is associated with a consistent piece of meaning. Japanese is a somewhat agglutinative language, as in the following example where the verb has a string of suffixes corresponding to the English passive ("was *verb*-ed") and causative ("made X *verb*").

(2)		Watasi-wa	natto-o	tabe-sase-rare-ta
		I-TOPIC	natto-ACC	eat-CAUS-PASS-PAST
		"I was made to eat natto."		

By contrast, a **fusional** language is one where many inflectional meanings are combined into single affixes. The Romance languages are a good example of fusional languages: the suffix on a verb expresses tense, aspect, and subject agreement, and is difficult to break down into smaller affixes. For example, in the Spanish word *estudiáramos*, the root *estud-* means "study" and the suffix *-iáramos* expresses subject agreement (first person plural), tense (past), aspect (imperfective), and mood (subjunctive).

4.4.5: Check your understanding

Shaw, P. (2008). Inside Access: The Prosodic Role of Internal Morphological Constituency. In *The Nature of the Word: Studies in Honor of Paul Kiparsky.* ed. Kristin Hanson and Sharon Inkelas. The MIT Press.

4.4.6: Affixation and Other Morphological Processes, from Sarah Harmon



4.4.6.1: Video Script

I wanted to take a moment to talk about some specific affixation and other morphological processes. I want to not just focus on English; I want to show you what happens in so many other languages. Some of these languages will look familiar to you, while others will be very different and new. That's the point: I want to showcase to you the variety that we have within language.

When we start off with morphological processes, we always start with affixation. You probably have heard at some point of the terms prefix and suffix. A **prefix** goes before the root; a **suffix** goes after the root. They're very common, not just in English, but in all Indo-European languages; we love both prefixation and suffixation. We tend to use prefixation for derivational morphology; suffixation can be used both for derivational morphology and inflectional morphology, not just an English, but in most Indo-European languages.

I'm showcasing here an example of suffixation from Spanish because I think it would be interesting for many of you to understand exactly what happens in Spanish, with respect to verbs. Most of you either are fluent in Spanish natively or learned, or you have learned about Spanish, so this should give you a new vision, as it were, with respect to verbs in Spanish.

Realistically, in Spanish, and all the Romance languages, we have a root, followed by a series of suffixes that indicate what that verb is going through, the various types of inflection. When we talk about inflection, especially in the Romance languages, but even in other Indo-European languages, there is a big combination of roles into one affix. In this case, I have the verb *tener* that means 'to have', as in to possess something, to own something. You see that *ten-* is the root and for many, many forms of the verb it just stays as *ten-*.

(Of course, if you know, Spanish, you know there is a stem change involved, but that's for a Spanish class, that's not morphology. Right now, let's just focus on the fact that you have a root, ten-.)

You have a specific suffix that goes afterwards, and that suffix can tell you a lot of different information. If it ends in [-er]—Spanish is written fairly phonetically so I'm leaving it here in how it is written, because Spanish is written basically in IPA—that -er suffix [-eɾ] tells you is that it is the infinitive, the base form of the verb. Think of it as the form of the verb that you would look up in the dictionary;in English, that would be 'to have'. If we swap that *-er* for *-emos*, now we have conjugated that verb, but in this specific way. As we can see in the middle three examples, *-mos* shows up in all three of them. We notice that we have first person plural as an indicator for all three of them. First person is the speaker; second person is the audience; third person is somebody not involved in the conversation. Plural, so 'we'. 'We' is first person plural, in English, *nosotros* is the form in Spanish, and the *-mos* at the end of that inflection tells you it is first person plural. That vowel or lead-in to the *-mos* tells you so much more. It can tell you the tense, the aspect, and the mood Those are three elements of deixis; we'll come back to that when we go to pragmatics in the chapter on Meaning. But for now, know that *-emos*, that *-e-* refers to both present tense and indicative, meaning something that stated declared. *-íamos*, that *-ía-* is still indicative, but it is past tense and durative aspect, meaning ongoing. And the *-dre-* in the *-dremos* is future indicative.

Those of you who speak Spanish especially native speakers of Spanish this is breaking down those puzzle pieces and understanding what they refer to. Think about, Spanish speakers, what *tener*, *tenemos*, *teníamos*, *tendremos* mean. They have multiple connotations, but each one of them have different roles, then *tener* is the infinitive 'to have'. *Tenemos* is' we have right now', as a declarative statement. *Teníamos* would be 'we used to have' or something along those lines. *Tendremos*, 'we will have', or 'we might have in the future'. Those are all different versions, and that inflection carries with it multiple levels of meaning. Then, just to show you a little bit more, if we want to do a past participle so a form of the verb that gets used a lot of compound forms it's the *-ido*, which tells you it is a past participle. I bet you didn't realize those inflections, those suffixes in Spanish carried so much meaning. This is just Spanish, and just one verb in Spanish. We see this throughout all human languages; if you have inflection, it carries a lot of meaning and, in this case, it's a suffix.

But there's two more types of affixation that we do not see in most Indo-European languages, although there is a little caveat to one of them. We see we have infixation and we have circumfixation. Let's start with **infixation**; as you would expect infixation means in the root. I'm going to show you two different examples; one is a more traditional way of thinking about infixation. This is Bontoc, which is one of the Filipino languages; the Filipino languages are part of a larger family called Australio-Pacific. This is a huge language family that covers the languages all the way out to Rapa Nui and Polynesia (think Hawaii, Fiji, Tonga, Samoa, even, New Zealand and the Maori language) and then covers all the languages throughout the Pacific Islands, through the northern coast of Australia, Papua New Guinea, Indonesia, all of that area. They are the poster children for infixation; Indo-European languages love suffixation for inflection, but Australio-Pacific languages love infixation. If you speak Tagalog, Ilokano, or any other Filipino language, as well as the other Australio-Pacific languages, you know about this.

For example, you want to take an adjective and you want to make it a verb, like 'to be…' that adjective to be strong, to be read what you do is you infix *-um-* right after the first consonant: *fikas* 'strong' becomes *fumikas* 'to be strong'; *kilad* 'red', the color red becomes *kumilad* 'to be read'. This is just one example; all of the Australio-Pacific languages love infixation, especially for any kind of inflection or derivation.

There's a second kind that you only see in the Semitic languages; I have Hebrew here, but Arabic, Amharic and all of the Semitic languages, which is a branch of the Afro Asiatic language family, they all have some kind of continental root. The vowels are the different inflections and derivation of morphine this is radically different from just about anything else that we see in any other language family, it makes the Semitic languages stand out in a very unique way. For example, *ktb*, if you will, but I'm going to use the pronunciation, the IPA. [ktb] is the continental root for 'to write' in Hebrew; I believe it's also the same in Arabic and it might even be in Amharic. But we're going to stick to Hebrew. Depending on which vowels you put in and where you put them, that depends on how you conjugate the verb 'to write'. For example, 'katab' with two 2 [a] thrown in there, that is just a declarative statement, 'write'. Compare that with [kutib], sticking an [u] and [i] in between those consonants, that means 'have been written' like 'the letter has been written', a perfect passive combination. If you use [a] and [u] and change where they go [aktub] this is 'be writing' like 'my mother is writing a letter'. If you change that [a] to an [u], and the [u] to an [a] so flip the vowels same placement, that is the passive, something 'is being written', so 'the letter is being written'. The vowels that you choose and where you choose to place them drastically change the meaning of what you're trying to say.

This is arbitrariness. Why the Semitic languages do this and seemingly no other language that we know of does is very peculiar and interesting and amazing.

The last type of application is called **circumfixation** and it means just that the inflection goes around the root. While it is not a very common way of doing inflection, it is something we see in the other Germanic languages—not English, although we used to, and that's a story for historical linguistics. German, Dutch, the Scandinavian languages, Icelandic, all of them, they all do some kind of circumfixation. Frequently, this is to form the past participle of the verb. To conjugate the verb to that 'have loved', 'have kissed', etc. Notice that it is not just the [ge-] in the front, the prefix, but also [-t] at the end, the suffix. It's a prefix and suffix combined; that is circumfixation.

A couple more processes that we should bring up right now. **Umlaut** or **morpheme-internal change**; usually, this is a vowel, which is why umlaut is the term we frequently use. English certainly is an example of this, although it is not a productive element; it is something that used to be rife in Old English. The difference between *man* and *men*, *goose* and *geese*, *hold* and *held*. Certain plural formations and certain past tense formations show umlaut. Those vowel changes, that is what umlaut is. You may have heard the term 'umlaut' to refer to those two dots that go over a vowel (e.g. ü, ä), especially in Germanic languages; in fact umlaut is a German word, and that is why it tends to be referred to with respect to vowels that change. In Modern English, certainly for the last several hundred years, this is unpredictable; it is a relic, as it were. When we get to historical linguistics we'll talk more about this relic. In some cases, there are changes, but in most cases, they just have **fossilized**—they've stayed the same.

Suppletion is the last one. **Suppletion** is when we have what we call a radical change of the morpheme. Another term for suppletion is **merger** and that really does describe what happens when you have two or more forms that merged together and form a single form. For example, if you want to impress some people and talk about language in a party setting (and who doesn't!), bring up this little factoid: if a language has the verb 'to be', it will be the most irregular form in the entire language, and if it has the verb 'to go' and pretty much every language does, it will be the second most irregular form in the entire language. That is because over the history of human language, there have frequently been multiple versions of 'to be', either as an actual verb on its own or idiomatic versions of it. These multiple forms get suppleted or merged together over time. If you've ever wondered why 'to be' has a present conjugation as *I am*, *you are*, *he* or *she is*, with the past tense conjugation is *I was*, *you were*, and wondering how those forms match, let alone how they match 'to be'? That's suppletion; that's merger. The forms merged together over time at some point in the history of English; there were separate verbs and they merge together. The same with 'to go' that has a past tense form of 'went'; again, there used to be two different verbs meaning 'to go' in Old English and they merged together. We'll come back to this when we get to historical linguistics. In fact, affixation as a whole is a huge area of historical linguistics that yields so much fruit with how a language has changed over time and how maybe it might change in the future.

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4.5: Allomorphy

Some morphemes have a consistent meaning, but appear in different forms depending on the environment where they occur. This is **allomorphy**. In English, for example, the indefinite article shows up as *a* when it occurs before a consonant (*a book*), but as *an* when it occurs before a vowel (*an apple*). This is an example of allomorphy based on the *phonology* (sounds) that appear before or after the morpheme (the phonological environment). This is called **phonologically conditioned allomorphy**.

Another example of allomorphy can be found in the plural forms of English nouns. First, consider the pairs of singular and plural nouns in (1).

(1)			*singular*	*plural*
	a.	[s]	book	books
			cat	cats
			nap	naps
	b.	[z]	paper	papers
			dog	dogs
			meal	meals
	c.	[ɪz] or [əz]	niece	niece
			horse	horses
			eyelash	eyelashes

The plural in all these words is spelled as “s” (or “es”), but it isn’t always pronounced the same way. If you pay attention, the plural adds the sound [s] in (1a), the sound [z] in (1b), and the sound [ɪz] or [əz] in (1c). Just like the alternation between *a* and *an*, this is predictable phonologically conditioned allomorphy, based on the last sound in the noun root. See if you can come up with a generalization about when you see each of the allomorphs in (1). (The answer appears in the Check Your Understanding questions at the end of this section.)

Now look at the singular-plural pairs in (2). These examples show more allomorphs of the plural in English, but they are **not** predictable: the allomorph of the plural used with these roots has to be remembered as a list.

One way of describing nouns that have no change in the plural is to say that they take an empty affix or zero affix. We use the symbol ∅ (the symbol for an empty set in mathematics) to indicate a morpheme that has no overt form.

(2)			*singular*	*plural*
	a.	-(r)en	child	children
			ox	oxen
			nap	naps
	b.	*internal change*	mouse	mice
			goose	geese
			woman	women
	c.	no change (-∅)	fish	fish

			sheep	sheep
			deer	deer

Allomorphy that is determined by the root, like in (2), is called **lexically conditioned allomorphy**.

When a morpheme can be realized in more than one way, we refer to its different forms as **allomorphs** of the morpheme.

(3) lists all the allomorphs of the English plural seen in this section.

(3)		***Plural:*** -s, -z, -ɪz, -(r)en, internal change, -∅

There are more allomorphs of the plural in English than we've seen here. Can you think of any others? For any other language that you know, are there allomorphs of the plural in that language? What about other affixes, in English or in other languages, can you think of further examples of allomorphy?

4.5.1: Check your understanding

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4.6: Lexical categories

4.6.1: Derivation vs inflection and lexical categories

Morphology is often divided into two types:

- **Derivational** morphology: Morphology that changes the meaning or category of its base
- **Inflectional** morphology: Morphology that expresses grammatical information appropriate to a word's category

We can also distinguish **compounds**, which are words that contain multiple roots into a single word.

The definitions of derivation and inflection above both refer to to the **category** of the base to which morphology applies. What do we mean by "category"? The category of a word is often referred to in traditional grammar as its **part of speech**. In the context of morphology we are often interested in the **lexical categories**, which is to say **nouns**, **verbs**, **adjectives**, and **adverbs**. The rest of this section gives an overview of what lexical categories are, and how we can identify them.

4.6.2: Lexical Categories, aka "Parts of Speech"

Determining the category of a word is an important part of morphological and syntactic analysis. A category of words or morphemes is a group that behave the same way as one another, for grammatical purposes.

You might be familiar with traditional **semantic** definitions for the parts of speech—definitions that are based on a word's meaning. If you ever learned that a noun is a "person, place or thing", or that a verb is an "action word", these are semantic tests. However, semantic tests don't always identify the categories that are relevant for linguistic analysis. They can also be hard to apply in borderline cases, and sometimes yield inconsistent results; for example, surely *action* and *event* are "action" words, so according to the semantic definition we might think they're verbs, but in fact these are both nouns!

In linguistics we're interested in making generalizations about where different categories of words or morphemes can occur, and how they can combine with each other. We therefore define categories based on the grammatical contexts in which words or morphemes are used—their **distribution**. The distribution of different categories varies from language to language. The remainder of this section reviews some of the main distributional tests for lexical categories (nouns, verbs, adjectives, and adverbs) in English (distributional tests for non-lexical categories appears in Chapter 6.5).

If you know any other language, think about whether any of these tests can be adapted to identify lexical categories in that language, or if there are other morphological or syntactic cues that can be used to distinguish lexical categories in that language.

4.6.2.1: Nouns (N)

- Syntactic tests for nouns:
  - Can follow a determiner
    - As in: *an event* or *the proposal*
  - Can be modified by **adjectives**
    - As in: *a happy event* or *the new proposal*
  - Can be the subject or object of a verb
    - As in: *Events occurred.* or *We made proposals.*
  - Can be replaced by a pronoun
    - As in: *Events occurred.* becoming *They occurred.*
  - Do not allow objects (without a preposition).
- Morphological tests for nouns:
  - Have singular and plural forms: e.g. *books*, *governments*, *happinesses*
    - Note: The plurals of some abstract nouns can seem odd! Think outside the box to find contexts where they might naturally occur.

4.6.2.2: Verbs (V)

- Syntactic tests
  - Can combine with auxiliary verbs (e.g. *can*, *will*, *have*, *be*)

- Can follow the infinitive marker *to*.
- Can take an object (without a preposition):
  - As in: *kick the ball*.

- Morphological tests
  - Have a third person singular present tense form with *-s*
    - As in: (*she/he/it*) *kicks*, *goes*, *proposes*
  - Have a past tense form, usually (but not always) with *-ed*
    - As in: (*she/he/it*) *kicked*, *went*, *proposed*
  - Have a perfect / passive form, usually with *-ed* or *-en*
    - As in: (*she/he/it*) *has kicked*, *gone*, *proposed*
  - Have a progressive form with *-ing*.
    - As in: *kicking*, *going*, *proposing*

4.6.2.3: Adjectives (Adj)

- Syntactic tests:
  - Modify nouns (occur between a determiner and a noun)
    - As in: *a happy event* or *the new proposal*
  - Can be modified by *very* (but so can many adverbs!)
    - As in: *very happy*, *very new*
  - Do not allow noun phrase objects (if objects are possible, they must be introduced in a prepositional phrase)
    - There are a handful of exceptions to the generalization that adjectives only take prepositional phrase objects, depending on your variety of English. Noun phrase objects of adjectives are discussed a bit more in Section 6.13.
- Morphological tests:
  - Can often be suffixed by *-ish*
  - May have comparative and superlative forms (e.g. *happier*, *happiest*)

4.6.2.4: Adverbs (Adv)

- Syntactic tests:
  - Modify verbs, adjectives, and other adverbs (anything but nouns!)
  - Cannot appear alone between a determiner and a noun.
  - Can be modified by *very* (but so can adjectives!)
- Morphological tests:
  - Many (not all) adverbs end in *-ly*

4.6.3: Using derivational affixes to identify category

In addition to the morphological tests above, you can also use derivational affixes to help determine the category of a word. For example:

- Suffixes like *-ment* and *-ness* always create nouns; the base that *-ment* attaches to is always a verb (if it's a free form), and the base of *-ness* is usually an adjective.
- Suffixes like *-ify* and *-ize* always create verbs; their bases are nouns (if they're free forms).

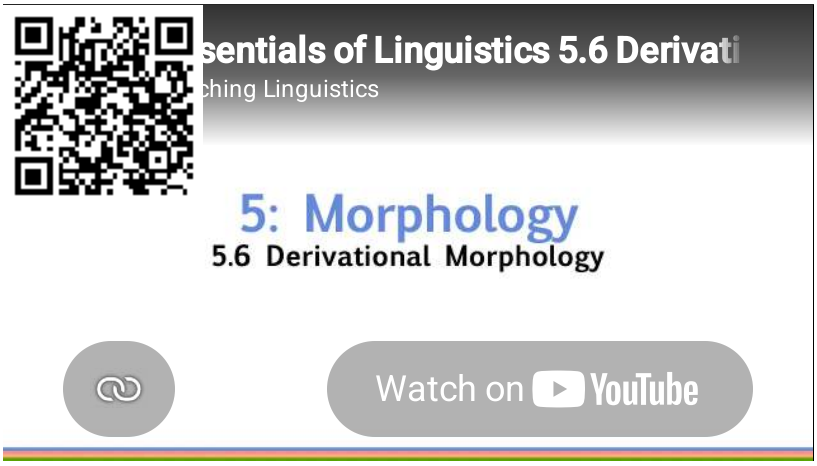
The property of derivational affixes to not only create particular categories, but also to *attach* to specific categories, is called **selection**. We discuss selection by derivational morphology further in Section 5.6.

4.6.4: Check your understanding

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4.7: Derivational morphology



4.7.0.1: Derivational morphology and selection

Derivational morphemes are typically choosy about the types of bases they combine with—another word for "choosy" is *selective*, and so we talk about how derivational affixes **select** the category of their base.

For example, the suffix *-able* combines only with verbs, and always creates adjectives meaning "able to be *verb*-ed": *readable*, *writeable*, *playable*, *employable*, and *googleable* are all possible adjectives in English, even if they don't appear in a dictionary—while the other words in this list probably do show up in most dictionaries, *googleable* might not, because *google* a relatively recent verb (adapted from the name of the company). But as an English speaker I don't need to check the dictionary to find out if something is a possible English word—if I'm talking to someone and I say that something is "googleable", I can be confident that they'll understand me even if they've never heard someone use that verb before.

Here is a very incomplete sample of derivational affixes in English, with the category they **select** on the left side of the arrow, and the category they **create** on the right side.

(1)		*-tion*	V	→	N
		-able	V	→	Adj
		-en	V	→	Adj
		-ed	V	→	Adj
		-ing	V	→	Adj or N
		-ment	V	→	N
		-ness	Adj	→	N
		-ity	Adj	→	N
		-ous	N	→	Adj
		-hood	N	→	N
		-ize	N	→	V
		-ly	Adj	→	Adj
		-ish	Adj	→	Adj

There are many more than this! You'll see them inside many words if you start paying attention.

Prefixes in English never change the category of the base they attach to, but they express clear meanings, like negation, repetition, order (e.g. *pre-* and *post-*), etc. Examples of English derivational prefixes and the categories they select appear in (2):

(2)		*non-*	N	→	N	*non-issue*
			Adj	→	Adj	*non-distinct*
		un-	V	→	V	*undo*
			Adj	→	Adj	*unhappy*
		re-	V	→	V	*redo*

Derivational morphology can also be even more selective, requiring not only a base that has a certain category, but only attaching to *specific* roots or bases. A lot of derivational morphology in English was acquired from borrowing words from French and Latin; these "latinate" affixes often prefer to combine with each other, and sometimes only with roots that are also latinate. Such affixes are less productive than other affixes, which combine freely with most bases.

Some of the most productive derivational suffixes in English are *-ish*, which can attach to most adjectives, *-ness*, *-able*, and *-ing*.

-ing is particularly productive: it can attach to all verbs in English to form adjectives (traditionally called "participles") or nouns (traditionally called "gerunds"). It is very unusual for a derivational affix to be that productive; usually there are at least a few roots that don't occur with a derivational affix, for whatever reason.

4.7.0.1: Order of Affixation

Because derivational affixes care about the category of the base they attach to, *and* they can result in a change to a new category for the whole word, the order in which they are added to a word can matter!

Prefixes, suffixes, and circumfixes always attach to the outer edge of their base. That means that if a word has only suffixes, or only prefixes, there is only one order those affixes could have attached in. It will never be the case that the suffix that was added last appears closer to the root than suffixes that attached earlier.

Consider the word *foolishly*. This has the root *fool* (a noun), the suffix *-ish* (which attaches to nouns to form adjectives), and the suffix *-ly* (which attaches to adjectives to form adverbs). The only way to build this word is to first attach *-ish* to the root *fool*, and then attach *-ly* to the new base *foolish*. This structure is illustrated in Figure 4.7.1

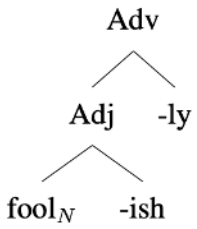


Figure 4.7.1: Tree diagram for *foolishness*

But if a word has both prefixes and suffixes, then it's slightly more work to figure out what order they attached in. Sometimes the selectional properties of the affixes means that there is only one option. Consider the word *unkindness*. Here we have one prefix and one suffix. So in principle there are two orders in which we could build the word:

- Option 1 would be to first attach *un-* to the Adjective root *kind*, building the Adjective *unkind*, then attach *-ness* to *unkind* to get the Noun *unkindness*
- Option 2 would be to first attach *-ness* to the Adjective root *kind*, building the Noun *kindness*, then attach *un-* to *kindness* to get the Noun unkindness

In both these hypothetical derivations the intermediate base—*unkind* in Option 1 and *kindness* in Option 2—is a possible word of English, so from that perspective both derivations seem equally plausible.

But only one of these options matches the selectional properties of the affixes involved.

- If we look at *un-*, we find that it only attaches to verbs (with a reversal reading, like *undo*) and adjectives (with a negative meaning, like *unkind*). It cannot attach to nouns.

- If we look at *-ness*, by contrast, it attaches to adjectives to *create* nouns.
- So if *-ness* attached first in this word, as in 2, it would turn the adjective *kind* into a noun, and *un-* would no longer have the right kind of base to attach to.

This means that it can only be the order in 1, where *un-* attaches before *-ness*, while its potential base is still an adjective, that is the correct one.

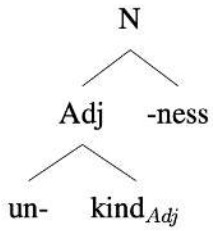


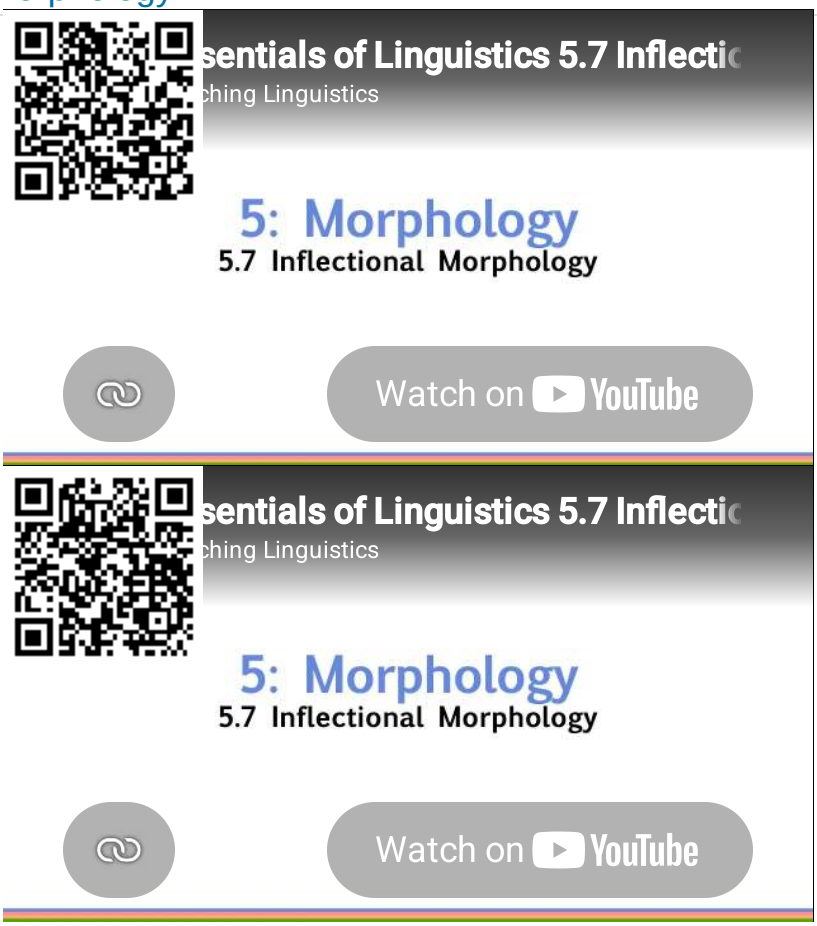
Figure 4.7.1: Tree diagram for *unkindness*

4.7.1: Check your understanding

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4.8: Inflectional morphology



So far we've focused on derivational morphology. The next kind of morphology we'll discuss is **inflectional morphology**.

Unlike derivational morphology, inflectional morphology never changes the category of its base. Instead it simply *suits* the category of its base, expressing grammatical information that's required in a particular language.

In English we find a very limited system of inflectional morphology:

- **Nouns**
  - Number: singular vs. plural
  - Case (only on pronouns)
    - Nominative: I, we, you, he, she, it, they
    - Accusative: me, us, you, him, her, it, them
    - Possessive: my, our, your, his, her, its, their
- **Verbs**
  - Agreement: most verbs agree with third person singular subjects only in the present tense (-s), but the verb *to be* has more forms.
  - Tense: Past vs. Present
  - Perfect/Passive Participle: -ed or -en (Perfect after auxiliary have, Passive after auxiliary be)
  - Progressive -ing (after auxiliary be)
- **Adjectives**
  - Comparative -er, Superlative -est (Arguable! Some people might treat this as derivational)

That's all of it! But if we look at other languages, we find more types of inflectional morphology.

One thing about inflectional morphology is that lots of it can be expressed **syntactically** instead of morphologically. So some languages have tense, but express it with a particle (a separate word) rather than with an affix on the verb. This is still tense, but it's not part of inflectional morphology.

The rest of this section gives a general survey of types of inflectional distinctions commonly made in the world's languages, but there are many types of inflection that aren't mentioned here.

4.8.1: Number

Most languages, if they have grammatical number, just distinguish singular and plural, but number systems can be more complex as well.

For example, many languages have **dual** in addition to singular and plural. Dual number is used for groups of exactly two things; we have a tiny bit of dual in English with determiners like *both*, which means strictly two. You have to replace *both* with *all* if a group has three or more things in it.

An example of a language that distinguishes dual morphologically is Inuktitut, one of the languages spoken by the Inuit people who live in the Arctic region. There is a good deal of dialect variation across the Inuit languages; examples here are drawn from Inuktut Tusaalangaa, and represent the dialect South Qikiqtaaluk, spoken in parts of Nunavut that include the city Iqaluit.

(1)		*gloss*	*singular*	dual (2)	plural (3+)
		"pen"	titiraut	titirautiik	titirautit
		"cloud"	nuvuja	nuvujaak	nuvujait
		"computer"	qaritaujaq	qaritaujaak	qaritaujait

The three-way distinction between singular, dual, and plural in Inuktitut applies not only to nouns but also to verbs that agree with their noun subjects. The examples in (2) are from the Inuktitut Reference Grammar produced by Inuit Uqausinginnik Taiguusiliuqtiit.

(2)	first person	singular	anijunga	"I go out"
		dual	anijuguk	"the two of us go out"
		plural	anijugut	"we (three or more) go out"
	second person	singular	anijutit	"you (one of you) go out"
		dual	anijusik	"you two go out"
		plural	anijusi	"you (three or more) go out"
	third person	singular	anijuq	"they (sg) go out"
		dual	anijuuk	"the two of them go out"
		plural	anijut	"they (three or more) go out"

A small number of languages go further and also have a **trial** (pronounced "try-ull"), usually only on pronouns. This is used for groups of exactly three.

A language can also have **paucal** number, used for small groups.

4.8.2: Person

Person distinctions are those between first person (*I*, *we*), second person (*you*), and third person (*he*, *she*, *it*, *they*).

Some languages make a distinction in the first person plural between a first person inclusive (me + you, and maybe some other people) and a first person exclusive (me + one or more other people, not you). Anishnaabemowin (Ojibwe), which has about 20,000 speakers, makes this kind of distinction. The pronoun *niinawind* refers to the speaker plus other people but not the person being addressed (that is, "we excluding you"). This is known as the **exclusive** we. The pronoun for **inclusive** we ("we including you") is *giinawind*. The distinction between inclusive and exclusive we is sometimes referred to as **clusivity**.

In Odawa and Algonquin varieties of Anishinaabemowin, spoken near Lake Huron and in Eastern Ontario and Quebec, these pronouns are *niinwi* and *giinwi*, respectively, but make the same contrast in meaning. Cree, which belongs to the same language family as Ojibwe (the Algonquian family), also makes an inclusive/exclusive distinction in the first-person plural. The inclusive form is *niyanân* and the exclusive form is *kiyânaw*. (Ojibwe examples from Valentine 2001.)

4.8.3: Case

Case refers to marking on nouns that reflects their grammatical role in the sentence. Most case systems have ways to distinguish the **subject** from the **object** of a sentence, as well as special marking for **possessors** and **indirect objects**.

Some languages have many more case distinctions than this; usually many of the case forms express meanings that in languages like English we express using prepositions. Estonian and Finnish are known for having especially many cases (14 in Estonian and 15 in Finnish): the Wikipedia article on Finnish cases is a good source if you'd like to learn more.

4.8.4: Agreement

Agreement refers to any inflectional morphology that reflects the properties of a different word in a sentence, usually a noun.

The most common type of agreement is **verbs** agreeing with their subject, though verbs in some languages might also agree with their object (or might sometimes agree with their object instead of their subject). Verbs usually agree with nouns for their **number** and **person**.

Determiners, **numerals**, and **adjectives** often agree with the noun they modify, usually for **number**, **case**, and **gender** (assuming a language has some or all of these types of inflection in the first place!).

4.8.5: Tense and Aspect

Tense refers to the contrast between **present** and **past** (or sometimes between future and non-future) and is typically marked on verbs.

Aspect is a bit harder to define, but is usually characterized as the perspective we take on an event: do we describe it as complete, or as ongoing? In English we have progressive (marked with *be* + *–ing*) and perfect aspect (*have* + *–ed*/*-en*).

French has a slightly different contrast in the past tense between the *imparfait* and the *passé composé*—these both locate things in the past, but the *imparfait* describes them as habitual or ongoing (**imperfective** aspect), while the other describes them as complete (**perfective** aspect).

The Mandarin particle le (了) also expresses perfective aspect, describing an event as complete, and zài (在) expresses progressive aspect, describing an event as in progress. But these are not examples of inflectional morphology, because these particles (=small words) are separate from the verb and do not act as affixes.

Terminology for aspectual distinctions can be confusing. In particular, the English perfect is not quite the same as the French or Mandarin perfective—though just as their names overlap, some of their uses are also similar.

4.8.5.1: Negation

In English we have derivational negative morphology (as in the prefixes *in-* or *non-*), which negates the meaning of a base or root.

Inflectional negation, by contrast, makes a whole sentence negative. In English we express inflectional negation syntactically, with either the word *not* (or its contracted clitic form *n't*). In other languages, however, negation can be expressed by inflectional affixes.

4.8.6: Other inflectional distinctions

What other types of distinctions can be marked in the verbal inflection of a language? Here we review a non-exhaustive set of inflectional distinctions made in some of the languages of the world.

Obviation: Algonquian languages, including Cree and Anishinaabemowin, make a distinction between proximate and obviative third person. You might think of this distinction as something similar to the near/far distinction between this and that in English, where this is used for something that is closer to the speaker and that is for something farther away. But, like in English, the proximate/obviative distinction is not just about physical distance; it can also allude to distance in time, or within a conversation, to someone that is the topic of discussion (proximate) versus someone that is a secondary character (obviative). The distinction is marked on the verbal morphology, as illustrated below with examples from Cree:Obviation

(3)		*proximate*		*obviative*
	a.	Regina wîkiwak.		Regina wîkiyiwa.
		"They live in Regina."		"Their friend/someone else lives in Regina."
	a.	kiskinwahamâkosiwak.		kiskinwahamâkosiyiwa.
		"They are in school."		"Their friend/someone else is in school."

CAUSATIVES: A causative is a construction that expresses that an event was caused by an outside actor. In English we have a few constructions that express causativity, using verbs like *make*, *have*, and *get*:

(4)	a.	English causative with *make*:		
		The tree fell.	→	I made the tree fall.
	b.	English causative with *have*:		
		The actors exited stage right.	→	The director had the actors exit stage right.
	c.	English causative with *get*:		
		The teacher cancelled the exam.	→	The students got the teacher to cancel the exam.

When a language has a morphological causative, it expresses these types of meanings by adding a morpheme onto the main verb. For example, in Kinande, a Bantu language spoken in the Democratic Republic of the Congo, the verb *erisóma* means "to read", but *erisómesya* means "to make (someone) read".

This is a type of morphology that changes the argument structure of a verb—the pattern of arguments (subjects, objects, indirect objects) that it combines with. Other types of argument changing morphology are applicative or benefactive (to do something *to* or *for* someone) and passive. We discuss the syntax of argument changing in Section 6.11, which also gives an example of a morphological causative in Japanese.

Causative morphology is often classified as derivational, rather than inflectional, because it changes the meaning of a verb. It's included in this section because it fits into the general discussion of types of morphology you might encounter in the analysis of other languages.

EVIDENTIALS: Many languages use morphology to indicate a speaker's certainty about what they're saying, or the source of their evidence for what they say. This is called evidential marking.

For example, in Turkish there is a distinction between the "direct past" -di, used to mark things you are certain of or that you directly witnessed, and the "indirect past" -miš, used to mark things you have only indirect evidence for.

(5)	a.	gel-di

		come-PAST
		“came”
	b.	gel-miš
		come-INDIRECT.PAST
		“came, evidently”

In English we don’t have any grammatical marking of evidentiality. We can still express our evidence or certainty, but we do this with the lexical meanings of nouns, verbs, adjectives, and adverbs. For example, “I saw that…” would express that the source of your evidence is something you saw; “Apparently” would express that you aren’t 100% certain, etc.

MODALITY: Many languages express the possibility or necessity of something happening via morphology on the main verb. This is called modality. Examples of this include categories like the *conditionnel* or the *futur* in French.

GENDER: In English we mark gender on third person pronouns, and we also have some words that have derivational gender suffixes (like *–ess* on *actress* or *waitress*).

By contrast, gender in a language like French is best treated as inflectional: not only do all nouns have a semantically arbitrary gender, determiners and adjectives (and sometimes verbs) show agreement with the grammatical gender of the noun they’re associated with to. For example, the noun *chat* “cat” in French is masculine (abbreviated M), and so it appears with a masculine determiner and adjective; the noun *abeille* “bee” is feminine (abbreviated F), so it appears with a feminine determiner and adjective. This is independent of the actual sex of a cat or bee.

(6)	a.	le	petit	chat
		the.M	small.M	cat(M)
		“the small cat”		
	b.	la	petite	abeille
		the.F	small.F	bee(F)
		“the small bee”		

Many European languages have this type of gender system, which divides nouns into masculine, feminine, and sometimes neuter. It’s also found elsewhere in the world: for example, Kanien’kéha (Mohawk), spoken by about 3,500 people in Ontario, Quebec, and New York, has a gender system that includes masculine, feminine/indefinite, and feminine/neuter.

Other languages of the world have different noun class or noun classification systems, which also divide nouns into somewhat arbitrary classes, but categories that don’t match the gender categories used for humans.

For example, the languages in the Bantu family of languages (a subgroup of the Niger-Congo language family spoken across the southern half of Africa, and which includes Kinande, Zulu, and Swahili, among many others) put all humans into one class, but have somewhere between 4 and 10 classes in total, which (just like gender in French) can be reflected by agreement on other words in a sentence.

Algonquian languages, including Cree and Anishinaabemowin, divide nouns into animate and inanimate. Animate nouns are usually those that are alive, whether animals or plants, or spiritually important things like asemaa (tobacco). Inanimate nouns usually refer to physical objects that aren’t alive. Sometimes the same noun can be animate or inanimate with slightly different meanings: for example mitig means “tree” when it’s animate but “stick” when it’s inanimate. There are other nouns that are less predictable: for example, miskomin “raspberry” is animate, but ode’imin “strawberry” is inanimate.

4.8.7: Check your understanding

4.8.8: References

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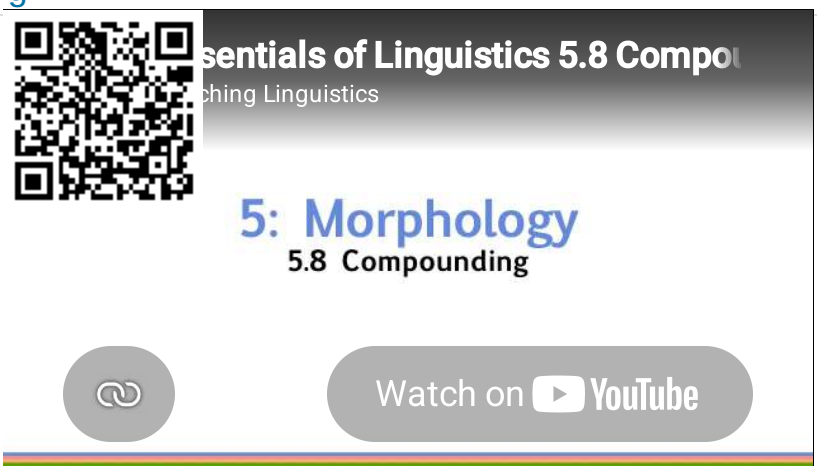
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4.9: Compounding



4.9.1: Compounds: Putting roots together

The last main "type" of morphology is **compounding**. Compounds are words built from more than one root (though they can also be built from derived words): if you find a word that contains more than one root in it, you are definitely dealing with a compound. Compounding differs from both derivation and inflection in that it doesn't involve combinations of roots and affixes, but instead roots with roots.

English is a language that builds compounds very freely—this is like other languages in the Germanic language family, like German and Dutch. For almost any two categories, you can find examples of compounds in English.

- **Noun-Noun** compounds include:
  - doghouse
  - website
  - basketball
  - sunflower
  - moonlight
  - beekeeper
  - heartburn
  - spaceship
- **Adjective-Noun** compounds include:
  - greenhouse
  - bluebird
- **Verb-Noun** compounds include:
  - breakwater
  - baby-sit
- **Noun-Adjective** compounds include:
  - trustworthy
  - watertight
- **Adjective-Adjective** compounds include:
  - purebred
  - kind-hearted
  - blue-green
- **Noun-Verb** compounds include:
  - browbeat
  - manhandle

- sidestep

- **Adjective-Verb** compounds include:
  - blacklist

4.9.1.1: Compounds and Spelling

In English we don't spell compounds in a consistent way. Some compounds—typically older ones—are spelled without a space, while others are spelled with a hyphen, and many new compounds are spelled with spaces, as though they are separate words.

We can tell that some sequences of "words" are compounds, though, in a few different ways. First of all, there is a difference in pronunciation. Compounds are always stressed (given emphasis) on their first member, while phrases (sequence of words) get stress on their last member.

So the compounds:

- bláckboard
- gréenhouse
- blúebird

Are pronounced differently than the corresponding phrases with adjectives followed by nouns:

- black bóard
- green hóuse
- blue bírd

Another difference is in the interpretation: a blackboard need not be black, and a greenhouse usually isn't green (though you grow green things in it).

Finally, there's a *syntactic* difference. Something we'll see when we get to Chapter 6 is that there's no way to string nouns together in English syntax, without connecting them with prepositions or verbs. So any time you see a string of "words" in English that all look like nouns, you have to be dealing with a compound.

English really likes building very long compounds out of nouns, though this is something many English users associate with German. In German, unlike in English, compounds are always spelled without spaces. So you get words like:

(1)		Donaudampfschiffahrtsgesellschaftskapitän
		Donau-dampf-schiffahrts-gesellschafts-kapitän
		"Danube steam shipping company captain"

The second row in (1) inserts the hyphens in this German compound so that you can see the roots more clearly—but if you look at the English translation, it actually tracks all the same nouns in the German example. English writing has just adopted the convention of writing long or novel compounds with spaces. Structurally, English compounds work just like their German counterparts.

4.9.1.2: Compounds and Headedness

If compounds have more than one root in them, which root determines the category of the word?

Most compounds—especially new compounds you might invent on the spot—have a **head**. The head of a compound determines its interpretation (a sunflower is a type of flower, a bluebird is a type of bird, etc.) as well as its category.

In English, the head of a compound is always on its right: English is a **right-headed** compound language.

Compounds that have a head are called **endocentric**. This is the same *endo–* morpheme you find in *endo-skeleton*. An animal (like a human) with a skeleton inside of it is endoskeletal, and a compound with a head inside of it is endocentric.

What about the compound equivalent of *exo-skeletal*, animals that have a carapace instead of a skeleton (like insects or crabs)? Compounds that are **exocentric** don't have a head inside of them—they don't describe either of their members.

Some exocentric compounds don't have an interpretive head, but still have what we might call a category head, in that the root on the right matches the category of the whole compound. For example, *redhead* ("person with red hair") is often listed as an

exocentric compound, because it does not describe a type of head. Similarly *sabretooth* is exocentric because it doesn't describe a type of tooth. But both of these are noun-noun compounds that are themselves nouns, so their right-hand member is almost a head. A *spoilsport* ("person who spoils other people's fun") is not a type of sport, but it is still a noun.

But other exocentric compounds don't even have a head in this sense. For example, *outcome* looks like a compound of a preposition and a verb, but is a noun. *Dust-up* is a compound of a noun and a preposition, but is a noun. *Tell-all* is a compound of a verb and a determiner (all), but is an adjective.

Finally, there is a special kind of compound usually called **dvandva** compounds. This term comes from Sanskrit, where *dvandva* means "pair". Dvandva compounds can be thought of as "co-headed"—they can be paraphrased with an "and" between the two members. Many dvandva compounds in English involve two roots that only occur in the compound, and that mirror each other's sounds. These are sometimes called reduplicatives.

- zigzag
- helter skelter
- flip flop
- riff raff
- hocus pocus

But we also have some other dvandva compounds:

- bittersweet
- secretary-treasurer
- parent-child (as in "a parent-child bond")
- blue-green (and many other terms for intermediate colours)

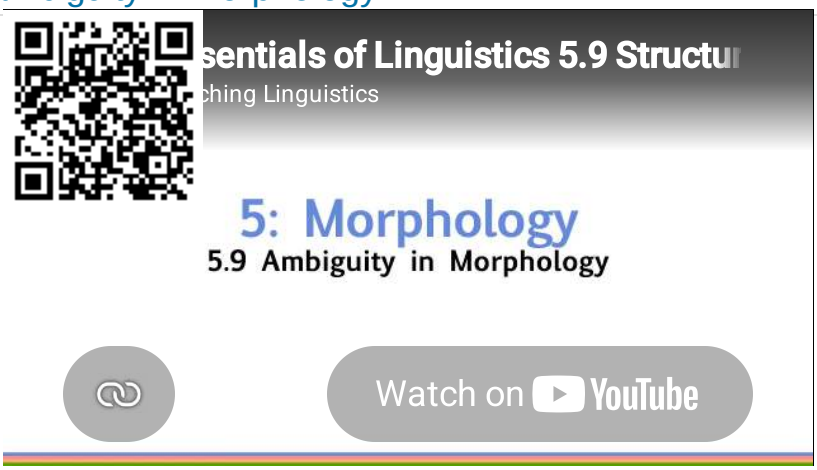
Overall, dvandva compounds are less common than other types of compounds in English.

4.9.2: Check your understanding

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4.10: Structural ambiguity in morphology



4.10.1: Ambiguity in derivation

It isn't always the case that affixes can only attach in one order. Sometimes both orders (or all orders, if there are more than two) meet the selectional requirements of all affixes involved.

When a string is compatible with more than one structural representation, it is **structurally ambiguous**—but not only are both trees potentially correct, they're often associated with different **meanings**.

Consider again the prefix *un-* but now in a word like *untieable*.

The word *untieable* is ambiguous. Pause for a moment and try to come up with its two interpretations.

The two interpretations of *untieable* are:

1. Able to be untied.
   For example: *the knot most people use for their shoelaces is chosen because it's easily untieable.*
2. Not able to be tied.
   For example: *if you haven't learned to tie knots, a celtic knot might seem untieable.*

As you might be able to see from the **paraphrases** I've given here—a paraphrase is a different way of saying the same thing—we can account for the ambiguity of *untieable* by attaching the two affixes in different orders.

For meaning 1 "able to be untied", we first attach the prefix *un-* to the verb *tie*, producing the verb *untie* (to undo a knot). Then we attach the suffix *-able* to *untie* to turn it into the adjective *untieable*.

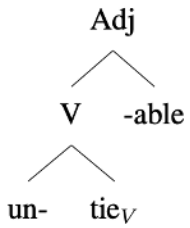


Figure 4.10.1: Tree diagram for *untieable*, on the interpretation "able to be untied"

For meaning 2 "not able to be tied", by contrast, first we attach the suffix *-able* to the verb *tie*, producing the adjective *tieable* (capable of being tied). Then we attach the prefix *un-* to this adjective. Now *un-* has its adjectival meaning, so we end up with an adjective meaning "not capable of being tied".

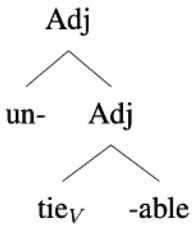


Figure 4.10.2: Tree diagram for *untieable*, on the interpretation "not able to be tied"

This type of ambiguity in derivational morphology requires that at least one affix be able to attach to bases of more than one category. We'll see that structural ambiguity is even more common in the case of compounds.

Structural ambiguity is different from the type of ambiguity we find with **homophones**—words that sound the same but have different meanings. If I say that I went to the *bank*, without more context you don't know if I went to the kind of bank that's a financial institution or the kind of bank that's the edge of a river. There's nothing *structural* in this ambiguity, instead there are just two different roots that sound the same.

4.10.2: Ambiguity in Compounding

Just as words created via derivational morphology can be ambiguous, so can compounds. In fact, in English it's often easier to create new examples of structural ambiguity with compounds than it is with derivational morphology, because any string of noun roots can hypothetically combine into a compound in multiple ways.

Consider the compound *river boat race*. This compound contains three roots: *river*, *boat*, and *race*. These could combine in two different orders, which correspond to two different meanings.

- Option 1 would be to first create the compound *river boat*, which refers to a particular kind of boat. Then if we add the root *race* to create the compound [*river boat*] *race*, the full compound describes any race between boats of that type—even if the race is held in a lake or on the ocean.



Figure 4.10.3: A race between two steamships, also calledriverboats. Source: Public domain via Wikimedia Commons

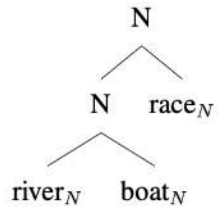


Figure 4.10.4: Tree diagram for *river boat race*, on the interpretation "a race involving river boats"

- Option 2 would be to first create the compound *boat race*, which would describe any race between boats. Then if we add the root *river* to create the compound *river* [*boat race*], the full compound would describe a race (with any type of boats) that takes place on a river.



Figure 4.10.5:A boat race held on the Kallada River. Source: Arun Sinha from India, CC BY 2.0, via Wikimedia Commons

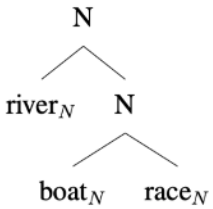


Figure 4.10.6:Tree diagram for *river boat race*, on the interpretation"a boat race taking place on a river"

Phonology sometimes makes compounds less ambiguous than they appear in writing. For some English speakers, for example, the first meaning above may be pronounced with primary stress on *ríver*, while the second meaning may be pronounced with primary stress on *bóat*.

In summary, some words are ambiguous because the morphemes they are composed from can combine in more than one order. This is the case for both derivational morphology and compounds. We can use tree diagrams to represent the different orders in which morphemes combine; in section 5.10 we will review in more detail how to draw morphological trees.

4.10.3: Check your understanding

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4.11: Morphophonology

4.11.1: 4.5.1 Morpho-phonology, from Sarah Harmon



4.11.1.1: Video Script

There's a phrase that we say with respect to language, that language does not occur in a vacuum. What that means is that language doesn't work just on its own. Any given area of language doesn't just change or stay the same on its own. Every aspect of language is related to every other aspect of language. When we talk about morphology, we can't just talk about lexicon and morphemes; we have to also include other aspects of language. The next several sections in this chapter are going to cover combinations of morphology and some other aspect of language. In this case, we're going to focus on sound so morph-phonology.

Just to give you a little hint, when we were talking about phonological rules in the previous chapter, some of those rules did not have anything to do with morphology at all. Think about, for example, the aspiration rule in English, when consonants are in the front of a stressed syllable, they get aspirated—that little puff of air. That has nothing to do with the morphology—it has only to do with phonology—so that is a **morphologically-irrelevant sound change**.

That being said, in phonology we have seen various types of **morphologically-relevant rules**:

- Whether it was the Hebrew reflective pronoun [lehit] that swaps places if the next verb it goes with starts with a sibilant;
- Whether it's Spanish and its epenthesis rule, the fact that an [s] + consonant cannot start off a word or lexicon; you have to epenthesize, you have to add that [e] in front of it;
- Whether it’s Classical Latin with respect to some of its lengthening;

these rules have to do with morphology in some way.

Let me show you something that probably hits a little closer to home. Look at these pluralized nouns. I've written them, both in the English writing system, as well as in IPA.

- buts,
- buds,
- buses,
- bushes,
- batches,
- badges,
- buys,
- bins,
- bills.

Notice that we technically write the plural of these nouns, the plural affixes, in one of two ways, either as an *-s* or as an *-es*. You were probably taught it has something to do with that sound that goes before. However, look at the IPA we have [-s], we also have [-z], and we have [-ɨz]; for us in western North American English, we tend to see [-ɨz] but in many cases, you also can say [-əz], so it's either a schwa [ə] or a barred 'i', that central high vowel [ɨ]. Either way, there's a vowel there in between that [-z] and the previous syllable. We don't actually have two; we have three forms of that plural suffix, the plural inflection. Can you spot the difference? Can you tell when you use each one of those forms? I'll give you a minute; pause here for a second.

Okay, are you ready to see the answer?

The rule is if the last constant of the root is a sibilant—an 's' like sound—then you have a dissimilation rule and you use [-ɨz] or [-əz]. If you have a voiceless consonant as that last consonant sound, then you have [-s], an assimilation rule. If you have any voiced constant or vowel or semi consonant/glide, then you have [-z] as the rule. That is it; it depends on the last sound of that root. Is it a sibilant? Is it voiceless? Or, is it voiced? That is an example of a morph-phonologic rule.

We talked about phonemes in an earlier chapter, which went in slashes and were the default form, and then allophones, which went in square brackets and went to describe what we actually do what we actually pronounce. The phoneme is always one of those variants and then we have multiple versions. We can do the same with morphemes: the **morpheme** is going slashes and then how they are realized how they are pronounced are the **allomorphs** and they go in square brackets. We will work with this more towards the end of the chapter when we go to analyze morphological data sets.

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4.12: Morphosyntax

4.12.1: 4.8.1 Morpho-syntax, from Sarah Harmon



4.12.1.1: Video Script

One really interesting way that we incorporate morphology into our languages is having it combined with syntax. As the last real content area of morphology, as we ultimately will lead to syntax, let's talk about how these to combine and then combine them really just amazing ways.

One way that we can analyze languages and talk about how these morphemes come together to create lexicon, and then larger sentences and phrases. One way we can analyze this is whether a language is more analytical or more synthetic. When we talk about an **analytical language**, we're talking about something that's **isolating;** that's frequently the term we use. What we say is that there's very few, if any, affixes. When they do get thrown in, they are not that common and they don't give as much information; most of the time a truly analytical language has no affixation whatsoever. Individual lexicon are put together and are analyzed in the way they combine. It is interesting to note that most analytical languages rely heavily on word order; that's something we'll get to again when we talk about syntax. I have Mandarin here; Mandarin is one of the Sino-Tibetan languages and the truth is all of the Sino-Tibetan languages are heavily analytical. They have no inflection whatsoever, at least not in the way that we look at it in the rest of the world. They do not put a piece onto a morpheme and combine them to create larger lexicon. They just have individual one-syllable, and occasionally two-syllable, lexicon that get combined in certain ways and that, together, depending on the word order, convey a certain meaning. This is Mandarin, but you can say the same for Shanghainese, Cantonese, Myanmar or Burmese, Tibetan. All of these languages are spoken in China and Southeast Asia and are connected to that Sino-Tibetan family, the same can also be said for a number of the Southeast Asian languages in Vietnam, Laos, Cambodia, Thailand, Indonesia and others. I will not butcher Mandarin; my pronunciation is terrible, but what you can see here is the following. You have a morpheme that means ‘first person’, a second morpheme that means ‘plural’, and so combined when they are together, they mean first person plural, 'we'. Notice that they are not combined in a traditional sense. They are individual lexicon; they stand alone. You have a verb here, and then you have a noun so 'we play piano', 'we are playing piano'. Really, you can't tell tense in this case either, because you have no tense marker; you have nothing that says *yesterday*, *today*, *tomorrow*. Compare that to be where you have the same combination, but you do have a past tense marker. That is how tense is marked—not really marked as a morpheme that is attached to the verb, rather it is a stand-alone. It is this if we are saying 'we play piano yesterday'. For an English speaker or a speaker of most other languages, that would sound really odd; most languages have a tendency to mark the verb in some way to let you know that it has a tense marker or something else. Analytical/isolating languages do not do this. By the way, notice, for example, the combo for 'we', the first person plural, and notice that when it's an object, it has the exact same form; there's no difference. Mandarin, like most analytical languages, heavily lives on word order, it has to be in a certain order for anyone to understand it.

Compare this to Hungarian. Hungarian is a Finno-Ugric language; it's one of my favorites to use, not just because we have a significant Hungarian population here in the United States, especially here in California, but also because we like to think of all the European languages as being similar. In fact, there are some that are very different. Finno-Ugric languages have some similarities with Indo-European languages, but they are quite different in many ways. Hungarian Estonian and Finnish are the three main Finno-Ugric languages, but there are more. Hungarian is a **synthetic language**, meaning that you have combinations of affixes and roots, and they are combined to create larger morphemes. If you come if you look at the terms for 'the man'. You see as a subject and you see it as an object; that little [-t] at the end of *embert* is telling you that it's an object, not a subject. The same is true if you compare the term for ‘the dog’ as a subject versus ‘the dog’ as an object; the object has that [t] at the end. When we look at a possessive, 'our house' versus 'your house', notice that has is the root for 'house' and depending on the suffix depends on whose house it is; that's how you modify it. This includes what we like to think of as a prepositional phrase—in Hungarian, it's a post-positional phrase (more on that in syntax)—it is part of the inflection of the lexicon.

Synthetic languages and analytical languages are on a spectrum; there isn't really a ‘super synthetic’ language, although we'll get to that concept in a minute. Most languages are on the spectrum; English is a great example of being smack in the middle. In many ways, it's quite analytic; we don't have that many inflectional morphemes. However, we have plenty of affixes; most of them are derivations. We certainly use them in combination with a root to convey information, so we do have synthetic elements as well. We're kind of in the middle of that spectrum: more analytical languages on one side, more synthetic languages on the other.

The other way to think about how more fields combine in a given language is to talk about them as being agglutinating, functional, or polysynthetic. Let me explain what those terms are and individually give you some examples.

Agglutinating languages put morphemes together loosely; you can see the edges of the puzzle pieces as you fit them together. Hungarian is a great example; you can pick out the different morphemes. Another example is Swahili. I love using Swahili and the other Niger-Congo languages because it's really straightforward to pick out their different morphemes. You can frequently see them pretty clearly; you just need to take a minute to look at the pieces. This is the verb 'to read' in present tense, in past tense, and then future tense. You have first person singular, so 'I', second person singular, 'you', and third person singular and, in this case, masculine, so 'he'. Notice that the first person marker is *ni-*, and you can see it horizontally across compared to *u-* as the second person singular marker and *a-* the third person singular masculine marker. You have a morpheme that gives you the tense, and then you have the root of the verb. You can see those puzzle pieces pretty clearly. When you learn an agglutinating language. I'm not going to say it's easier to learn the morphology, but certainly there's a piece that's a little easier, in that you're able to see the pieces.

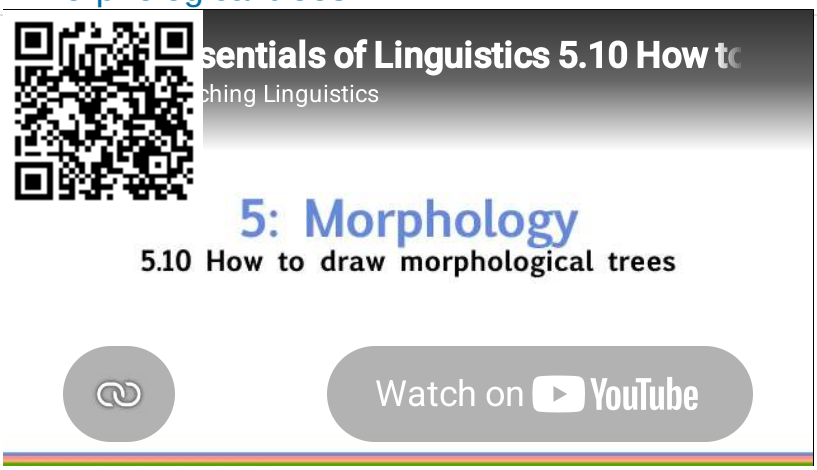
Compared to a language like English or Spanish, which is fusional, and it's a different story. **Fusional languages** combine roles in a given suffix or affix. I say suffix because most functional languages tend to have a lot of suffixation. I earlier showed you Spanish verb *tener*, or 'to have', and it's multiple conjugations Well, this is *hablar*, 'to speak'. Those of you who have experience with Spanish, you know this verb well. This is just another little bit of a breakdown of those suffixes that give us those inflections and, as you, as you can see, they have multiple roles. That [-o] at the end of [ablo] tells you first person singular present indicative; I actually forgot to put the mood on. This slide gives you four pieces of information in one syllable, one sound even. The same is true for that [a] and that [e], as well as that [n]; technically it's the vowel that goes with it, but that changes as well. When you learn a fusional language, one of the challenges is remembering that that one little syllable or one little inflection carries so much information, especially if the information is very different than what you do in your native language. There's a real juxtaposition as to trying to decipher what that sound means. Those of you who have had to learn Spanish, you know that one of the other pieces that's really important is the stress on the syllable. If you are stressing the root of the verb or if you're stressing the affix and that can drastically change, meaning that, for example, [ablo] as you see it written here, means 'I speak now' in the present tense indicative course. However, if I say [abló] and stress the last syllable, that is third person, singular, past tense and now we have to add an aspect; we have to say punctual as well. The difference between ‘I speak (right now)’, and ‘he spoke (yesterday)’ is all in where you put that stress syllable. Fusional languages have affixes that include multiple meanings and even multiple roles. English [-s] as an inflection is a great example.

We have agglutinating, and we have fusional, and those two are on a spectrum, but way the end of the spectrum is really a third one and it's called **polysynthetic**. It combines that synthetic (as in synthetic and analytic language) and fusional or agglutinating, that depends on the language. It combines these aspects in really interesting ways: highly complex lexicon that have multiple affixes and stems. We're not just talking about a language that has a stem and a couple different aspects of stuck on somewhere. We're talking about languages in which a given lexicon, a stand-alone word has an entire phrase, or even sentence, involved. This is Sora, a language spoken in southern India, it is a Dravidian language, it is not Indo-European. Sora is a really great example of polysynthetic languages in action. You see this sentence here, 'he is catching fish', but notice that there are only two lexicon: the

lexicon for 'he', so the subject, and then the lexicon for the entire verb phrase. All of it in one lexicon: the morpheme for 'catch', the morpheme for 'fish', the morpheme for 'not past' (what we would consider maybe just present but, it's just not-past), and the morpheme for 'do', as in 'this is an action and an active sentence'. It's not just having a whole verb phrase in a single stand-alone lexicon; you can have an entire sentence in a single standalone lexicon: 'catch-tiger-non past-do-first person agent', which is saying the first person is this person doing the action, so 'I will catch a tiger', all in one lexicon. Polysynthetic languages are completely fascinating. The fact that you can pack in so much information into one lexicon, suddenly learning a language like English or Spanish or Japanese or Russian isn't so difficult.

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4.13: How to draw morphological trees



In Section 5.9 we saw that the order in which we attach derivational affixes, or the order in which we build compound words, sometimes matters. So a word like "governmental", isn't just a string of the root *govern* + the suffix *–ment* + the suffix *–al*. Instead, it's the result of first combining *govern* and *–ment*, and then combining the result of that with a further suffix *–al*.

In linguistics, we often represent this type of structure with a **tree diagram**. Trees are used to represent the **constituency** of language, the subgroupings of pieces within a larger word or phrase. One of the big insights of linguistics is that constituency is always relevant when describing how pieces combine together, whether we're looking at morphemes within a word or words within a sentence. (though different theories in linguistics often take different views of what range of hierarchical structures are possible in natural languages.)

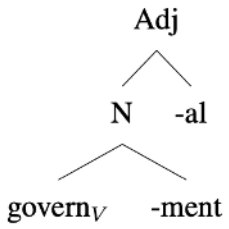


Figure 4.13.1: Tree diagram for *governmental*

When drawing a morphological tree, we can follow these steps:

1. Identify the root and any affixes
   - 1 root: non-compound word
   - 2 roots: compound word
2. Determine the category of the root
3. Determine the order in which affixes attach
4. Determine the category of any intervening bases, and of the whole word.

You might find that it makes sense to do these in different orders, or in different orders in different words. The best way to find out what works for you is to practice.

Linguistic trees also represent the order of their elements—you should be able to read along the bottom of the tree, and get the order of morphemes in the word (or words in a sentence, as we'll see in Chapter 6). This means that prefixes should always go on the left of the constituent they attach to, and suffixes should always go on the right (assuming we read left-to-right).

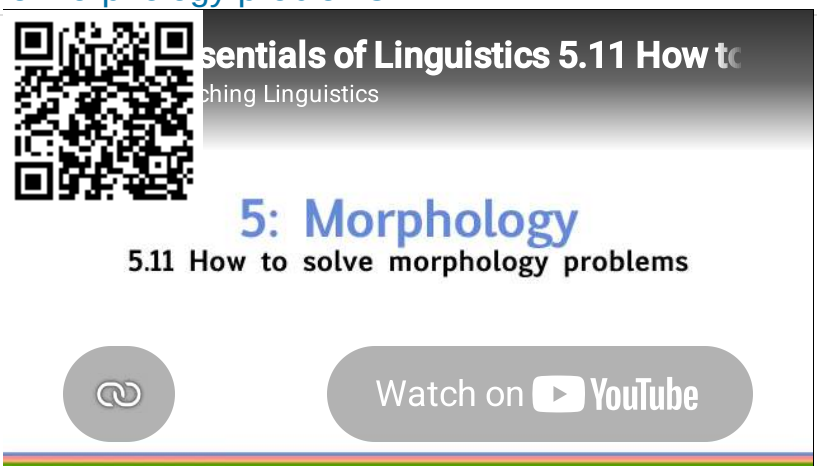
4.13.1: Check your understanding

Coming soon!

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4.14: How to solve morphology problems



An important skill when it comes to morphology is being able to **segment** words in another language into their individual morphemes—in other words, being able to identify roots and affixes in complex words.

Remember that a morpheme is a consistent pairing of **form** (sound or sign) with **meaning or function**. Finding morphemes requires comparing words whose meanings you know, to see if the shared parts of their meanings correspond to shared parts of their forms.

Consider the example of singular, dual, and plural nouns in Inuktut:

(1)		*gloss*	*singular*	dual (2)	plural (3+)
		"door"	matu	matuuk	matuit
		"cloud"	nuvuja	nuvujaak	nuvujait

How can we find the **plural** morpheme in these examples? If we just start with a single plural word, like *matuit* "doors (three or more)", there's no way to figure out how to divide it (or even if it can be divided). But if we compare words that share **only one** aspect of their meaning/grammatical function, we can start to divide words:

matu**it** : nuvuja**it**
door.**PL** : cloud.**PL**

The words *matuit* and *nuvujait* are both plural. Their sounds don't overlap very much, but they do share the final *-it*. This is a consistent pairing of form and meaning, so we can hypothesize that *-it* is the suffix meaning PLURAL.

Next we can compare *matuit* with another word with the meaning "door".

matuit : **matu**
door.PL : **door**.SG

The words *matuit* and *matu* both have "door" as part of their meaning; they also both contain the string *matu*. This is a consistent pairing of form and meaning, so we can identify *matu* as the root meaning "door". (This means that *matu* doesn't have any suffix meaning singular—that's common for singular nouns across languages, but note that you will sometimes find a singular suffix. We could also say that there's a -∅ singular suffix, but that's not necessary.)

We can also go back to *nuvujait*, and see that once we've identified the suffix *-it* we're left with the string *nuvuja*, which by hypothesis would be the root meaning "cloud"—and indeed, *nuvuja* appears in our data with that meaning!

So far we have three morphemes:

- **matu**: "door", root
- **nuvuja**: "cloud", root
- **-it**: PLURAL, suffix

What about the dual? We have two dual nouns in the data set above.

- matuuk *door. (two)*
- nuvujaak *clouds (two)*

We can separate out the roots that we've already identified:

- matu-uk *door. (two)*
- nuvuja-ak *clouds (two)*

We're now left with two slightly different suffixes: *–uk* and *–ak*. Because we've already identified the roots, we can be pretty confident that these suffixes both express the meaning DUAL. They would be **allomorphs**:

- **-uk/-ak**: DUAL, suffix

If we had more data, our next step would be to try to find out if the choice of *-uk* vs. *-ak* is predictable in Inuktitut. Based on these two words, we might hypothesize that *-uk* occurs after [u] and *-ak* occurs after [a] (an example of phonologically-determined allomorphy), but we would need to check more words to see if that prediction is correct.

In summary, to segment data from an unfamiliar language into morphemes, start by comparing words that differ in a single aspect of their meaning, and see if you can match the difference in meaning to a difference in form. If you ever get stuck, go back and see if you can change your earlier hypotheses about the boundaries between morphemes in earlier words.

You can practice segmenting morphemes in an unfamiliar language in the exercises at the end of this chapter.

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4.15: Exercise your linguistics skills

Exercise 1. *Basic; 5.2, 5.11.* Below is a list of words from Turkish, the most widely-spoken member of the Turkic language family, and the national language of Turkey and Northern Cyprus (also spoken as a minority language in many other countries). of examples taken from Turkish. All words are transcribed in the International Phonetic Alphabet. List all the morphemes that occur in the Turkish data, and give their *glosses* (that is: state their meaning or grammatical function). For each morpheme, state whether it is a root, a prefix, or a suffix. Paying attention to the order of morphemes in these examples, how would you say "in our little hands" in Turkish?

- [deniz] 'an ocean'
- [elim] 'my hand'
- [denize] 'to an ocean'
- [eller] 'hands'
- [denizin] 'of an ocean'
- [diʃler] 'teeth'
- [eve] 'to a house'
- [diʃimizin] 'of our tooth'
- [evden] 'from a house'
- [diʃlerimizin] 'of our teeth'
- [evdʒɪkden] 'from a little house'
- [eldʒɪke] 'to a little hand'
- [denizdʒɪkde] 'in a little ocean'
- [denizlerimizde] 'in our oceans'
- [elde] 'in a hand'
- [evdʒɪklerimizde] 'in our little houses'

Exercise 2. *Intermediate; 5.4.* Examine the following pairs of words from Kreyòl (also known as Hatian Creole), a Romance language spoken in Haiti. List all the morphemes that occur in these examples. For any morpheme with two or more allomorphs, make a generalization about the environment in which each one occurs, and state whether the allomorphy is lexically or phonologically conditioned. (Note: a tilde over a vowel indicates that the vowel is nasalized.)

- panie 'basket' ~ paniea 'the basket'
- trou 'hole' ~ troua 'the hole'
- chẽ 'dog' ~ chẽã 'the dog'
- pitit 'child' ~ pititla 'the child'
- ãj 'angel' ~ ãjla 'the angel'
- madãm 'lady' ~ madãmla 'the lady'

Exercise 3. *Basic; 5.6–5.7.* For each of the following English words, identify the affix(es) in the word. For each affix, say whether it is derivational or inflectional. For inflectional affixes, say what grammatical information the affix indicates.

purity
newest
misunderstand
Canadian
unlikely
weaken
nieces
expectantly

Exercise 4. *Intermediate; 5.5–5.7, 5.10.* For the bolded word in each of the following sentences of English, identify its category, and state the criterion (or criteria) you used to determine its category. For all the morphologically complex words, identify the root and all the affixes, and determine each affix's selectional requirement (what it attaches to) and what change it makes to the category and/or meaning of its base. Bonus: try drawing trees to show the structure of any morphologically complex words.

1. The car goes very **fast**.

2. Amy likes hot **weather**.
3. Some **babies** never sleep.
4. I **dream** about the future.
5. I had a **dream** last night.
6. Our **discussion** was very interesting.
7. They started to run **quickly**.
8. I appreciate your **politeness**.
9. The store **misclassified** that book.
10. She founded a **nongovernmental** organization.

Exercise 5. *Advanced; 5.1–5.6.* Consider the English words *conceive*, *receive*, *perceive*, and *deceive*. Are these words morphologically simple or morphologically complex? Justify your answer with reference to concepts introduced in this chapter, mentioning additional facts of English morphology if relevant. Discuss evidence that argues for a different conclusion, if any.

Exercise 6. *Intermediate; 5.8.* Compound words in English are variable in their spelling: some are spelled with no space between the elements of the compound (*redhead*, *greenhouse*), some are spelled with a space (*ice cream*, *ski boots*), and some are spelled with a hyphen between the elements (*gluten-free*, *long-term*). Identify all the compounds in the following sentences[1]:

> *"Amélie Tourain leaned forward a little and switched on her desk light."*
>
> *"The third occasion on which she said something funny the headmistress had glanced at her over Doris Anderson's note-book, then at Mlle Devaux, and after that things went much easier with the grammar teacher."*
>
> *"Mlle Tourain was sitting back in her chair now, and had begun to tap the rubber end of her pencil against the brass ink-pot."*
>
> *"She had spoken with an undercurrent of passion running through her words, as she was speaking now."*

Exercise 7. *Basic; 5.8.* The examples below show compounds in Hebrew, a Semitic language. What category or categories of roots can participate in compounding, based on these examples? Do compounds in Hebrew appear to be left-headed or right-headed?[2]

(a)	beyt	xolim	(b)	batey	sefer
	house	patient		houses	book
	hospital			schools	
(c)	ʻorex	din	(d)	yom	huledet
	editor	law		day	birth
	lawyer			birthday	
(e)	gan	xayot	(f)	gan	yeladim
	garden	animals		garden	children
	zoo			kindergarten	

1. The sentences for Exercise 3 are taken from Swiss Sonata by Gwethalyn Graham, which is in the Public Domain in Canada. ↵
2. The Hebrew examples are adapted from Borer, H. (2011). "Afro-Asiatic, Semitic: Hebrew." In *The Oxford Handbook of Compounding*, eds. R. Lieber and P. Štekauer. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199695720.013.0027 ↵

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CHAPTER OVERVIEW

5: Phrases- Syntax

Learning Objectives

When you've completed this chapter, you'll be able to:

- Use the evidence of constituency tests to identify the phrases within a sentence
- Categorize words into lexical and functional categories based on their distribution
- Identify relationships between grammatically related sentences (active and passive, statements and questions)
- Draw tree diagrams to represent the structural analysis of sentences in English

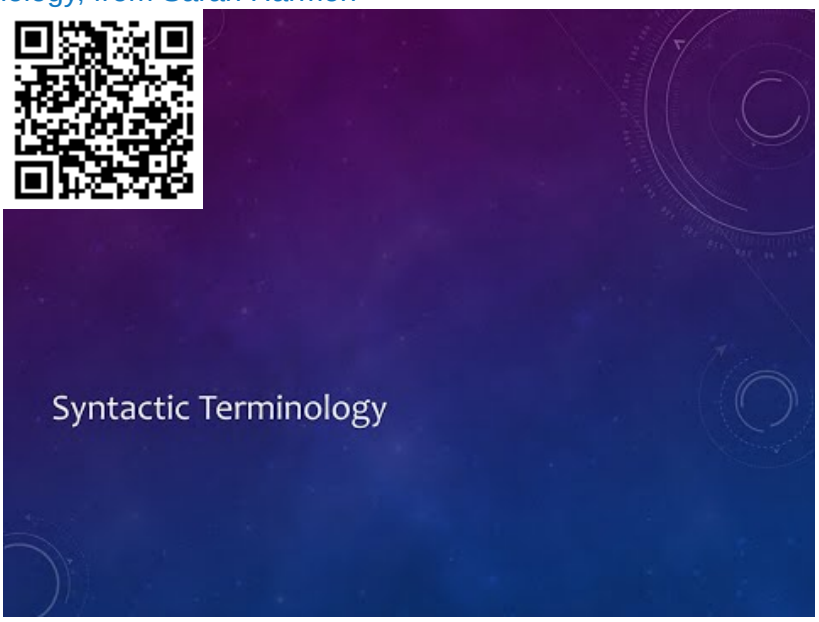
In Chapter 5 we looked at the internal structure of words (morphology). In this chapter we look at how words are organized into **phrases** and **sentences**, which in linguistics is called **syntax**. In linguistics, syntax is the study of how words are organized into phrases and sentences. Just as the morphemes in a word are organized into structures, the words in a sentence are also best viewed not just as a string of words, but instead as having a **hierarchical structure**. And just as words contain a head morpheme, we'll see that every phrase has an element that is its **syntactic head**.

5.1: Syntax Terminology
5.2: Word order
5.3: Structure within the sentence- Phrases, heads, and selection
5.4: Functional categories
5.5: Clausal embedding
5.6: From constituency to tree diagrams
5.7: Trees- Introducing X-bar theory
5.8: Trees- Sentences as TPs
5.9: Trees- Embedded clauses
5.10: Trees- Movement
5.11: Grammaticality
5.12: Exercise your linguistics skills.

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5.1: Syntax Terminology

5.1.1: Syntax Terminology, from Sarah Harmon



5.1.1.1: Video Script

Just a quick piece about syntactic terminology. Mostly because it's going to sound very familiar compared to what we talked about in morphology.

When we talk about syntax, we talk about lexical categories and about functional categories. When we talk about these things, we're talking about their role with respect to the overall structure of a given phrase or sentence. You'll notice that this pretty closely mirrors what we see when we talk about morphology. We talk about lexical vs functional lexicon, and open versus closed class lexicon. There is one exception: you'll notice that P (Preposition) is now a lexical category, not a functional category. That's what happens with prepositions or adpositions because it can be either before or after the noun phrase.

The reality is prepositions/adpositions are tweeners. They are somewhat lexical syntactically because they can have a phrase; they frequently are part of the phrase, and they are the head of that phrase. That being said, morphologically they are closed class and tend to act a little more functional. We can't make new ones easily; we don't tend to have multiple versions of them; they tend to pretty much stay as is and they don't tend to be borrowed from one language to another. Just know that prepositions have a dual role.

Everything else is fairly self-explanatory. The **lexical categories** all can be heads of their own phrases, so nouns, verbs, adjectives, adverbs and prepositions. **Functional categories** are only going to be complements; they're going to support a lexical item in some way, shape or form; these are determiners, auxiliaries, pro forms (pronouns and others), conjunctions and complementizers.

In the next section, we're going to talk about word order, and then after that we're going to start talking about actual structure. It is going to be important to remember that there is this big distinction between a lexical category and a functional category and we're going to see them both used in a variety of ways.

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5.2: Word order

5.2.1: A starting point: basic word order

If you think about hearing or seeing a sentence, or if you think about reading a sentence that's been written down, a really obvious property is that words and morphemes come in a particular order. Indeed, the only difference between the grammatical and ungrammatical sentences we saw in 6.1, repeated below in (1), is that the words appear in different orders.

(1)	a.	All grypnos are tichek.
	b.	*Grypnos tichek all are.

Fixed vs. flexible word order

The relevance of word order for grammaticality is particularly strong for a language like English, which has relatively **fixed word order**. There isn't much flexibility in English to change the order of words in a sentence, without either changing the meaning or making the sentence ungrammatical. Many other languages also have relatively fixed word order, including French, Chatino, and Choktaw, but lots of other languages have much more flexible word order. In Latin, Anishinaabemowin, Kanien'kéha, and ASL, to name just a few, word order is relatively flexible, and determined by stylistic factors or by the topic or focus of the sentence.

What is the basic order of words in English sentences? Based on the grammatical sentences in (2) and the ungrammatical ones in (3), see if you can come up with any generalizations about where the **verb** appears in English.

(2)	a.	Amal ate chocolate.
	b.	Beavers build dams.
	c.	Cats chase mice.
	d.	Daffodils bloom.
	e.	Eagles fly.

(3)	a.	*Amal chocolate ate.
	b.	*Build beavers dams.
	c.	*Chase mice cats.
	d.	*Bloom daffodils.
	e.	*Fly eagles.

These sentences are all **statements**, not **questions** or **commands**: they state a fact about the world, something that could be *true* or *false*. Looking at (3b-e), and comparing them with the grammatical sentences in (2), we can make the generalization that the verb cannot be the *first* word in an English statement.

What about (3a)? In (3a) the verb isn't the first word, but the sentence is still ungrammatical. We might try to explain that by saying that the verb also can't be the *last* word in a statement—except that the verb does come last in (2d) and (2e), which are both grammatical. So a more accurate generalization would be to say that the verb in an English sentence has to come after at least one **noun**, and that it *can* be followed by a second noun, but doesn't have to be.

We could write this generalization as a kind of formula or template: the grammatical sentences in (2) have the order **N V (N)** (the parentheses around the second "N" mean that it is optional).

Another way to describe word order involves talking not just about categories like nouns and verbs, but grammatical functions like **subject** and **object**. Word order in English doesn't just require that *any* noun come before the verb, it must be the noun that corresponds to the subject. Similarly, if the verb is a **transitive** verb with an object, the object noun must come after the verb. This is why *Chocolate ate Amal.* is a grammatical sentence of English (though with a somewhat implausible meaning), but cannot express the same meaning as (1a) (*Amal ate chocolate*).

If you aren't sure about terms like "subject", "object", and "transitive", read the rest of this section and then come back and re-read the last paragraph. If you feel you are comfortable with those terms, it's still a good idea to review the definitions given here, to make sure that you understand the terms in the same way they're used in this textbook.

5.2.2: Key grammatical terminology

This section reviews some key grammatical terminology that you might be familiar with from elsewhere (often from language classes). This vocabulary is important for describing the basic structure of phrases and sentences, and we'll use it frequently throughout this chapter.

Sentence

A string of words that expresses a complete **proposition**. For statements (as opposed to questions or commands), a proposition is something that can be *true* or *false*. A sentence is a **clause** that stands on its own as an utterance.

Clause

A clause is a combination of one subject and one predicate. Some clauses occur *inside* other clauses, though (see **complex sentence** below), and so not all clauses are independent sentences.

Predicate

A predicate is the state, event, or activity that the sentence attributes to its **subject**.

The word "predicate" is used in two ways. Sometimes it is used to refer to a single head or word (usually a verb or an adjective), but other times its used to describe everything in the sentence other than the subject (for example, a whole **verb phrase**). In this chapter we use it in the first sense, to refer to a word that combines with a subject and (sometimes) one or more objects.

Arguments

Arguments are phrases that correspond to the participants or actors involved in a sentence's predicate. They are typically **noun phrases**, but it's possible to have arguments of other types (usually prepositional phrases or whole clauses).

In the following sentences the arguments are in **bold** and the predicate is *italicized*.

(3)	a.	**Vanja** *loves* **chocolate**.
	b.	**The children** *gave* [**the kitten**] [**a toy**].
	c.	**Everyone** is *excited*.

5.2.2.1: CLASSIFYING PREDICATES

Predicates can be classified by their **transitivity**, which is the *number* of arguments they take. (This is also sometimes called the **valency** of a predicate.) The words for transitivity are based on the *number of objects* a predicate takes.

Intransitive

An intransitive predicate takes one argument (the subject); no object.

Transitive

A transitive predicate takes two arguments (subject and direct object); one object.

Ditransitive

A ditransitive predicate takes three arguments (subject, direct object, and indirect object); two objects.

5.2.2.2: CLASSIFYING ARGUMENTS

Arguments can be classified in at least two ways: their position in the sentence, and how they're related to the predicate (are they the actor, the thing acted upon, etc). For now we'll focus on the **position** of arguments, with diagnostics specific to English. Later in this chapter, in 6.10 Arguments and thematic roles, we'll return to classifying arguments based on their role in the event.

Subject

Subjects almost always appear *before* the predicate in English, and control agreement on the verb. If the subject is a pronoun, it is in nominative case (*I*, *we*, *you*, *he*, *she*, *it*, *they*)

Direct object

Objects usually appear *after* the verb in English. If the direct object is a pronoun, it is in accusative case (*me*, *us*, *you*, *him*, *her*, *it*, *them*)

Indirect object:

With ditransitive verbs, the indirect object is often the recipient of the direct object. The indirect object is often (not always) marked by "to" (or another preposition); if it is a pronoun, it is in accusative case (but in languages that have dative case, often in dative case)

5.2.2.3: CLASSIFYING SENTENCES

Now that we've looked at grammatical terminology relating to predicates and arguments within sentences, let's talk about terminology for sentences and clauses as a whole. First, we can classify them according to their **function**—whether they are used to make a statement, ask a question, or give a command.

Declarative

Declarative clauses are statements, things that can be true or false.

Interrogatives

Interrogative clauses are questions. Questions come in two general types:

- Yes-No questions, like: *Did Romil watch a movie?*
  and
- Content questions, like: *What did Romil watch?*

Imperatives:

Imperative clauses express requests or commands. For example: *Open the door (please)!*

Alternatively, we can classify sentences according to their **structure**; that is, according to whether they contain one clause or more than one clause, and (if more than one clause) how the sub-clauses are related to one other.

Simple sentence

A sentence is **simple** if it contains only one clause. All the sentences we have seen so far have been simple sentences.

Compound sentence

A **compound** sentence has at least two clauses, linked by a conjunction (*and*, *or*, or *but*). For example: *[Danai laughed] and [Seo-yeon cried]*.

Complex sentence

A **complex** sentence is one that contains a subordinate embedded clause—a clause inside a clause. This is an example of recursion! For example: *Seo-yeon knows [that Danai laughed]* .

5.2.3: Variation across languages: order of Subject, Object, and Verb

Having reviewed terminology relating to predicates and their arguments, we're now in a better position to talk about variation across languages in terms of basic word order—the order found in simple declarative clauses, in the absence of any special emphasis or topic.

English is **Subject-Verb-Object** (SVO). This is one of the most common word orders in the world's languages, found in about 35.5% of languages (Dryer, 2013). Other languages with this basic word order include most of the Romance languages, ASL, both Mandarin and Cantonese, and Nahuatl. (This word order is usually referred to as "SVO" even though not all clauses have objects; in a sentence without an object, the order would just be SV.)

The most common basic word order is Subject-Object-Verb (41% of languages, according to Dryer 2013); for example, Japanese and Korean are both SOV languages, as is Haida.

Even though SVO and SOV are very common orders, all the other logically possible orders for subjects, objects, and verbs are also attested in the world's languages.

Basic Verb-Subject-Object order is found, for example, in Irish and the other Celtic languages, as well as in Anishinaabemowin. Orders where the object comes before the subject (VOS, OVS, OSV) are less common, but nonetheless found in a few languages.

As we noted before, even though most languages have a basic word order (the order found in neutral declarative sentences), in many languages this order is much more flexible than it is in English.

When word order is flexible, it's usually the case that order determined at least partly by **topic** and/or **focus**—the topic is the thing you're talking about, and the focus is something you want to emphasize. So while English has a very strict SVO word order, languages with word order that is flexible with respect to the subject and predicate might be said to have a strict **topic-comment** word order, where he first element in the sentence is the **topic** (the thing the sentence is about) and the rest is a **comment** on that topic. Language users will prefer or require particular word orders in particular conversational contexts.

In Chapter 9.3 Dr. Kanatawakhon-Maracle gives several examples of flexible word order of this type in Mohawk (also known as Kanien'kéha)—showing that translating from English isn't always straightforward, with many different translations being possible with shades of meaning that can be a bit hard to distinguish in English.

5.2.4: Check your understanding

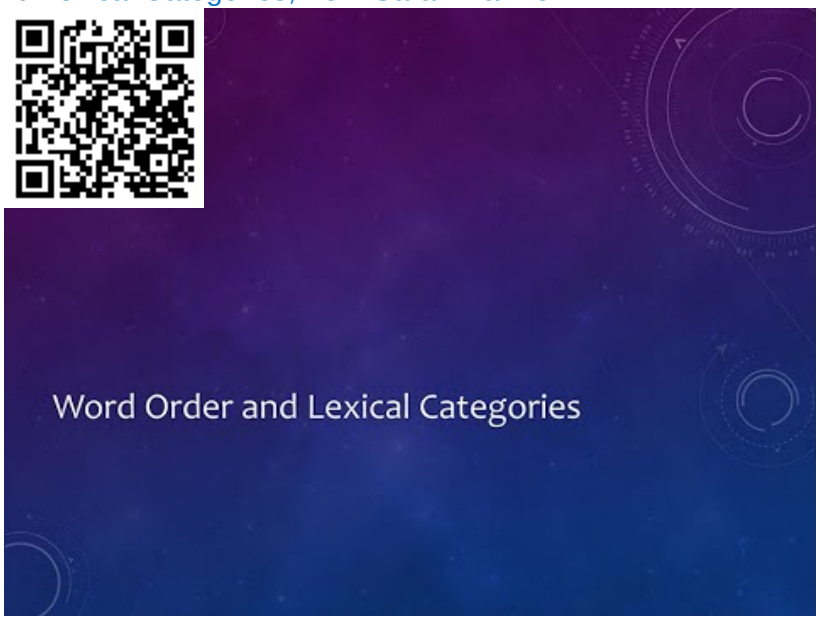
5.2.5: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, this section comes after 6.1 Syntactic knowledge and grammaticality judgements, and the next section is 6.3 Phrases, Heads, and Selection.

5.2.6: References

Matthew S. Dryer. 2013. Order of Subject, Object and Verb. In: Dryer, Matthew S. & Haspelmath, Martin (eds.) The World Atlas of Language Structures Online. Leipzig: Max Planck Institute for Evolutionary Anthropology. (Available online at http://wals.info/chapter/81, Accessed on 2022-02-26.)

5.2.7: Word Order and Lexical Categories, from Sarah Harmon



5.2.7.1: Video Script

Let's talk word order and a little bit more about lexical categories. For the most part, this is not something that Catherine Anderson brings up, but I think it's something that's important to talk about, especially when we compare English with just about any other language.

I found this little comic a while back, and if you are a Star Wars fan, and certainly those who have been watching—whether it's the movies, or the Mandalorian or anything else—you know about how Yoda has a different way of talking. Certainly, if Luke Skywalker says, "Why do you talk backwards all the time?" Luke is showing his perspective; Yoda also has his own perspective:

“Backwards talking, I am not. English centric view of grammatical structure, you have.” Not only is it perfect Yoda-ese, as it were, but it also showcases why it's really important to take that step back as linguists, to be objective and just report on and describe.

First of all, let's talk about word order. It's a really important thing; every language has some kind of default word order. In some cases, that's the only possible word order; in other languages, you might be able to play with it a little bit.

When we talk word order, we are focusing on specifically the order of the subject, the object and the verb. We frequently just use those initials: S, O, V. There's a really curious fact about human languages, not just the ones that are being spoken now but anything that we have recorded and deciphered in the human existence.

- 35% of the world languages are SVO languages; that means that their canonical word order their default word order is subject verb object. English certainly falls in this category pretty much every Indo-European language is part of this category, with a couple of exceptions that will get to. Swahili, Thai, Hausa, which is spoken in western Africa, there's so many examples of this.
- 19% of the world languages are VSO languages, and that means the verb is first and then the subject, and then the object. Irish, in fact all of the Celtic languages, are VSO languages, so a little tweak on that VSO. Classical Arabic is, although modern Arabic is not always. Tagalog, as well as all the other Filipino languages and most into most Australio-Pacific languages, are VSO.
- By far and away the most common word order is SOV, subject object verb. Turkish, Japanese, Persian or Farsi (both terms are equal). Farsi, by the way, is an Indo-European language; Hindi tends to be SOV as well.

It's really interesting to note that some 96% of the world's languages actually have the subject before the object in some way. That's an important thing that will come back to when we talk about typology and historical linguistics, but suffice it to say that humans tend to like their subjects before their objects. That makes Yoda-ese a little unique, by the way.

Just as a comparison, let me show you a little bit about English versus Japanese. We'll come back to this when we talk about topology, when we talk about how different word orders affect other elements. You will notice, no doubt that English is an SVO language, that means that we have our subject and then our verb and then our object. SVO languages tend to have prepositions, which is what we do. We tend to be head first, which means that, in a given phrase the head, the crucial piece of that phrase, has to be the first thing there and, if not the very first thing one of the very first things. We tend to rely on word order for a structure; there can be cases of SVO languages that you some sort of case marking, but by and large, not as much.

Japanese is a very traditional SOV language; again, that means the subject, and then the object and then the verb is the overriding structure of a sentence. They tend to be head last, meaning the verb is at the end of the verb phrase. The preposition is not a preposition but a post position because it's at the end of the phrase. An interesting note is that most SOV language is also mark case. Just to remind you, case is a type of inflection that tells you who or what the subject is, who or what the direct object is, who the indirect object is, and the like. Japanese has case marking, as does German and the other Germanic languages, Russian and the other Slavic languages. Latin was a case marketing language and there's so many more examples

As we walk through a little bit more about lexical categories and everything else, just keep in mind that every language has its set of rules, which leads us to the next section, how do you put a phrase together.

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5.3: Structure within the sentence- Phrases, heads, and selection

5.3.1: From words to phrases

Beyond the order of words, all human languages appear to group words together into **constituents**. The generalizations about which sentences people find grammatical and which ones they find ungrammatical don't refer to purely linear properties like "fourth word in a sentence", but instead to **phrases** in particular **structural positions**. In the rest of this section we'll explore what it means to be a phrase in more detail; in the next section we'll start talking about structural positions.

A **phrase** is a set of words that act together as a unit. Let's look at the example in (1) to see what this means:

(1)		All kittens are very cute.

What other groups of words can appear in the same position as the words **all kittens** in this sentence?

(2)	a.	**Puppies** are very cute.
	b.	**The ducklings that I saw earlier** are very cute.
	c.	**These videos of a baby panda sneezing** are very cute.

…and so on. It turns out that lots of different groups of words can go in this position—but not all of them! What all these examples have in common is that we've replaced [all kittens] with another group of words that includes at least one **plural noun**: *puppies* or *ducklings* or *videos*. If we swap in a singular noun, the sentences would be ungrammatical, as we see in (3).

(3)	a.	***The puppy** are very cute.
	b.	***The duckling that I saw earlier** are very cute.
	c.	***This video of a baby panda sneezing** are very cute.

…but if we change the plural verb *are* to the singular *is* they become good again (this is **subject agreement** inflection, last seen in 5.7 Inflectional morphology):

(4)	a.	**The puppy** is very cute.
	b.	**The duckling that I saw earlier** is very cute.
	c.	**This video of a baby panda sneezing** is very cute.

It turns out that the groups of words that we can easily substitute here are all ones that have a **noun** in them. But it's not enough to just have *some* noun in the group of words at the front of the sentence, as the examples in (5) show. (5a) is ungrammatical even though the string of words at the beginning includes the pronoun *I*—and this sentence is ungrammatical whether we try the form *is* or *are* or even *am*. In (5b) the sentence is ungrammatical even though we have the compound noun *baby panda*, again no matter what form of the verb we try.

(5)	a.	***That I saw earlier** {is / are / am} very cute.
	b.	***Of a baby panda** {is / are} very cute.

What distinguishes the grammatical sentences in (1), (2), and (4) from the ungrammatical sentences in (5) is that in (1), (2), and (4) the group of words at the beginning of these sentence are **noun phrases** (remember that the sentences in (3) were ungrammatical

just because they had the wrong agreement inflection). Noun phrases are groups of words that not only contain a noun, but where the noun is the "most important" element in some sense.

By "most important" we mean that it's the noun that determines an important part of the meaning of the subject, but also that it's this noun that determines the category of the whole phrase, which determines where the phrase can go in relation to other phrases. The noun is the **head** of the phrase, the same kind of **headedness** we saw in 5.8 Compounding for compounds, but applied to words in a phrase instead of to morphemes in a word.

The head of a phrase also determines what else can go in the phrase; in particular it determines whether the phrase contains an **object**—though for heads that aren't verbs, we usually use the more general term **complement**. Recall from the discussion of grammatical terminology in Section 6.2 that we classify verbs by their **transitivity**—that is, by how many objects they take. Each verb has an opinion about whether and how many objects it allows. By contrast, there's no verb that cares whether it's modified by an adverb (and also no verb that cares whether it has a subject or not, because all clauses in English require subjects). The technical term for this is **selection**: heads **select** their complements, both whether a complement is required or allowed, and what the complement's category has to be.

Headedness is important to the grammar of **all** languages, not just English. The right kinds of generalizations in syntax are never about single words like nouns or verbs, but instead about phrases like noun phrases or verb phrases.

Importantly, phrases can contain other phrases *of the same type* inside of them. So for example, the noun phrase [*these videos of a baby panda*] contains a second noun phrase inside it, [*a baby panda*].

The ability of a structure to contain another structure of the same type inside itself is called **recursion**. This is another key property of natural language grammars—even though there is some debate among linguists about whether all human languages exhibit recursion, everyone agrees that many or most languages do, and that one of the things we need to explain about our human language capacity is that all humans can acquire a language with recursion. You can learn more about child language acquisition in Chapter 11.

5.3.2: Variation across languages: Word order within phrases

As we've already seen, languages vary in their word order, but this variation isn't random—it isn't the case that anything goes in word order.

This isn't just true for the order of major constituents in a sentence (subjects, objects and verbs), but also for the order of elements inside phrases; in particular, the order of heads and what they select (their object or complement).

In English it is always the case that heads *precede* their complements. This is true of verbs and their objects, prepositions and their noun phrase complements, and nouns and their prepositional phrase complements.

(6)	a.	I [$_{VP}$ ate$_{(V)}$ [$_{NP}$ an apple].
	b.	[$_{PP}$ to$_{(P)}$ [$_{NP}$ Toronto]
	c.	[$_{NP}$ picture$_{(N)}$ [$_{PP}$ of a robot]

In contrast to English, Japanese is an **SOV** language. And in Japanese, heads always *follow* their complements. In other words, heads in Japanese don't appear in the middle of their phrases like in English, but instead always at the *end* of their phrases.

(7)	a.	Watasi-wa	[$_{VP}$	[$_{NP}$	*ringo-o*	]	**tabe-ta**.	]
		I-TOPIC			apple-ACC		eat-PAST	
		"I ate (an) apple."						
	b.	[$_{PP}$	[$_{NP}$	*Tokyo*	]	**e**	]	
				Tokyo		to		
		"to Tokyo"						
	c.	[$_{NP}$	[$_{PP}$	*robotto*	*no*	]	**shasin**	]
				robot	of		picture	

		“picture of (a) robot”

This is the *reverse* of the order we get in English.

Technically words like *e* (“to”) in Japanese would be **postpositions** instead of **prepositions**, and sometimes the more general term **adpositions** is used for both languages like English and languages like Japanese. These terms are parallel to **suffix**, **prefix**, and **affix** in morphology.

The ability of **heads** to either precede or follow their complements is called **head directionality**. A language can be **head initial** like English, or **head-final** like Japanese. If you’re analyzing an unfamiliar language, and need to figure out its word order, one of the first questions you should ask is whether it appears to be head initial or head final.

In later sections of this chapter we’ll see other ways to derive differences in word order, involving differences in the **movement** (or *transformations*) available in a language’s grammar.

5.3.3: Check your understanding

5.3.4: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.2 Word order and the next section is 6.4 Identifying phrases: Constituency tests.

6.4: Identifying phrases- Constituency tests

By identifying certain parts of sentences as **phrases**, we are making a claim that language users represent them as units in their mental grammar. The technical term for units inside a sentence is **constituent**: a constituent is any group of words that acts together within a sentence.

Along with headedness, constituency is one of the central concepts in syntax. Both of these are highlighted when we represent the structure of language using **tree diagrams**, as we’ll see beginning in Section 6.13, but they’re fundamental to understanding the organization of sentences with or without trees.

When we analyze a new sentence, how do we identify the phrases inside of it? We want to find evidence that certain groups of words actually do act together as units. To find that evidence, we use grammaticality judgements, and a few simple tests.

The tests that identify constituents (often called **constituency tests**) that we’ll review in this chapter come in four basic types:

- Replacement tests
- Movement tests
- It-clefts
- Answers to questions

Many textbooks also introduce a **coordination** test, but it is not always reliable, so we’ll discuss it briefly at the end of this section but won’t rely on it.

5.3.5: REPLACEMENT TEST

Here are two sentences to start with.

(1)		The students saw a movie after class.
(2)		The students saw a movie about dinosaurs.

Let’s consider the string of words *a movie*. Based on discussion so far in this chapter, you might have the idea that this is a noun phrase—or at least that it *could* be a noun phrase. But whether or not you have that idea, we need evidence to decide one way or the other.

One piece of evidence that something is a noun phrase is that you can **replace** it with a pronoun, and get a sentence *with the same meaning* (in a context where the meaning of the pronoun is made clear). In (3) we take the pronoun *it* and replace the string of

words we're interested in, then ask if the new sentence is grammatical and whether it has the same meaning.

(3)		The students saw a movie after class.	→	The students saw **it** after class.

Replacing *a movie* with *it* in (3) does give us a new grammatical sentence that can mean the same thing as (1), so we have evidence not only that *a movie* is a constituent in (1), but also that that constituent is a noun phrase.

What about *a movie* in (2)? Let's run the same test there:

(4)		The students saw a movie about dinosaurs.	→	*The students saw **it** about dinosaurs.

This time the result of replacing *a movie* with *it* is an ungrammatical sentence, so in (2) *a movie* is not a complete noun phrase. We might be surprised about this—we expect a noun like *movie* to be inside a noun phrase—but if we test other possible constituents we see that it's not that there's no noun phrase here, it's just that it's a bit bigger:

(5)		The students saw a movie about dinosaurs.	→	The students saw **it**.

Based on comparing the results of our replacement tests in (4) and (5), we can conclude that in (2) *a movie* is not a complete noun phrase, but *a movie about dinosaurs* is both a constituent and a noun phrase.

We can do the same pronoun replacement test with the string *the students* in (1). Because *students* is plural, the relevant pronoun is *they*:

(6)		The students saw a movie after class.	→	**They** saw a movie after class.

The result of this replacement is grammatical, so we conclude that *the students* is also a constituent, and also a noun phrase.

Replacement tests don't have to involve pronouns. Verb phrases can be replaced with *do* (or *do too*), but seeing this usually requires setting up two sentences with different subjects or with a contrast in time like *yesterday* vs. *today*. Since we have just seen that *the students* in (1) is a noun phrase subject (because it comes at the beginning of a simple declarative sentence, before the verb), let's set up a replacement test for verb phrase with a preceding sentence with a different subject:

(7)	a.	The teachers saw a movie after class, and…	→	The students **did too**.
	b.	The teachers saw a movie after class, and…	→	*The students **did too** before class.

What we see in (7) is that *did too* can replace *saw a movie after class*, but can't replace *saw a movie* alone. This tells us that *saw a movie after class* is a constituent, and it's a verb phrase (because *do (too)* replaces verb phrases).

What about the string *after class*? This string expresses a time, and we can replace it with the word *then*:

(8)		The students saw a movie after class.	→	The students saw a movie **then**.

This shows that *after class* is a constituent; in fact, it's a **prepositional phrase**. Not all prepositional phrases can be replaced by *then*, however—*about dinosaurs* is also a prepositional phrase, but can't be replaced by *then*.

(8)		The students saw a movie about dinosaurs.	→	*The students saw a movie **then**.

Here the result of doing replacement would be grammatical in other contexts, but it isn't another way to say that the students saw a movie about dinosaurs—this is why it's marked ungrammatical here, it's ungrammatical *on the intended meaning*. **You have to pay attention to both grammaticality and meaning when you do replacement tests.**

At this point, you're probably wondering how you know what you can use as a replacement. Here are some handy tips:

- Noun Phrases can be replaced with pronouns (*it*, *them*, *they*).
- Verb Phrases can be replaced with *do* or *do too* (or *did*, *does*, *doing*).
- Some Prepositional Phrases (but not all) can be replaced with *then* or *there*.
- Adjective Phrases can be replaced with something that you know to be an adjective, such as *happy* (though in this case the meaning will change)

Because replacement is category-specific, you can use the evidence of replacement tests both to identify constituents *and* to figure out the constituent's category: If you can replace it with a pronoun, then you've got a noun phrase and you can look for the noun that's the head. If you can replace it with *do (too)*, then you've got a verb phrase which will have a verb as its head.

5.3.6: MOVEMENT TEST

Replacement is not the only tool we have for checking if a set of words is a constituent. Some constituents can be moved to somewhere else in the sentence without changing the sentence's meaning or its grammaticality. Prepositional phrases are especially good at being moved. Consider this sentence:

(9)		Nimra bought a scarf at that strange little shop.

Let's start by targeting the last string of words by moving it to the beginning. Move the string of words then ask yourself whether the resulting sentence is grammatical.

(10)		Nimra bought a scarf <u>at that strange little shop</u>.	→	**At that strange little shop** Nimra bought a scarf.

It is! In isolation the sentence might sound a little unnatural, but we can imagine a context where it would be fine, such as, "At the department store she bought socks, at the pharmacy she bought some toothpaste, and at that strange little shop, she bought a scarf."

On the other hand, if we target a smaller string of words, as in (11), we get a different result.

(11)		Nimra bought a scarf <u>at that strange</u> little shop.	→	*__At that strange__ Nimra bought a scarf little shop.

The result of moving the string *at that strange* to the beginning of the sentence is a total disaster. The fact that the resulting sentence is totally ungrammatical gives us evidence that the string of words *at that strange* is **not** a constituent in this sentence.

5.3.7: CLEFT TEST

A **cleft** construction is one where you take two parts of a sentence and divide them from each other. (A *cleft* is a split or gap.)

In English, a cleft is a sentence with the form: *It is/was _ that _*.

To use the cleft test, we take the string of words that we're investigating and put it after the words *It was* (or *it is*/*it's*), then put the remaining parts of the sentence after the word *that*. Let's try this for phrases that we've already shown to be constituents with our other tests.

(12)		The students saw a movie after class.
	→	It was **a movie** that *the students saw _ after class*.
	→	It was **after class** that *the students saw a movie _*.

(13)		The students saw a movie about dinosaurs.
	→	It was **a movie about dinosaurs** that *the students saw _*.
(14)		Nimra bought a scarf at that strange little shop.
	→	It was **at that strange little shop** that *Nimra bought a scarf _*.

To cleft a verb phrase in English you need put a present or past tense form of *do* in the position the verb phrase occupied in the original sentence, as shown in (15).

(15)		The students saw a movie after class.
	→	(?)It was **see a movie after class** that the students *did*.

Clefting a verb phrase doesn't always sound totally natural in English, but most people find it better than clefting non-constituents. At the end of this section, go back and compare (15) to the sentences in (16) and (17), and see if you agree that (15) is better.

By contrast, things that our tests showed were *not* constituents cannot be put into the first position of a cleft sentence:

(16)		*It was **a movie** that *the students saw _ about dinosaurs*.
(17)		*It was **at the strange** that *Nimra bought a scarf _ little shop.*

Now let's try the cleft test on a new sentence:

(18)		Rathna's brother baked these delicious cookies.
	→	It was **these delicious cookies** that *Rathna's brother baked _*.
	→	It was **Rathna's brother** that *_ baked these delicious cookies*.

The cleft test shows us that the string of words *these delicious cookies* is a constituent, and that the words *Rathna's brother* are a constituent. But look what happens if we apply the cleft test to another string of words:

(19)		Rathna's brother baked these delicious cookies.
	→	*It was **Rathna's brother baked** that *_ these delicious cookies*.
(20)		Rathna's brother baked these delicious cookies.
	→	*It was **these delicious** that *Rathna's brother baked _ cookies*.

(21)		Rathna's brother baked these delicious cookies.
	→	*It was **cookies** that *Rathna's brother baked these delicious* _.

All of these applications of the cleft test result in totally ungrammatical sentences, which gives us evidence that those underlined strings of words are not constituents in this sentence. Remember, though, just because a certain string of words isn't a constituent in one sentence, doesn't mean it's not a constituent in *any* sentence—the result of a constituency test only applies to the specific sentence you're testing.

5.3.8: AnswerS TO QUESTIONS

If a string of words is a constituent, it's usually grammatical for it to stand alone as the answer to a question based on the sentence.

(22)		Rathna's brother baked these delicious cookies.
	a.	What did Rathna's brother bake? **These delicious cookies.**
	a.	Who baked these delicious cookies? **Rathna's brother.**

Answers to questions can also help us identify a verb phrase, because they're a good context for *do*-replacement (as a **replacement test**):

(23)		Who baked these delicious cookies? Rathna's brother **did**.

In the answer, "Rathna's brother did", the word *did* replaces the verb phrase *baked these delicious cookies*.

Again, if a string of words is not a constituent, then it is unlikely to be grammatical as the answer to a question. In fact, it's difficult to even form the right kind of question:

(23)	a.	What did Rathna's brother bake cookies? *These delicious.
	b.	Who of Rathna's these delicious cookies? *Brother baked.

5.3.9: SUMMARY

Results of tests like these are how we investigate the structure of the mental grammar that underlies how people use the languages they know. We can't observe mental grammar directly, so observing how words behave is how we make inferences about how it must work. These four tests are tools that we have for observing how words behave in sentences. If we discover a string of words that passes these tests, then we know that the phrase is a constituent, and that tells us something about the organization of the sentence as a whole.

Not every constituent will pass every test, but if you've found that it passes two of the four tests, then you can be confident that the string is actually a constituent.

5.3.10: Check your understanding

5.3.11: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.3 Structure within the sentence: Phrases, heads, and selection and the next section is 6.5 Functional categories.

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5.4: Functional categories

5.4.1: From lexical categories to functional categories

In 5.5 Lexical categories we reviewed the **lexical categories** of nouns, verbs, adjectives, and adverbs. As we've started looking at phrases and sentences, however, you may have noticed that not all words in a sentence belong to one of these categories. Consider the sentence in (1).

(1)		The spaceship will arrive in orbit very soon.

Spaceship is a noun, and it is the head of the noun phrase [*the spaceship*] (we can tell because it could be replaced by a pronoun like *it*). But what category is *the*? Similarly, in this sentence *arrive* is a verb, *orbit* is a noun, and *soon* is an adverb, but what categories do *will*, *in*, and *very* belong to?

Words like *the*, *will*, *in*, and *very* belong to **functional** categories, which can be thought of as the grammatical glue that holds syntax together. While lexical categories mostly describe non-linguistic things, states, or events, functional categories often have purely grammatical meanings or uses.

Some of the most important functional categories that we'll use in this chapter are described in this section. In some later sections other functional categories will be introduced—as we develop a syntactic theory, a lot of the action comes in identifying new grammatical functions, and figuring out how they map onto structure.

5.4.1.1: Determiner

You may be familiar with the **definite article** *the* and **indefinite article** *a(n)*, as in *the book* or *a cat*.

(2)	a.	the book
	b.	a cat

In English, these occur in noun phrases before the head noun, as well as before any numbers or adjectives, as we see in the examples in (3):

(3)	a.	the three red books
	b.	a large angry cat

In fact, determiners are usually the very **first** thing in a noun phrase, and you can only have one of them (unlike adjectives, which you can pile up). If you try to have more than one, the result is ungrammatical, as we can see in (4)—for me it's not grammatical to say **a the book* or **the a cat*.

(4)	a.	*a the book
	b.	*the a cat

This distribution doesn't apply only to *the* and *a(n)*, though. There are a bunch of other elements that occur in exactly the same places, with exactly the same restrictions. These other things aren't articles in traditional grammar, so we use the label **determiners** for this larger functional category.

Some other determiners:

- Demonstratives (*this*, *that*, *these*, *those*)
- Some **quantifiers** (*every*, *some*, *each*, *most*, etc.)

Test for yourself that these occur in the same places in noun phrases as *the* and *a(n)* do—and that some other words expressing quantities (like *all* and *many*) and numbers do not.

Possessors in English expressed by possessive pronouns or by noun phrases marked with *'s* also appear in the same position as determiners, and are also in complementary distribution with them, as shown in (5).

(5)	a.	**my** book
	b.	**[a friend from school]'s** cat
	c.	*the [a friend from school]'s cat
	d.	*[a friend from school]'s the book

Notice that the marker *'s* attaches to the whole phrase, rather than to the head noun *friend*; this makes it a **clitic** rather than an affix, and makes it different from possessor marking typically found in languages with genitive case.

Possession in English can also be marked with a prepositional phrase, which would come after the noun and not be in complementary distribution with determiners: *the cat [of my friend from school]*.

Not all languages have definite and indefinite articles, but most languages have some kind of determiners. If you know a language other than English, try to figure out whether there's a class a words that occur outside adjectives and numbers that might be determiners—these could come first, as in English, but might instead come after the head noun, especially if other things in the noun phrase also come after the noun.

5.4.1.2: Pronouns

Pronouns are a special functional category that can replace a whole noun phrase, as we saw in 6.4 Identifying phrases: Constituency tests. The set of pronouns in the variety of English most Canadians speak is limited to the following, where each row lists the nominative, accusative, and possessive forms of the pronoun (as introduced in 5.7 Inflectional morphology):

- First person singular: I / me / my
- First person plural: we / us / our
- Second person: you / you / your
- Third person singular inanimate: it / it / its
- Third person singular feminine: she / her / her
- Third person singular masculine: he / him / his
- Third person animate singular / general plural: they / them / their

Many English speakers have a dedicated second person plural like *y'all* or*you*s; for some English speakers, *you guys* may also have the distribution of a second person plural pronoun, though for other people this might be an ordinary noun phrase. Across different varieties of English, many people have different case forms for some of the pronouns listed above as well.

Try taking a moment to figure out what pronouns exist in your English grammar: do you use a distinct second person plural like *y'all*? Would you use a different form for any of the pronouns listed above?

Most languages have pronouns, but in some languages pronouns aren't used as often as they are in English; when using those languages, people may usually leave noun phrases out entirely, rather than replace them with pronouns.

While pronouns are a functional category, in this textbook we will treat them as still belonging to the same category as nouns (abbreviated N).

5.4.1.3: Auxiliaries

Auxiliaries are like verbs in that they can be present or past tense, and can show agreement, but they always occur alongside a lexical main verb. For this reason they're sometimes called "helping verbs".

For example, in the **progressive** in English we see the auxiliary *be*, alongside a main verb that ends in the inflectional suffix *-ing*:

(6)		The bears **are** *dancing*.

In English declarative sentences, auxiliaries occur after the subject and before the main verb.

If an English sentence is negative, at least one auxiliary will occur to the left of negative *not* /*n't*:

(7)		The bears **aren't** dancing.

In a Yes-No questions in English, at least one auxiliary appears at the front of the sentence, before the subject:

(8)		**Are** the bears dancing.

The auxiliaries in English are:

- *have* (followed by a past participle, in the perfect)
- *be* (followed by a past participle in the passive, and a present participle in the progressive)
- *do* (used in questions and negation when there's no other auxiliary)

Importantly, these can all also be used as main lexical verbs! They're auxiliaries only when there's also another verb in the clause that's acting as the lexical verb. If *have* expresses possession, or *be* is followed by a noun or adjective instead of a verb, these are main verb uses.

In English there is also a class of **modal** auxiliaries. These only occur as auxiliaries in modern English, and are different from the other auxiliaries in that they don't agree with the subject. The modal auxiliaries are:

- will
- would
- can
- could
- may
- might
- shall (archaic for many people)
- should
- must

Sometimes lists of modals include *ought* (as in *You ought not do that.*)*need* (as in *You need not go*) and *dare* (as in *I dare not try*), but these aren't used as modals very frequently by most English speakers today.

You can test for yourself that these have the same distribution with respect to subjects, negation, and in questions as the auxiliaries *be*, *have*, and *do*.

5.4.1.4: Prepositions

Prepositions express locations or grammatical relations. They are almost always followed by noun phrases (though a few prepositions can occur by themselves)—in other words, they are almost always **transitive** and **select a noun phrase complement**. Prepositions can sometimes be modified by words like *very* or *way*. Those modifiers, the preposition, and the following noun phrase, all group together into a **prepositional phrase** constituent.

Some prepositions:

- on
- up
- beside
- through
- outside
- in
- above
- to
- of
- with
- for
- without

Outside is an example of a preposition that can occur without a following noun phrase, in a sentence like *They're playing* ***outside***.

5.4.1.5: Other functional categories

A few other functional categories that you will encounter in this chapter are **degree** words like *very* and *way*, which always modify adjectives or adverbs; **numbers**, which occur between determiners and adjectives, and which as a syntactic category also include words like *many* and *few*; and **conjunctions**, which include only *and*, *or*, and *but*, and connect two phrases of the same category.

Two other important functional categories will come up later in this chapter: **tense**, which will be the category that heads sentences, and **complementizers**, which will introduce embedded clauses. We will learn how to identify these functional categories in later sections; for now, it's useful to note that words like *because* and *although* pattern together with other words as part of the functional category of complementizers, even though in traditional grammar they're often identified as conjunctions (based mostly on their meaning, instead of their distribution).

5.4.2: Functional categories as "closed class"

Even though there are lots of different functional categories, they're different from lexical categories in that it's much harder to add new words to an existing functional category than it is to come up with new lexical items. So I can coin new nouns (like *grypno*) and new adjectives (like *tichek*) very easily, but it's more difficult to add, say, a brand-new determiner or auxiliary to a language.

Even though it's harder, though, it's definitely not impossible! Consider the functional category of pronouns. There are lots of new pronouns that people have proposed as nonbinary pronouns. These **neopronouns** are sometimes harder to get the hang of than new lexical nouns are (which is one of the signs that pronouns are more of a closed class than nouns are) but it's very possible to become a fluent user of a new pronoun with a bit of practice.

Prepositions: lexical or functional?

Prepositions are sometimes treated as a lexical category instead of as a functional category. For one thing, you might have noticed in 5.8 Compounding that prepositions can occur in compounds, which is something more typical of roots that belong to lexical categories. On the other hand, prepositions form a more closed class than nouns, verbs, adjectives, or adverbs, and they are often used to express purely grammatical information. In this textbook, we will continue to treat prepositions as functional elements—though the distinction between functional and lexical elements won't be relevant very often.

5.4.3: Check your understanding

Coming soon!

5.4.4: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.4 Identifying phrases: Constituency tests and the next section is 6.13 From constituency to tree diagrams. **This is your first departure from the published order of sections.**

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5.5: Clausal embedding

5.5.1: Recursion: Sentences inside sentences

So far we've talked about the organization of words into constituents in a single clause. Consider the sentence in (1), which we saw before in 6.4 Identifying phrases: Constituency tests:

(1)		The students saw a movie about dinosaurs.

This sentence has 3 noun phrases: [*the students*], [*dinosaurs*], and [*a movie about dinosaurs*]. The noun phrase [*dinosaurs*] is inside the bigger constituent [*a movie about dinosaurs*], and they're linked together by a preposition *about*—in fact, [*about dinosaurs*] is a prepositional phrase. We also have a verb phrase [*saw a movie about dinosaurs*]—the verb and its object (or its objects, if it is ditransitive), will always be part of the same verb phrase constituent.

Now consider the sentences in (2) and (3):

(2)		Deniz said something.
(3)		Samnang might leave.

In (2), the object of the verb *said* is *something*; together these form a verb phrase. But now consider a sentence like (4):

(4)		Deniz said that [Samnang might leave].

In (4), the entire clause from (3) appears after the verb *said*, in the same position that *something* appeared in (2). Also, if we do constituency tests—for example replacement in (5)—we can see that [*said that Samnang might leave*] is a verb phrase that can be replaced by *do (too)*.

(5)		Keiko *said that Samnang might leave*, and Deniz **did too**.

What we see here is that the complement of a verb can be a whole clause; in this case we call the clause-inside-a-clause an **embedded clause**.

What about the word *that*? The role of *that* seems to be to introduce the embedded clause. Words that have this function of introducing an embedded clause belong to the category **complementizers** (called that because they turn clauses into the complements of verbs).

Like other categories, complementizers create complementizer phrases (CPs). Here the complementizer phrase is [*that Samnang might leave*]; again, you can identify this constituent with tests.

(6)		It was **that Samnang might leave** that *Deniz said* __.

Just as verbs select how many complements they take, they can also select the *category* of their complement. Some transitive verbs can combine only with noun phrase objects, some only with prepositional phrases, some only with complementizer phrases—and some with any or all of these.

For example, the verb *know* can combine with several different categories of complements:

(7)		They know…	
		…this fact.	(noun phrase)
		…about birds.	(prepositional phrase)
		…that birds can fly.	(complementizer phrase)

Other verbs can only take some of these as complements:

(8)		We ate…	
		…curry.	(noun phrase)
		*…about curry.	(*prepositional phrase)
		*…that curry is for dinner.	(*complementizer phrase)

(9)		The teacher said…	
		…something.	(noun phrase)
		*…about chocolate.	(*prepositional phrase)
		…that they like chocolate.	(complementizer phrase)

(10)		They talked…	
		…mythology.	(noun phrase)
		…about mythology.	(prepositional phrase)
		*…that mythology is interesting.	(*complementizer phrase)

(Some people might not find *They talked mythology.* totally grammatical; whether *talk* can take a noun phrase object is something that has changed over time in English.)

So far the examples of embedded clauses that we've seen are all embedded **statements**. Is that the only kind of embedded clause that exists in English, or in language in general? Are there any complementizers other than *that*?

Take a moment to see if you can think of some other verbs that embed whole clauses, and see if you can identify some element in those sentences that looks like another complementizer. You can do this for English, or for another language that you know.

5.5.2: Questions inside sentences: Embedded interrogative clauses

We just saw that the English verb *know* can combine with several different types of complements (complementizer phrases, noun phrases, and prepositional phrases). It also happens to be able to combine with more than one *type* of embedded clause. Consider the following examples:

(11)		I know…
		…(**that**) ghosts exist.
		…**whether** ghosts exist.
		…**if** ghosts exist.

What we see here is that the verb *know* can combine not only with clauses introduced by *that* (or nothing), but also ones introduced by *whether* or *if*. Another way to write this would be to use { curly braces } to surround the complementizers allowed after *know*, as in:

(12)		I know [$_{CP}$ {that, ∅, whether, if} ghosts exist].

Not all verbs are equally flexible! Some verbs, like *believe*, only allow *that* or ∅, not *whether* or *if*:

(13)	a.	I believe [$_{CP}$ {that, ∅} ghosts exist].
	b.	*I believe [$_{CP}$ {whether, if} ghosts exist].

Other verbs *only* allow *whether* or *if* as complementizers, like *wonder*:

(14)	a.	*I wonder [$_{CP}$ {that, ∅} ghosts exist].
	b.	I wonder [$_{CP}$ {whether, if} ghosts exist].

What this tells us is that the difference between *that* or ∅ on the one hand, and *whether* or *if* on the other hand, is something that verbs can be sensitive to when it comes to **selection**.

What, then, is the difference between these two sets of complementizers?

We can see the difference if we look at their use with **verbs of quotation**, comparing embedded clauses with direct quotation (indicated in English writing by using quotation marks).

Consider the verb *say* in (15):

(15)		They said **that** ghosts exist.	=	They said: "**Ghosts exist.**"

The embedded clause introduced by *that* can directly paraphrase a directly quoted **statement**.

Now compare the verb *ask* in (16):

(16)		They asked **if** ghosts exist.	=	They asked: "**Do ghosts exist?**"

In (16) we see that the embedded clause with *if* corresponds not to a quoted statement, but to a quoted **question**! This is the difference between *that* and ∅ versus *if* and *whether*:

- *that* and ∅: introduce **embedded statements**
  - they are [–Q] (non-question) complementizers
- *if* and *whether*: introduce **embedded questions**
  - they are [+Q] (question) complementizers

In English, all verbs that can select a CP headed by *whether* can also select a CP headed by *if*, though some speakers prefer one or the other, or prefer one to the other for certain verbs. If you're a fluent English speaker, ask yourself if you prefer one of these words to the other one.

The relationship between *that* and ∅ is slightly more complex. For the most part, any verb that can select a CP headed by *that* can also select a CP headed by ∅. But there are a few verbs that strongly prefer an overt *that*. In my own English, one example is the verb *report*:

(17)	a.	The newspaper reported that there was a demonstration yesterday.
	b.	*The newspaper reported ∅ there was a demonstration yesterday.

When a complementizer phrase occurs in a different position in a sentence *that* is also often obligatory. For example, when a clause is the subject of a sentence, many people find it ungrammatical to leave *that* out in English.

(18)	a.	[That there was a demonstration yesterday] surprised some people.
	b.	*[There was a demonstration yesterday] surprised some people.
	c.	It surprised some people [that there was a demonstration yesterday].

	d.	*It surprised some people [there was a demonstration yesterday].

The choice of complementizers is something that varies a lot across different varieties of English. If you or other people in your class don't share the judgements reported here, see if you can figure out generalizations that describe your own grammar better!

5.5.3: Embedded nonfinite clauses

Are complementizer phrases all just questions or statements?

There's at least one other distinction in types of clauses that verbs can take as complements. Consider, for example, the verb *want*:

(19)	a.	I want [ghosts to exist].
	b.	*I want [{that/∅} ghosts exist].
	c.	*I want [{whether/if} ghosts exist].

In my English, and maybe in yours, the verb *want* doesn't allow any of the complementizers we've seen so far. Instead, it requires that the clause it embeds have a **nonfinite verb**. Is a clause like [*ghosts to exist*] a complementizer phrase, or should we identify it as something else?

There is reason to think that at least some nonfinite clauses can occur in complementizer phrases: while many nonfinite embedded clauses don't have any overt complementizer, at least some do. Consider the examples in (20).

(20)	a.	I want [**for** ghosts to exist].
	b.	I prefer [**for** my coffee to have milk in it].
	c.	I'd like [**for** you to leave now].

Not everyone likes *for* in these examples, but at least some English speakers find it grammatical. Here *for* appears in the same kind of position we previously saw *that*, *if*, or *whether* in. We can analyze *for* as a **complementizer for nonfinite clauses**.

What makes *for* possible in (20), for many speakers, is the presence of a subject in the embedded clause. In many languages, including English, it's possible for nonfinite clauses to lack a subject; we won't look at such clauses more in this chapter, but in some varieties of English the complementizer *for* can occur without any subject, resulting in what are called *for to* infinitives, as in *I was happy for to leave*. You can read more about this construction, and its distribution across varieties of English, at the Yale Grammatical Diversity Project: *for to* infinitives.

Some verbs can take *either* finite or nonfinite complements. Consider the verb *prefer*:

(21)	a.	I prefer [**that** cookies have chocolate chips].
	b.	I prefer [**for** cookies to have chocolate chips].

So just like the verb *know* can select either a question or a statement as its complement, the verb *prefer* can select either a finite or a non-finite clause.

"Nonfinite" and "infinitive" are two words for the same thing—notice that in both cases a negative prefix (*non-* or *in-*) attaches to the root *finite*. Nonfinite verbs in English appear with the infinitive marker *to*. This marker shows up in the same position occupied by auxiliaries—after the subject but before negation—and it's in complementary distribution with the **modal** auxiliaries.

5.5.4: Check your understanding

Coming soon!

5.5.5: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.17 Trees: Structural ambiguity and the next section is 6.18 Trees: Embedded clauses.

5.5.6: References

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5.6: From constituency to tree diagrams

In this section we begin to introduce the formal notation of **tree diagrams**. We use tree diagrams to make specific and testable claims (hypotheses) about the structure of phrases and sentences.

Thinking back to Section 6.1, one way of thinking about the goal of syntactic theory is that it's aiming to account for what languages users know about which sentences are grammatical, and which sentences are ungrammatical.

What constituents do we find inside sentences? Well, we know that a sentence consists of (at least) a subject and a predicate, and that subjects are (usually) noun phrases, and predicates are often verb phrases. We might express this as a rule, known as a phrase structure rule.

Phrase structure rules were central to the theory of syntax developed in Chomsky 1957, which kickstarted the modern field of generative syntax.

(1)		S → NP VP

This rule says that wherever you have an S, it is possible for that S to be made up of an NP followed by a VP.

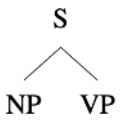


Figure 6.1 Schematic tree for S containing an NP subject and VP predicate

Another way to represent the same idea is with a **tree diagram**, as in Figure 6.1. Tree diagrams can express the same information as phrase structure rules, but can more efficiently express the output of multiple such rules; current syntactic theories are typically expressed in terms of constraints on possible trees, rather than in terms of constraints on phrase structure rules.

What kind of structure might we expect to find inside the NP subject? Here are some NPs—you might think of a sentence in which some or all of them can occur (remember that you can tell if a string in a sentence is a single NP by using a replacement test to try substituting a pronoun).

(2)	a.	robots	(N)
	b.	some robots	(D N)
	c.	six robots	(Num N)
	d.	the six robots	(D Num N)
	e.	the six small robots	(D Num Adj N)
	e.	robots from Boston	(N PP)
	f.	the robots from Boston	(D N PP)
	g.	the six small robots from Boston	(D Num Adj N PP)

We could abstract across all of these, and write a general phrase structure rule for
NPs, putting parentheses around all optional elements. A subscript "n" indicates that that element can be repeated any number of times.

(3)		NP → (Det) (Num) $(Adj)_n$ N $(PP)_n$

This can be read as:

> *An NP can consist of a determiner (optional), followed by a numeral (optional), followed by any number of adjectives (all optional), followed by a noun (required), followed by any number of prepositional phrases (all optional).*

We could represent the structure of some of the specific NPs in (2) as in Figure 6.2.

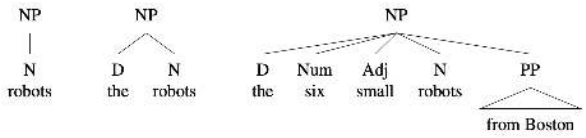


Figure 6.2 Tree diagrams for [*robots*], [*the robots*], and [*the six small robots from Boston*]

The phrase structure rule for NPs referred to prepositional phrases (PP). These phrases have fewer possible shapes than NPs:

(4)	a.	from Boston	(P NP)
	b.	outside	(P)
	c.	just outside	(Deg P)
	d.	way beyond my knowledge	(Deg P NP)

We can abstract this in a single phrase structure rule:

(5)		PP → (Deg) P $(NP)_n$ N $(PP)_n$

We could then expand the "NP" symbol using our phrase structure rule for NPs above. That NP might contain another PP inside it—here we've encountered **recursion** again. Figure 6.3 shows tree structures for some of the PPs in (4).

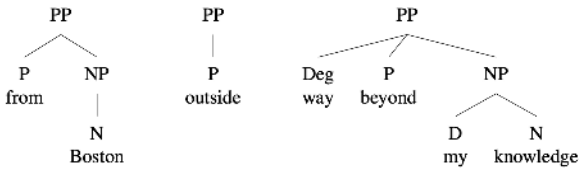


Figure 6.3 Tree diagrams for [*from Boston*], [*outside*], and [*way beyond my knowledge*]

Now let's look at some verb phrases (VPs). In the following examples, the VPs are all in [square brackets].

(6)	a.	The crew [repaired the ship].
	b.	The captain [gave the crew orders].
	c.	The spaceship [arrived].
	d.	The crew [travelled across the galaxy].

How do we know these are VPs? Well, they come after the *subject* of the sentence (an NP in all these examples), so that means they are predicates. In one case the predicate is a single word *arrived*—this word is a verb, so the only thing it could be is a verb phrase. All the other sequences in square brackets could be swapped into the same position as *arrived*, so they must be phrases of the same type. For example:

(7)		The spaceship [gave the crew orders].

This sentence might be pragmatically odd unless you assume the spaceship is an artificial intelligence, but it is grammatical. Another test would be the **replacement test** for VPs, which involves replacement with *do* (you can review the replacement test in 6.4 Identifying phrases: Constituency tests).

Based on these tests, we know that a verb by itself (like *arrived*) can be a VP, and that the object is inside the VP with the preceding verb. We have intransitive VPs with just a verb, transitive VPs with one NP, and ditransitive VPs with two NPs.

Many ditransitive verbs in English can also appear with an NP and a PP, though some ditransitive verbs, like *put*, only allow the NP PP version). The alternation between a ditranstive [NP NP] as in (7) and [NP PP] as in (8) is called the **dative alternation**.

(8)		The spaceship [gave orders to the crew].

The VPs we've seen in this section can be derived with the following phrase structure rules:

(9)	a.	VP → $V_{intrans}$
	b.	VP → V_{trans} NP
	b.	VP → $V_{ditrans}$ NP NP
	b.	VP → $V_{ditrans}$ NP PP

If we looked at a wider range of VPs we'd also find that adverb phrases can go at the *beginning* or *end* of VPs, though not typically in the middle. So we'd end up with the following general phrase structure rule for VP:

(10)		VP → (AdvP) V (NP) (NP/PP) $(AdvP)_n$

By putting together the structures we've proposed for NPs, PPs, and VPs, we're now in a position to show some trees for full sentences. Figure 6.4 shows a tree for the sentence [*The crew from Mars repaired the spaceship*].

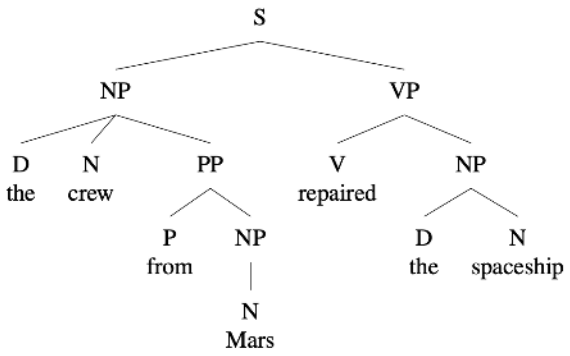


Figure 6.4 Tree diagram for *The crew from Mars repaired the spaceship*.

There are also some cases where a verb can be followed by an adjective phrase (*We are happy.*; *They seem nice.*). There isn't an easy way to collapse this with our previous phrase structure rule; to account for this we could add a second phrase structure rule for VPs (VP → V AdjP).

We can also formulate phrase structure rules for various modifier phrases: AdvP, AdjP, and NumP.

Adverb phrases consist of an adverb (11a), preceded by an optional degree phrase (11b). You can also sometimes get a PP after an adverb (11c).

(11)	a.	quickly
	b.	very quickly
	c.	quite quickly for a sloth

This is summarized by the phrase structure rule in (12):

(12)		AdvP → (DegP) Adv $(PP)_n$

Adjective phrases are similar:

(13)		The robot is [$_{AdjP}$ very proud of itself].

(14)		AdjP → (DegP) Adj $(PP)_n$

Number phrases are also modified by degree phrases!

(15)	a.	exactly six
	b.	approximately 30
	c.	very many

(16)		NumP → (DegP) Num_n

The "objects" of adjectives are almost always expressed by PPs—that is, if there's something in an AdjP that comes after the adjective, it usually can't be an NP (or a VP), but instead has to be a PP.

Adjectives with NP complements

In English there are a very tiny number of exceptions to the generalization that complements of adjectives are PPs, though the exact number is different for different speakers. The one exception that all English speakers have is the adjective *worth*. So we can say:

(17)		This object is [worth a lot of money.]

Here the adjective is followed by the NP [*a lot of money*]. The NP has to be something that expresses a value.

Some English speakers, including most Canadian English speakers and some in upstate New York and Pennsylvania, have another exception with the deverbal adjectives *finished* and *done*:

(18)	a.	I am [finished my coffee].
	b.	The children are [done their homework].

If you aren't from one of those places, you might need to use the verbal perfect (*have finished my coffee*), or use the preposition *with* (*are finished with their homework*).

Some people allow a few more adjectives in this construction, but they're all deverbal (that is: derived from verbs). For example, people might allow NP complements with the adjectives *started* and *completed*.

Let's return to phrase structure rules for whole sentences. We've already seen that sentences can consist of an NP followed by a VP:

(19)		[The robot] [repaired the spaceship].

They can also have an **auxiliary** (modal or non-modal), and can have adverbs at the beginning or end.

(20)	a.	[The robot] will [repair the spaceship].
	b.	Maybe [the robot] will [repair the spaceship] tomorrow.

You can also put **negation** in a sentence—though negation always requires an auxiliary in English (if there isn't already an auxiliary, we apply Do-support):

(21)	a.	[The robot] didn't [repair the spaceship].
	b.	[The robot] hasn't [repaired the spaceship].

From these we can get a full phrase structure rule with several optional elements, but an obligatory NP subject and an obligatory VP predicate:

(22)		S → (AdvP) NP (Aux) (Neg) VP (AdvP)

Phrase structure rules are useful for describing the sequences that can occur in phrases of different types, but neither these rules nor the trees we've seen in this section do more than list the elements that can occur in phrases of different types. In the remaining sections of this chapter, we'll explore a theory that limits possible tree structures to a few basic configurations, with the goal of explaining not only how languages can vary, but also explaining limits on the variation seen across human languages.

5.6.1: Check your understanding

Coming soon!

5.6.2: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.5 Functional categories and the next section is 6.14 Trees: Introducing X-bar theory.

If your instructor has assigned Appendix 1 instead of the second half of this chapter, you should move on to Appendix 1 now.

5.6.3: References

Chomsky, Noam. 1957. *Syntactic Structures.* The Hague: Mouton.

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5.7: Trees- Introducing X-bar theory

Constituency tests and phrase structure rules provide a useful starting point for thinking about the structure of possible sentences, but they don't really start explaining *why* certain structures are grammatical, or predicting what possible and impossible grammars might look like. In this section we introduce **X-bar theory**, which aims to make stronger predictions by restricting the shape of possible trees. It's called that because it introduces an extra layer of structure inside phrases called the "bar level".

To see why we might want to constrain what trees are possible, let's begin by thinking about a type of structure that's really easy to describe using a phrase structure rule:

- **Weird phrase structure rule:** NP –> V (Adj) PP

This rule is weird because it's a noun phrase that's missing the noun: we already saw in Section 6.3 is that what makes something a noun phrase is precisely that it has a noun inside it. The restriction that all natural languages phrases have heads of the same category is the first limit we'll put on possible structures in X-bar theory:

- Every phrase (XP) has a head of the same category (X)

And this goes the other way as well: all **heads** (words) **project** (or "occur inside") a phrase of their category:

- Every head (X) projects a phrase of the same category (XP)

What this means is that even when a noun or verb—or any other category—doesn't obviously have any other words in the same phrase as it, it's still inside an NP or a VP. In other words, while the two sentences in (1) are in one sense very different (one has two words, the other has 11), in another sense they have the same structure: both sentences consist of an NP followed by a VP.

(1)	a.	Cats sleep.
	b.	The many very fast spaceships carried a lot of valuable cargo.

By default, in X-bar theory we assume that the same constraints apply to all categories and phrases, and that they apply in all languages. In the absence of evidence to the contrary, we assume that determiners occur inside determiner phrases (DPs), degree words occur inside degree phrases (DegPs), and so on.

The assumption that all phrases involve the same structure, and that this is true in all languages, is a **hypothesis**. If we encounter evidence that is inconsistent with this hypothesis, we would revise the theory to account for new data. Active research in syntax consists of investigating grammatical patterns in languages, and showing how they do (or do not) require specific revisions to current syntactic theories.

The key feature of X-bar theory (and the source of its name) arises from the observation that phrases aren't just a flat structure.

Our phrase structure rule for NPs, for example, could build NPs that contain a determiner (or DP), a noun, and a PP, but there was no sub-grouping. The tree diagram in Figure 6.5 shows this. (the triangle over *robots* indicates that we have abbreviated structure inside this constituent.)

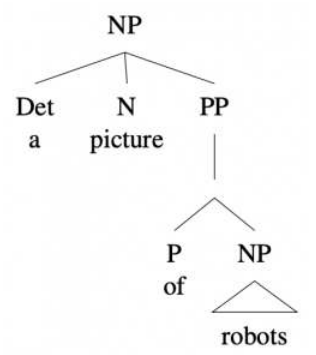


Figure 6.5 Tree diagram for [*a picture of robots*]

What we find if we look at phrases of all types, in many languages, is that head is always in a closer relationship with one other element inside the phrase, than with anything else. Specifically, heads are in a closer relationship with their **complement—**

remember that in English the complement follows the head of the phrase, while it can come before the head in other languages. We saw in Section 6.3, for example, that verbs determine whether and how many objects they combine with. Above we saw that adjectives generally combine with PP complements, but that a few adjectives idiosyncratically allow NP complements.

This means that there are units—**constituents**—inside phrases. So not only do all heads have phrases, and all phrases have heads, but there is what we might call a "mid sized sub-phrase" in every phrase (or an "intermediate phrase"). This mid-sized phrase is called **X-bar** (written **X'**), which is where the theory gets its name.

So we expand X-bar theory to the following generalizations, expressed in phrase structure rules:

- XP → (YP) X'
- X' → X (ZP)

XP, YP, and ZP are all variables over any category of phrase. These rules can be read as saying:

> *Every phrase (XP) must have a bar-level of the same category (X') within it, optionally preceded by another phrase (YP). Every bar-level (X') must have a head of the same category within it, optionally followed by another phrase (ZP).*

The positions occupied by YP and ZP are **argument positions**, and they have special names. The names for structural relations in trees are adapted from family relationships: parent, child, etc.

The sibling of the head is the copml**e**ment (with an "e"), not the compl**i**ment (with an "i")! This is *complement* as in set theory, not as in saying nice things to someone.

Complement:

Sibling of the head X (child of X') is its **complement**

Heads **select** their complement (including *if* they take a complement)

Specifier:

The child of XP, sister of X' is the **specifier** of the phrase

If we put these labels in the tree in place os "YP" and "ZP" above, we get a **general X-bar template for English** (specific to English because it includes the linear order found in English).

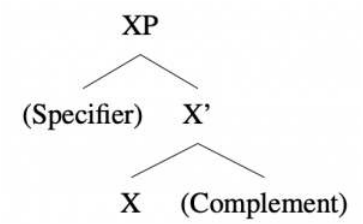


Figure 6.6 Generalized X-bar template (for English, head initial)

What is the evidence for bar levels? In the remainder of this section we review the evidence for sub-constituents inside NPs and VPs.

5.7.1: Evidence for N'

The evidence for N' ("N-bar") involves showing that a noun is in a closer relationship with a PP that follows it than it is with a previous determiner.

We can show this with **constituency tests** that target this sub-NP unit. These tests are a bit trickier to apply than the constituency tests covered in Section 6.4, but they follow the same general principle.

Here we will only go through one of these tests: *one*-replacement. Just as a pronoun can replace a whole NP, the word "one" can (for at least some speakers of English) replace a noun and a following prepositional phrase, leaving behind anything before the noun. Like other kinds of replacement, especially replacement with *do* for VPs, *one*-replacement requires that there's an earlier NP that "fills in" what's being replaced.

(2)		[$_{NP}$ Yesterday's **launch of a spaceship**] was exciting, but [today's **one**] was not. (where [*one*]=[*launch of a spaceship*])

By contrast, you can't replace a determiner and an N with *one*, leaving the PP behind:

(3)		*[$_{NP}$ **The launch** of a spaceship] is exciting, but [**one** of a mining drone] is not. (where [*one*]=[*the launch*])

Recall from Section 6.5 that determiners and possessors are in complementary distribution, which we account for by putting them in the same structural position: NP only has one specifier, so it can only hold one determiner or possessor.

This gives us the following overall structure of an NP, showing a **closer relationship** between the N and a following PP than between either of those and the preceding determiner or possessor.

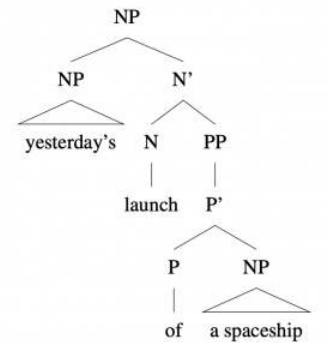


Figure 6.7 Tree diagram for [*yesterday's launch of a spaceship*]

5.7.2: Evidence for V'

We can do similar tests to find a constituent inside VP, consisting of the verb and its object. For example, we can **elide** a verb and its object, leaving a previous AdvP behind, but we cannot elide AdvP + V, leaving the NP object behind.

(4)	a.	They will [$_{VP}$ quickly build a spaceship], and we will [$_{VP}$ slowly _]
	b.	*They will [$_{VP}$ quickly build a spaceship], and we will [$_{VP}$ _ an orbital station]
		(ungrammatical if what's missing is [quickly build])

For many speakers the contrast is clearer with *do so* replacement: *do so* can replace a verb and its object, but can't replace an adverb and verb if this strands the object.

(5)	a.	They will [$_{VP}$ quickly build a spaceship], and we will [$_{VP}$ slowly **do so**]
	b.	*They will [$_{VP}$ quickly build a spaceship], and we will [$_{VP}$ **do so** an orbital station]
		(ungrammatical if what's missing is [quickly build])

As with noun phrases, we can represent the fact that the verb and its object form a constituent, to the exclusion of any adverbs, by putting them both under the V' node.

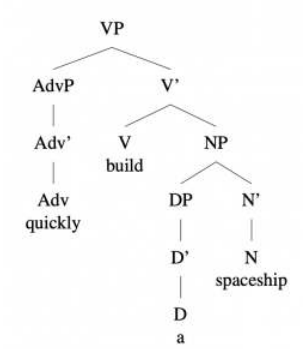


Figure 6.8 Tree diagram for [quickly build a spaceship]

5.7.3: “Empty” bar levels

As with the hypothesis that all heads project phrases, even when there are no other words in the phrase, X-bar theory assumes that all phrases contain at least one bar level, even when it is not needed to host a complement.

So for the sentence in (6), we would have the tree in Figure 6.9, where every phrase has a bar level even though none of the phrases we’ve drawn includes a complement:

(6)		The spaceships landed.

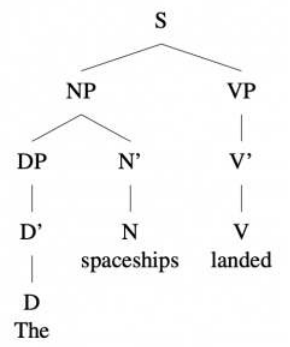


Figure 6.9 Tree diagram for *The spaceships landed.*

This tree also illustrates something that’s still missing from our implementation of X-bar theory: we’ve said that every phrase has to have a head, but our sentences are currently headless. In the next section we turn to the proposal that all sentences are projected from a *tense* head.

5.7.4: Check your understanding

Coming soon!

5.7.5: Navigation

If you are following the alternative path through the chapter that interleaves core concepts with tree structures, the previous section was 6.13 From constituency to tree diagrams and the next section is 6.15 Trees: Sentences as TPs.

5.7.6: Phrase Structure Rules, X-Bar Theory, and Constituency, from Sarah Harmon



5.7.6.1: Video Script

Anderson does an excellent job of walking you through a phrase structure tree. I'm just going to add a little bit more.

If you want a basic set of phrase structure rules for English—and it should be noted, this is most all dialects of English, not all but most all—this is one set that you can use.

S → NP VP

S → CP VP

CP → (Comp) S

NP → (Det) (AdjP) N' (CP) (PP) (CoordP)

N' → (AdjP) N' (PP)

N' → N

NP → NP's N'

NP → Pro

NP → [proper name]

VP → V' (CP) (NP) (AdjP) (PP) (CoordP) (AdvP)

V' → V

V' → Aux V'

AdjP → Adj (N') (CoordP)

AdvP → Adv (PP) (CoordP)

PP → P NP (CoordP)

CoordP → Coord XP

Figure 5.7.1: English Phrase Structure Rules. (Copyright; Sarah Harmon)

Catherine has a slightly modified version of this but either set will work just fine. What's important to note is that for every type of phrase, there is a head and a complement. The **head** is the crucial piece of that phrase, and then the **complement** is the supporting cast, as it were. For example, the head of a noun phrase is always going to be a noun.

All of these little codes, as it were, are a nice shorthand for trying to decipher what role that piece has. Instead of thinking of individual morphemes and lexicons and puzzle pieces, think bigger. Think big steel beams that are being used to set up the structure of a building; that's basically what phrase structure rules are.

As Anderson talks about, we're going to be using X-Bar Theory. It has been around for quite some time, about 40 years. It is still the prevailing method of doing basic syntactic analysis; we'll talk more about that soon enough. She does an excellent job of explaining it, it is really a great tool, not just to analyze the syntax. Morphology as well; you can use this type of structure this branching tree structure to analyze how more things are put together in a language, to create lexicon. Then you can use it to create the structure of a sentence or phrase in a given language. It has used been used for pretty much every language that is in existence; there's only a very few that it doesn't work for.

Catherine talks quite a bit about constituency, so I'm going to leave that there, but I do want to bring up recursion. It is one of the great ways to analyze a specific phrase structure of a specific language: to look at what has allowed with respect to recursion. **Recursion** actually refers to that hallmark of language called **duality**, that we have a limited number of resources, but we can make an infinite number of statements or sentences in a given language. For example, if we scroll back to our phrase structure rules, this more or less covers every single possible sentence and phrase in English. You pretty much can blueprint English based off of these rules. Yet, these few rules explain pretty much every possible statement that you can make in English; that's recursion. It also shows up in the fact that you can have nesting of different types of phrases. For example, a noun phrase can have a propositional phrase as a complement, so 'the cat in the house'. 'In the house' is modifying or describing 'cat'. Notice that a prepositional phrase can have a noun phrase as one of its components; in fact, it has to have a noun phrase. 'In the House', there's your prepositional phrase, and then that noun phrase itself can get further modified by another propositional phrase: 'the cat in the house down the hill on the river next to the forest' and on and on and on. You can keep building quite a number of these recursive statements.

That's possible. Is it probable? Well, no, it's not. There is a tendency to kind of keep a limit as to how many recursive elements you put in. If you think about it, that makes sense; if I start to describe where I live, 'I live in a house on a street in the town by the river next to the forest through the gap down the gulch…'. After a minute, you stop being able to keep track of where my house is. There seems to be a limit, three to four phrases are the rough limit. That being said, could we build a structure as tall and as far as we can see? Sure. Do we do that? No, we tend to keep a limit to our height of building; we also tend to put a limit on how many recursive elements we tend to include.

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5.8: Trees- Sentences as TPs

So far we've applied X-bar theory to a range of phrase types. But what about sentences? Up to this point we've simply been labelling them as "S", as in Figure 6.10.

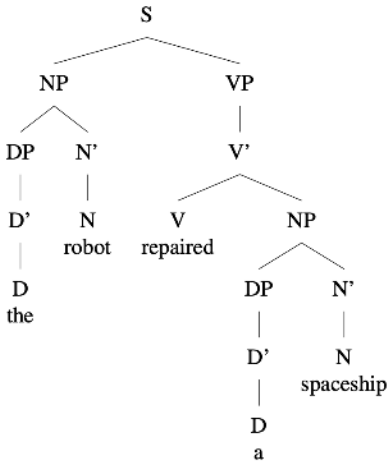


Figure 6.10 Tree diagram for *The robot repaired a spaceship.* (to be revised)

But if a "phrase" is a string of words that form a constituent, then sentences are also phrases—and X-bar theory requires that all phrases have heads, a hypothesis we don't want to abandon unless we have evidence that it's incorrect.

What could the head of the sentence be?

Recall that we had a phrase structure rule for sentences like the following:

- S –> NP (Aux) VP

This rule allows sentences to include an auxiliary between the subject NP and the predicate VP, as in Figure 6.11:

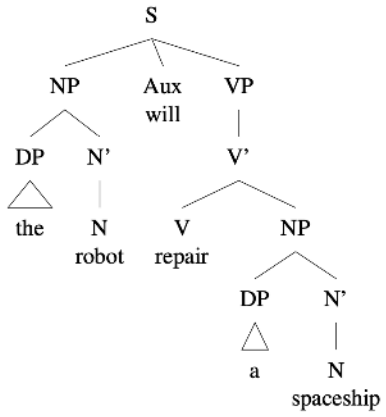


Figure 6.11 Tree diagram for *The robot will repair a spaceship.* (to be revised)

This tree has two problems from the perspective of X-bar theory: now not only does the sentence (S) not have a head, but the auxiliary is a head without a phrase! We could simply put the Aux into an AuxP, as we did with determiners, degree adverbs, and so on. But there's another option open to us: we can solve both the lack of a phrase for Aux and the lack of a head for S in one stroke, by analyzing the auxiliary itself as the head of the phrase:

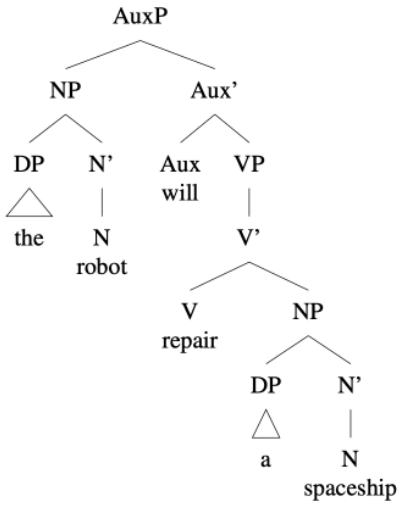


Figure 6.12 Tree diagram for *The robot will repair a spaceship.*, with the sentence as category AuxP (to be revised)

What if there weren't an auxiliary, though? Are all sentences AuxPs? **No.** In fact, if we think about what auxiliaries in English express, they are always inflected for **tense**. Even in the absence of an auxiliary, we see tense on the main verb, and in nonfinite clauses the nonfinite marker *to* takes the place of an auxiliary.

Based on this, the proposal in X-bar theory is that sentences aren't auxiliary phrases, but they are **tense phrases** (TPs). Tense represents **finiteness**—we say that sentences when they stand independently are always **finite**, which is a term meaning that they have tense.

This is an example of a case where the greater technical detail of X-bar theory motivates us to look at sentences and reconsider whether they are projections of some category, just like all other phrases are. In fact, TP is a very nice phrase from the perspective of X-bar theory, because it always has both a **specifier** (the subject) and a **complement** (the predicate).

What things are of category T?

- The modal auxiliaries (*will*, *would*, *can*, *could*, *may*, *might*, *shall*, *should*, *must*)
- The non-modal auxiliaries (*be*, *have*, *do*)
- The nonfinite marker *to*
- Abstract tense features ([+PAST] for past tense, [–PAST] for present tense)

So the final version of the tree for *The robot will repair the spaceship.* is as in Figure 6.13, and the final version of the tree for *The robot repaired the spaceship.* (without an auxiliary) is as in Figure 6.14.

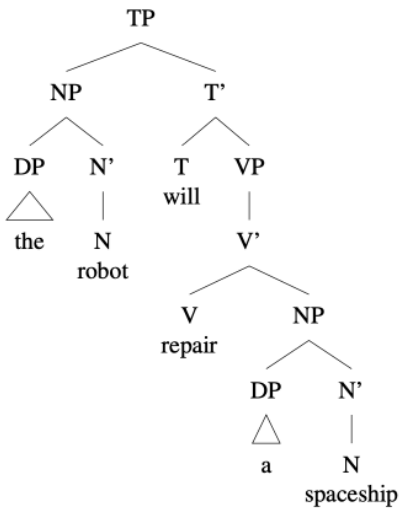


Figure 6.13 Tree diagram for *The robot will repair a spaceship.*, with the sentence as category TP (final version)

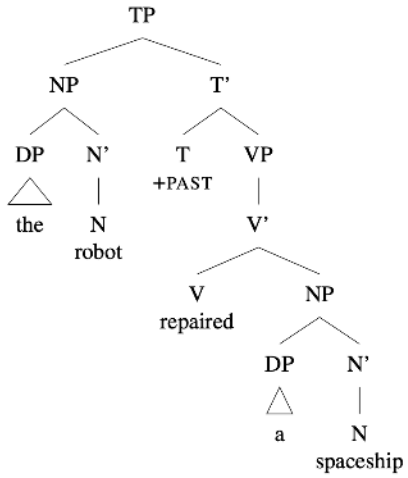


Figure 6.14 Tree diagram for *The robot repaired a spaceship.*, with the sentence as category TP (final version)

What about languages that don't have tense?

There are different options! We could say that languages that don't require tense—like Mandarin or Cantonese, for example—don't have sentences that are TPs, but instead have some other category. (Can you think of any plasible options?)

The other option is to assume that even though we don't pronounce tense in all languages, it's nonetheless the case that something abstract makes a sentence a sentence—something that corresponds to "finiteness". So even if it doesn't have the same *meaning* as English tense, there's something that does the same grammatical work of anchoring a clause, and gluing the subject and predicate together.

This second option is fairly widely assumed, in the type of syntactic theory that we're learning in this class (descendants of X-bar theory). People sometimes use the label "Inflection Phrase" (InflP or IP), but it's also common to simply use the label "TP" even if you're assuming that the semantic content of this functional phrase might vary.

5.8.1: X-bar theory and language variation: Head direction

We saw in Section 6.3 that languages can vary systematically in their basic word order, and characterized some differences in terms of the relative order of **heads** and their **complements**.

This analysis is very easy to encode in X-bar theory, by a simple switch in the **X-bar template** of languages of the two types.

Recall the basic shape of phrases of several categories in English, illustrated in the trees in Figure 6.15.

(1)	a.	I [$_{VP}$ ate$_{V}$ [$_{NP}$ an apple].
	b.	[$_{PP}$ to$_{P}$ [$_{NP}$ Toronto]
	c.	[$_{NP}$ picture$_{N}$ [$_{PP}$ of a robot]

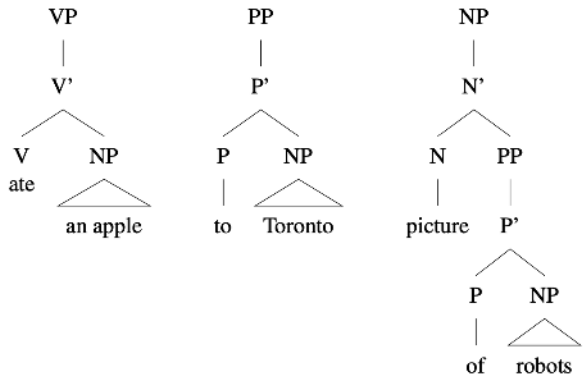


Figure 6.15 Tree diagrams showing head initial word order in English

In contrast to English, Japanese is a strictly **SOV** language. And in Japanese, **heads** always *follow* their complements, the *reverse* of the order we get in English.

What X-bar theory allows us to say is that phrases in Japanese have the same **structure** as phrases in English, but a different **order**.

Specifically, in Japanese complements are still the siblings of their heads, but they *precede* the head instead of following it, as illustrated for the examples in (2) in Figure 6.16. These Japanese examples appeared previously in 6.3 Structure within the sentence: Phrases, heads, and selection.

(2)	a.	Watasi-wa	[$_{VP}$	[$_{NP}$	*ringo-o*	]	**tabe-ta**.	]
		I-TOPIC			apple-ACC		eat-PAST	
		“I ate (an) apple.”						
	b.	[$_{PP}$	[$_{NP}$	*Tokyo*	]	**e**	]	
				Tokyo		to		
		“to Tokyo”						
	c.	[$_{NP}$	[$_{PP}$	*robotto*	*no*	]	**shasin**	]
				robot	of		picture	
		“picture of (a) robot”						

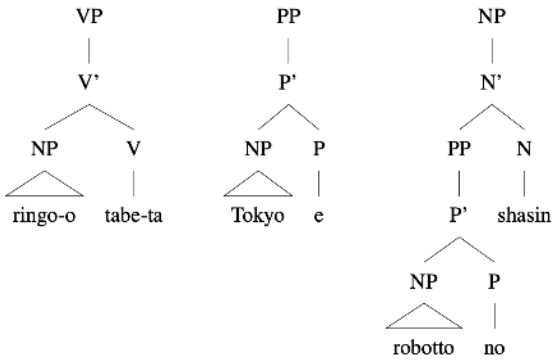


Figure 6.16 Tree diagrams illustrating head final word order in JapaneseIf we draw a tree for Japanese, we would extend this template to TP, as well as all the other phrases we’ve looked at, as shown in Figure 6.17.

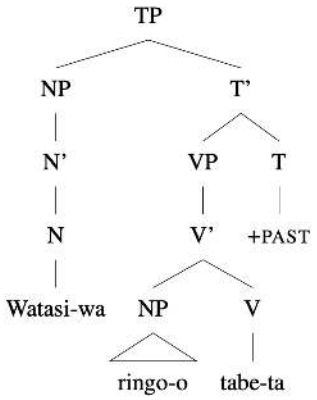


Figure 6.17 Tree diagram showing a head-final TP structure in Japanese

When you're drawing a tree for another language, it's important that the words come in the right order if you read the words off the bottom of the tree! If you're analyzing an unfamiliar language, and need to figure out its word order, one of the first questions you should ask is whether it appears to be head initial or head final.

In contrast to complements contrast, **specifiers** don't show the same variation. They always come before their complements, across all known languages.

When analyzing a new language, the starting assumption is that all **structural** relations are the same, but that linear order and the distribution of silent functional heads may be different. Beginning in Section 6.19, we will also see the possibility that languages may exhibit different types of **movement**.

5.8.2: Check your understanding

Coming soon!

5.8.3: Navigation

If you are following the alternative path through the chapter that interleaves core concepts with tree structures, the previous section was 6.14 Trees: Introducing X-Bar theory, and the next section is 6.16 Trees: Modifiers as adjuncts.

6.16: Trees- Modifiers as adjuncts

When we introduced X-Bar theory, we gained the ability to represent the asymmetric relationship between heads and their complements on the one hand, and heads and their specifiers on the other hand.

At the same time, with X-Bar structure as we've had it so far, we lost a bit of empirical coverage that we'd been able to include in phrase structure rules: we lost a place to put **modifiers**:

- AdjPs and NumPs in NPs
- AdvPs in VPs and TPs
- modifier PP in all other phrases

With **adjuncts** we expand X-Bar structure to accommodate modifiers.

The basic idea of adjuncts is that while there can only be one **head** in a phrase, and there can only be one **phrase** (because it's the final projection of a head), a bar level is a "mid-sized phrase" or "partial phrase", and in principle there can be many partial phrases within a larger phrase.

Let's see how this works in practice. Consider the noun phrase (NP) in (1).

(1)		[$_{NP}$ the early arrival of spring]

This NP contains a modifying adjective phrase [$_{AdjP}$ *early*]. Without that AdjP, the structure would be as shown in Figure 6.18.

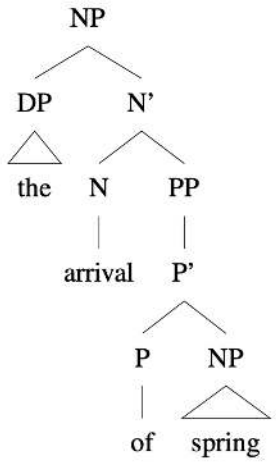


Figure 6.18 Tree diagram for [the arrival of spring], showing that both Specifier and Complement positions are occupied.

In this NP both the specifier and complement positions are filled, so there's no more space for the adjective phrase [$_{AdjP}$ *early*].

By adding additional bar levels, we can create structural "space" for modifiers. These positions are neither specifiers nor complements, instead they are **adjuncts**.

Adjunct

A constituent that is both the child *and* sibling of X' is an **adjunct**.

Unlike specifiers and complements, adjuncts are flexible in their position: they can appear on either the left side or the right size of a phrase structure.

Figure 6.19 illustrates how an additional N' creates space for [$_{AdjP}$ *early*] to appear as an adjunct.

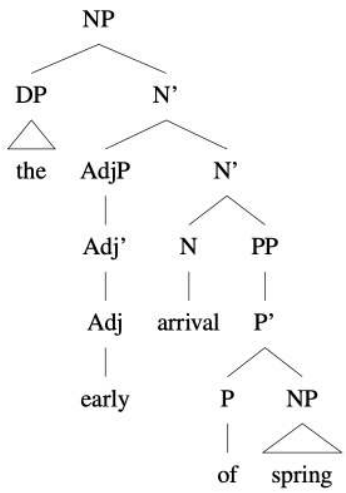


Figure 6.19 Tree diagram showing [$_{AdjP}$ early] as an Adjunct to N', with the extra N' level creating "space" for the modifier.

The same expansion of X-Bar structure gives us space within an NP to represent **two** PPs after the head noun, as in [$_{NP}$ *a letter* [$_{PP}$ *from home*] [$_{PP}$ *in the mailbox*]]. If we run our *one*-replacement test, we can show that *letter* can be replaced by *one*, leaving either both PPs behind, or leaving just the second one behind. If *one* replaces an N-bar constituent, this means that there must be an N-bar that contains *letter* but not either of the PPs.

(2)	a.	I saw a <u>letter</u> from home in the mailbox, and **one** from the bank on the table.

	b.	I found that <u>letter from home</u> in the mailbox, and this **one** on the table.

The tree showing both PPs as adjuncts within NP appears in Figure 6.20.

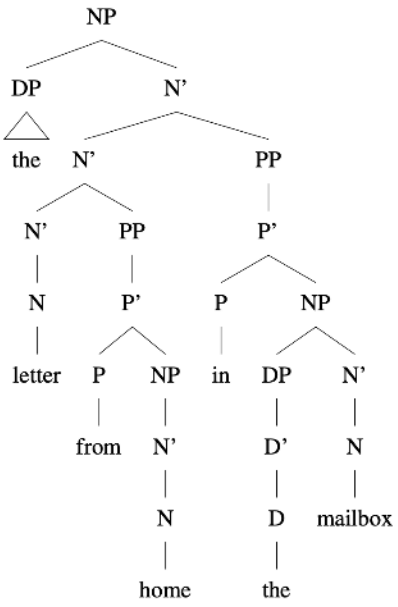


Figure 6.20 Tree diagram for [the letter [PP from home] [PP in the mailbox], showing both PPs as Adjuncts.

Adverbs within verb phrases are also adjuncts. We've already seen that adverbs can go either at the beginning or end of verb phrase, as in (3a-b); we can also get more than one adverb in a verb phrase, as in (3c).

(3)	a.	They [$_{VP}$ [$_{AdvP}$ quickly] left the room]
	b.	They [$_{VP}$ left the room [$_{AdvP}$ quickly]].
	c.	We [$_{VP}$ [$_{AdvP}$ deliberately] left the room [$_{AdvP}$ slowly]].

Adverbs appearing in adjunct positions to the left and right of VP are shown in Figure 6.21.

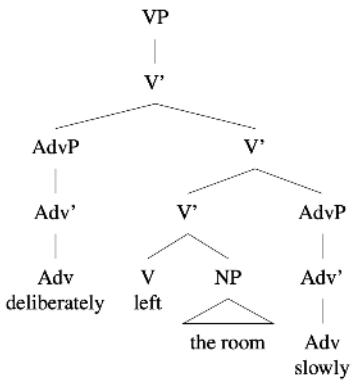


Figure 6.21 Tree diagram for [VP [AdvP deliberately] left the room [AdvP slowly]], showing both adverbs as Adjuncts to V'.

All adverbs occur in adjunct positions, as do all adjective phrase inside NP. (Predicate adjectives, as in *The book is <u>long</u>.* are complements of a verb.)

PPs sometimes occur as complements, and sometimes as adjuncts—we've seen examples of both in this section. constituency tests like replacement with **one** (for N') and **do so** (for V') are very useful for figuring out if a particular PP is a complement or an adjunct.

5.8.4: Check your understanding

Coming soon!

5.8.5: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.15 Trees: Sentences as TPs and the next section is 6.17 Trees: Structural ambiguity.

6.17: Trees- Structural ambiguity

In Section 5.9 we saw cases of structural ambiguity in morphology, cases where the same string of morphemes can have more than one structure, with each structure corresponding to a different interpretation.

The same thing is found in syntax. Consider the following example:

(1)		I saw someone with a telescope.

This has two possible interpretations:

1. I was using a telescope, and I saw someone. (PP modifies VP)
2. I saw someone, and that person had a telescope. (PP modifies NP)

In the first interpretation, the prepositional phrase [$_{PP}$ with a telescope] modifies the verb phrase headed by *saw*. In the second interpretation, the same prepositional phrase modifies the noun phrase *someone*. These two structures are illustrated below:

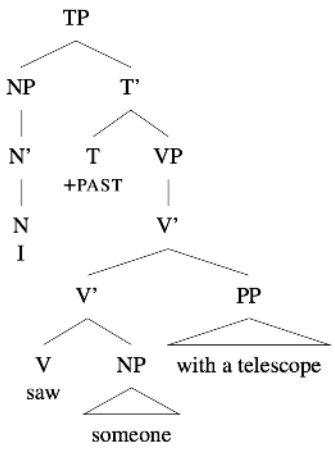


Figure 6.22: Tree diagram showing [$_{PP}$ with a telescope] as an Adjunct of the verb, meaning "I used a telescope to see someone".

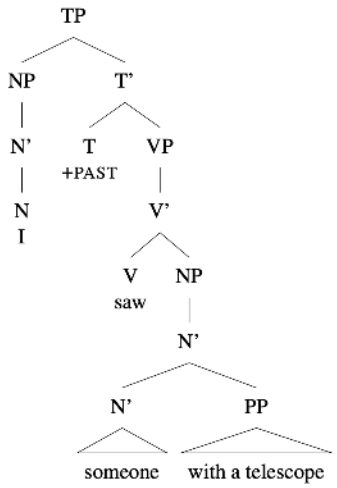


Figure 6.23: Tree diagram showing [$_{PP}$ with a telescope] as an Adjunct of the NP object, meaning "I saw a person and that person had a telescope"

The same will be true for other cases of structural ambiguity—each meaning will correspond to a different potential tree structure.

Many cases of structural ambiguity in syntax involve modifiers in adjunct positions on one or both interpretations. Some of the practical implications of ambiguity are discussed in 8.3 Semantics and pragmatics in the legal domain.

5.8.6: Check your understanding

Coming soon!

5.8.7: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.16 Trees: Modifiers as adjuncts and the next section is 6.6 Clausal embedding.

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5.9: Trees- Embedded clauses

In Section 6.6 we observed that **complementizers** allow clauses to be embedded—that is, to be complements of a verb.

Following our principles of X-bar structure, this means that the complementizer (C) must project a **CP**. Because verbs can **select** whether they take an embedded clause, this CP should be the complement of the verb, and should take TP as its own complement.

Recall the sentences we looked at in Section 6.6:

(1)		Deniz said something.
(2)		Samnang might leave.

Based on the principle of X-bar theory we have seen in previous sections, these would correspond to the tree structures in Figure 6.24.

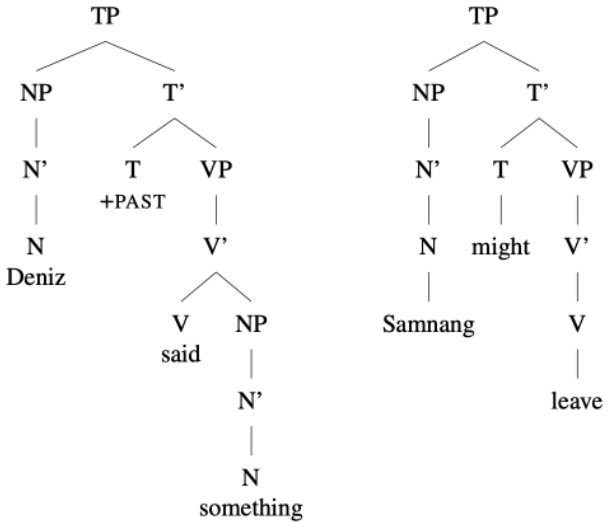


Figure 6.24 Tree diagrams for two TP clauses, [*Deniz said something.*] and [*Samnang might leave.*]

Now we can ask: how do these two clauses fit together when (2) is embedded below the verb *said* of (1), as in the complex sentence in (3)?

(3)		Deniz said **that** [Samnang might leave].

In addition to what we said in previous sections about the fact that some verbs **select** CPs as their complements, here's no space to put the C head, or the CP it's part of, within either the embedded TP to the main clause VP. Instead, we put the TP *inside* the CP, as in the tree in Figure 6.25.

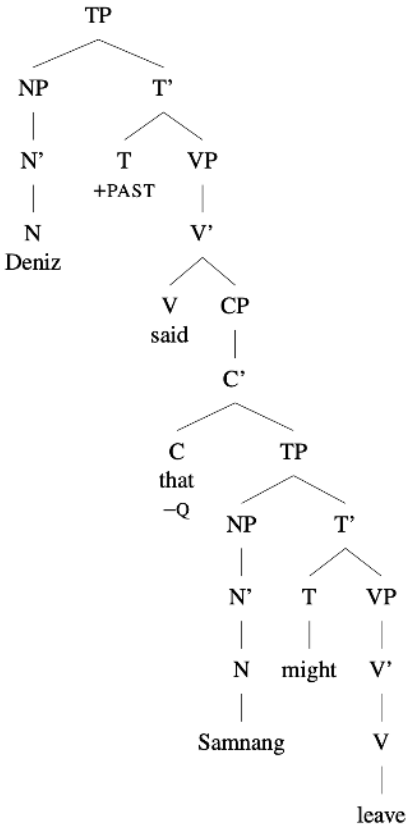


Figure 6.25 Tree diagram for an embedded clause structure. The embedded clause is a CP that is the sibling of the main clause V

What if the complementizer [$_C$ that] is missing, as in (4)?

(4)		Deniz said **that** [Samnang might leave].

In this case we'd wouldn't say that there's no CP, but that in English the C head can be **null**. (In Section 6.19 we'll see other cases where we assume there is an empty C head, because its specifier position is filled.) The tree for (4) would be just like the tree in Figure 6.25, but with no word in the C head.

In Section 6.6 we saw that embedded Yes-No questions are structurally similar to embedded declaratives, but with the complementizer *if* or *whether*. Since they have similar structures, their trees are also fundamentally the same, with *if* or *whether* occurring in a C head. Thus the tree for a sentence like (5) is as in Figure 6.26.

(5)		Eryl wonders **if** [ghosts exist].

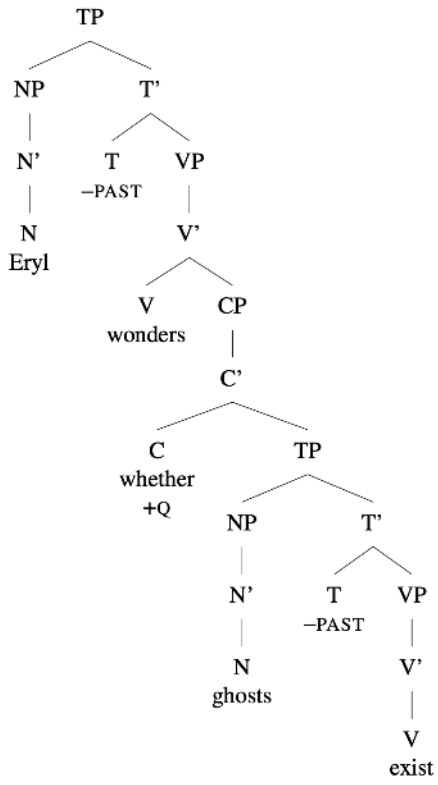


Figure 6.26 Tree diagram showing an embedded Yes-No question. The CP headed by a +Q C is the sibling of the main clause V

In 6.6 Clausal embedding we introduced the feature [–Q] for declarative complementizers and [+Q] for interrogative complementizers. Reframing this in terms of C heads, both *that* and ∅ are declarative C heads with a [–Q] feature, while both *if* and *whether* are interrogative C heads with a [+Q] feature. Verbs select whether they compose with [–Q] CPs, [+Q] CPs, both, or neither.

Finally, in section 6.6 we also introduced embedded *nonfinite* clauses. The complementizer in these clauses is either ∅ or *for*, which we could call [–FIN] complementizers. They also differ in that the head of T is the nonfinite marker *to*.

(6)		I want **for** [ghosts to exist].

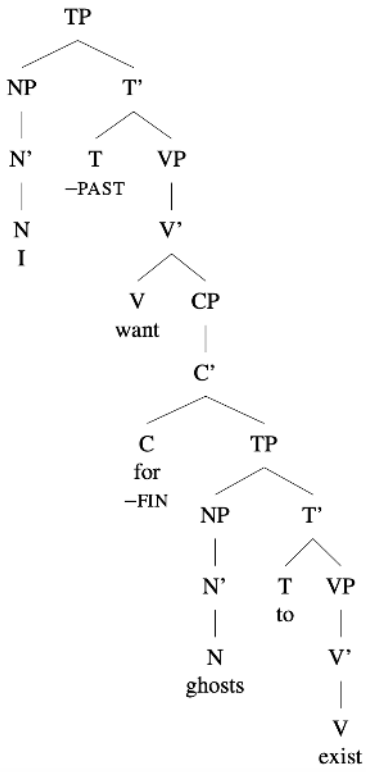


Figure 6.27 Tree diagram for an embedded nonfinite clause. The CP headed by -FIN C is the sibling of the main clause V; the embedded TP is headed by *to*

We've now finished formalizing the basic structure of clauses in X-bar theory. Our next step will be to look at how we can formalize transformations in tree structures, introducing the concept of syntactic movement.

5.9.1: Check your understanding

Coming soon!

5.9.2: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.6 Clausal embedding, and the next section is 6.7 Main clause Yes-No questions.

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5.10: Trees- Movement

5.10.1: X-bar theory: Subject-Aux Inversion as Head Movement

The first transformation we saw, in Section 6.7, was Subject-Auxiliary Inversion, which reverses the order of the subject and the auxiliary.

Thinking not in terms of the linear order of the subject and the auxiliary, but instead in terms of our X-Bar structure, could we state this transformation more precisely?

The tree for [*They have left.*], an ordinary declarative clause, will be as in Figure 6.28.

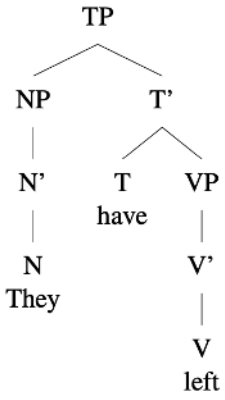


Figure 6.28 Tree diagram for the declarative sentence [*They have left.*]

The structural relations in this tree encode the grammatical relations between the subject, the clause as a whole, and the predicate. Those relations should not be fundamentally different in a question. We just want to add a difference in the order of constituents, in order to mark that this is a question.

The simplest way to change the order of the subject and the auxiliary is to **move** one of them. We could either move the auxiliary up and to the left, or move the subject down and to the right.

If we think about *embedded* questions, which we developed an X-bar theory analysis for in Section 6.18, these had a +Q complementizer above the TP, *if* or *whether*. This complementizer is in the same position that the auxiliary appears in in main clause questions: right before the subject. This gives us a way to understand Subject-Auxiliary Inversion as movement of the auxiliary from T up and to the left, to land in C. This is illustrated in Figure 6.29.

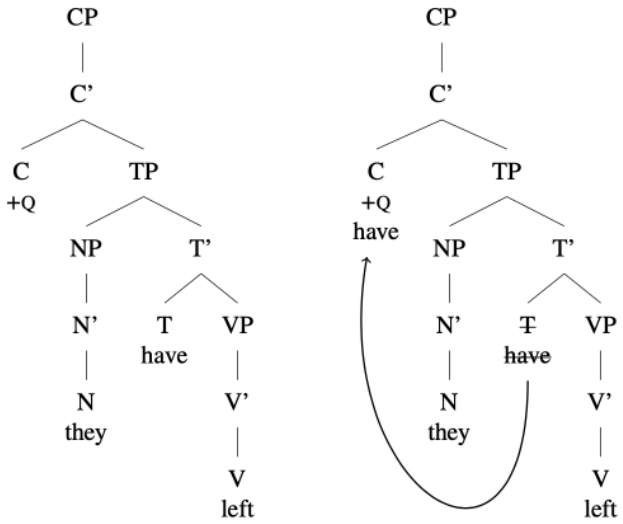


Figure 6.29 Tree diagrams for the question [*Have they left?*] before and after T-to-C Head Movement

The movement in Figure 6.29 is an example of **Head Movement**, which changes a tree by moving a head to the next head above it.

Head Movement:

Movement of a head (X) into the next higher head position.

We can now restate the generalization about how Yes-No Questions are formed in English main clauses. To name an instance of head movement, you can identify the start and end points. So the movement we see in English main clause questions is called **T-to-C movement.**

Yes-No Question Formation in English:

Yes-No Questions are formed by **moving the auxiliary in T to C.**

This is a **derivational** way of representing the relationship between a fronted auxiliary and the position it occupies in statements: we start with one tree structure, and make a change to it in order to arrive at the final structure. There are other ways to represent this dependency, some of which are pursued in non-derivational approaches to syntax.

5.10.1.1: Notation for Head Movement

In the history of generative linguistics, there have been several different notations used for movement. In this textbook we draw a line through the moving head in its base position (

~~like this~~), and draw an arrow to the position it moves to.

There are other ways of indicating movement, which you might encounter online or in other resources. These include *trace notation*, where the original position of the moved element has a "trace" (written *t*) left in it. This can be thought of as a variable, or as the empty space left
behind by the thing that moved. Trace notation won't be used in this textbook, but we mention it so that you won't be confused if you see it elsewhere.

5.10.1.2: X-bar theory: Question word fronting as Phrasal Movement

As we saw in Section 6.8, content questions in English also involve a change in word order from corresponding statements. However, we'll see in this section that we can't describe that change just in terms of head movement. Instead, we're going to introduce a second (and final) type of movement: **Phrasal Movement**.

Recall some examples of content questions in English:

(1)	a.	**What** has the squirrel hidden?
	b.	**Where** is it snowing?
	c.	**When** was it snowing?
	d.	**How** do squirrels hide nuts?

All these questions involve **Subject-Aux Inversion**, which we analyzed earlier as **T-to-C movement** when looking at main clause Yes-No questions. We can tell this has applied because the auxiliary is **before** the subject in all the content questions in (1).

But we can't use T-to-C movement to analyze how the content question word gets to the front of the sentence for two reasons:

1. The auxiliary is already in C. We can't put two words in one head, so we need to put the WH word somewhere else—and somewhere higher up.
2. The thing that moves to the front of the sentence in a WH-question isn't just a head, it's a whole phrase.

How can we tell that what moves is a whole phrase? We can tell by looking at a wider range of content questions.

(2)	a.	**What kind of nuts** has the squirrel hidden?
	b.	**Which city** is it snowing in?
	c.	**Which nuts** did the squirrels hide?

Here instead of the single word *what* or *where*, we have larger NPs moving to the front of the question—though these larger NPs still *contain* content question words. Here *what* and *which* are determiners, occurring in the same position that *this* or *the* or *a* would occur.

So we know that the content question phrase isn't pronounced in the C head in content questions. Where **is** it pronounced, then?

To answer this question, let's consider again word order for the statement *The squirrel has hidden nuts*. The auxiliary *has* is in T, and the object *nuts* is the complement of the verb *hidden*. We can represent this in a labelled bracket structure:

(3)		[$_{TP}$ [$_{NP}$ the squirrel] [$_{T'}$ [$_{T}$ has] [$_{VP}$ hidden nuts]]]

In the content question, what changes is that we have *what* as the object of *hidden*, instead of *nuts*. We also have a +Q C head above TP, because that's where the auxiliary in T moves. We can schematize the structure before we do any movement as in Figure 6.30. (The tree before any movement occurs is called Deep Structure in some theories of syntax, though we won't focus on that terminology here.)

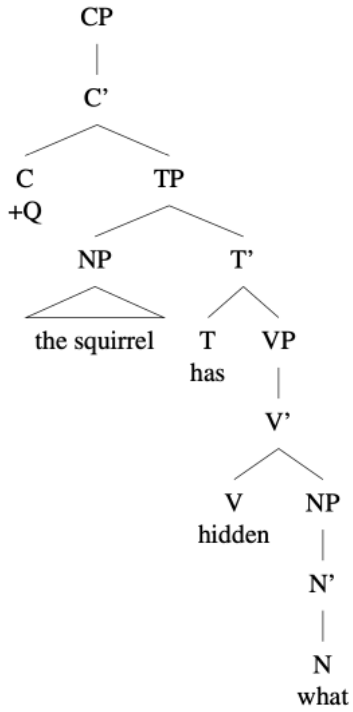


Figure 6.30 Tree diagram for the question [*What has the squirrel hidden?*] prior to any movement

Now we need to transform this clause so that the question phrase appears in initial position, at the beginning of the sentence. This isn't head movement, it's **Phrasal Movement**, also referred to as **XP Movement**. A phrase can't go in a head position, but it can move to the empty Specifier position in CP.

Phrasal Movement:

Movement of a phrase (XP) into a higher specifier position.

This type of Phrasal Movement is known as WH-movement; Phrasal Movement is usually named for the type of phrase that moves.

WH-movement:

Move a WH-phrase from its original position into Spec,CP.

Figure 6.31 shows what the tree structure will look like after both T-to-C Movement and WH-movement have applied.

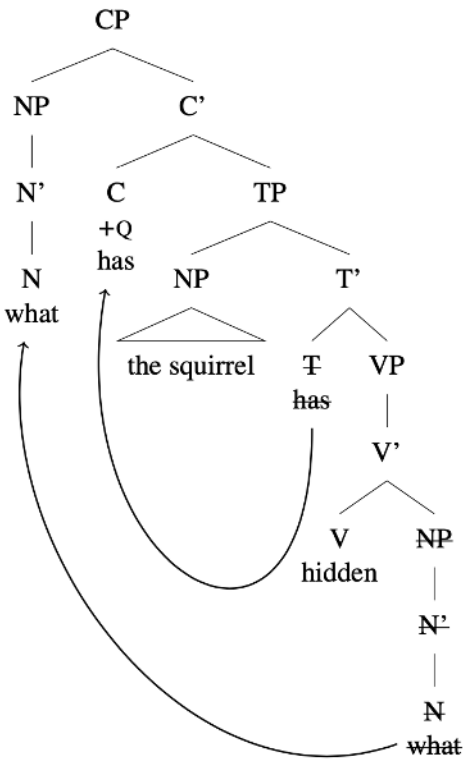


Figure 6.31 Tree diagram for the question [*What has the squirrel hidden?*] after both T-to-C and WH-movement

What does it look like when we have a **complex NP** moving to Spec,CP? Basically the same, as shown in Figure 6.32. This tree also shows the auxiliary *did* in C, inserted as a result of Do-Support:

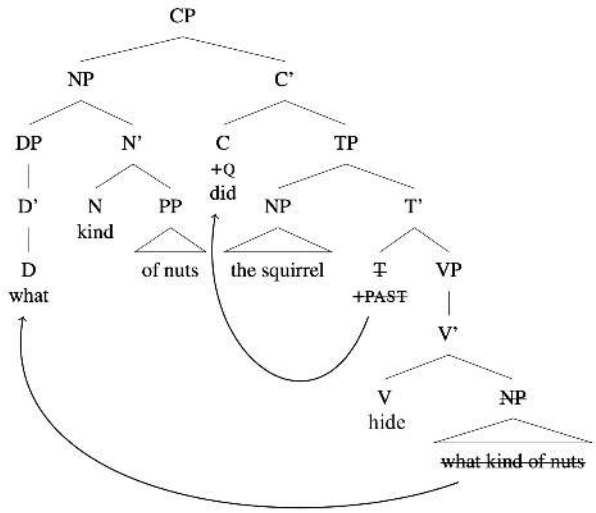


Figure 6.31 Tree diagram for the question [*What kind of nuts did the squirrel hide?*] after both T-to-C and WH-movement

Embedded content questions, which we saw in Section 6.9, have very similar tree structures. They are **like** main clause content questions in putting the WH-phrase at the front of the CP, but **unlike** main clause content phrases in that they don't do Subject-Auxiliary Inversion (T-to-C movement).

What would this look like in a tree? Consider this embedded content question:

(4)		I know [$_{CP}$ what squirrels hide].

The tree for this sentence would be as in Figure 6.32.

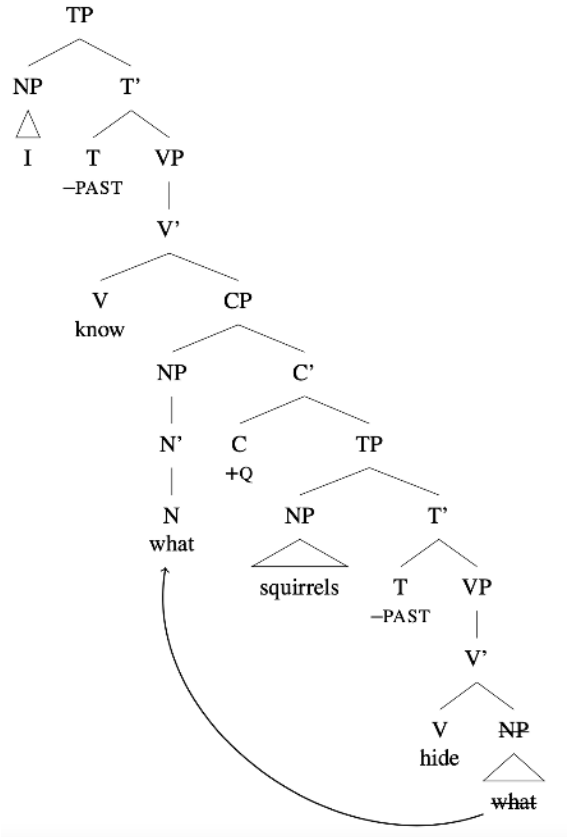


Figure 6.31 Tree diagram for embedded content question *I know what squirrels hide.*

Notice that the embedded C is empty! In many varieties of English, when you get a phrase in embedded Spec,CP, it's impossible to also have an overt complementizer. So sentences like (5) are always ungrammatical in my English, even though *if* is a +Q complementizer.

(5)		*I know [$_{CP}$ what if squirrels hide].

This isn't true in all languages! In many languages WH-movement is totally compatible with an overt complementizer. Tlingit is a Na-Dené language spoken by members of the Tlingit Nation, whose territory includes parts of Southeast Alaska in the United States, and parts of the Yukon territory and Northern British Columbia in Canada. In Tlingit content questions, the content question word must appear in the left edge of the sentence, but must also be followed by a question particle *sá*, as shown in (6). The Tlingit examples here are drawn from Cable (2007). "Ergative" is a case that appears on transitive subjects; the symbol <g̲> represents a voiced uvular stop, an acute accent on a vowel indicates high tone, and the symbol <x'> represents a glottalized velar fricative.

(6)	a.	Daa	sá	kéet	axá?	
		what	+Q	killerwhale	he.eats.it	
		"What do killerwhales eat?"				
	b.	Aadóoch	sá	kg̲watóow	yá	x'úx'?
		who.ERGATIVE	+Q	he.will.read.it	this	book
		"Who will read this book?"				

Other phrases can appear before the content question word, but only when they are the topic of the sentence. One way to understand the word order in (6) is that the content question word has moved to the specifier of CP, while the head of CP is also filled by a +Q complementizer *sá*. So the restriction we see in English isn't a universal one, it's just one type of syntactic pattern.

Movement gives us another tool for understanding the variation in word order that we see across different languages. In this section we've focused on how we can use movement to analyze the word order difference between statements and questions in English. This can be applied to any other type of construction or to any other language: if there is a difference in word order in a language that can't be explained by X-bar structure, one possibility is that the difference results from either a head or a phrase moving in some contexts but not others.

5.10.2: Check your understanding

Coming soon!

5.10.3: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.9 Embedded content questions, and the next section is 6.10 Arguments and thematic roles.

6.20: Trees- Movement beyond questions

5.10.4: Head Movement outside questions: V-to-T movement of auxiliaries

Based on the discussion so far, you might think of movement as something that we only find in questions. But that isn't the case! It happens that questions are one of the places that we clearly see movement in English, but both Head Movement and Phrasal Movement can be found in other contexts as well.

In this section we'll see evidence that auxiliaries like *be* and *have* start out lower than T and move to it via Head Movement, then evidence that the same is true for all verbs in a language like French.

5.10.4.1: ENGLISH AUXILIARIES

The following sentences all have one auxiliary in them:

(1)	a.	The leaves **will** fall.
	b.	The leaves **have** fallen.
	c.	The leaves **are** falling.

We saw in Section 6.5 that auxiliaries all have the same **distribution** in English sentences, a distribution that is different from main verbs: they appear before negation and participate in Subject-Auxiliary Inversion (T-to-C movement). They also appear before adverbs like *always*, as in (2):

(2)	a.	The leaves **will *always*** fall.
	b.	The leaves **have *always*** fallen.
	c.	The leaves **are *always*** falling.

We explained this similarity in distribution—and the way the auxiliaries are all different from main verbs—by analyzing all the auxiliaries as belonging to a single syntactic category: **T**.

But it turns out that the picture is a bit more complex. There's a difference between modals (and nonfinite *to*) on the one hand, and all the other auxiliaries on the other.

First, for many speakers of English, modals (and *to*) cannot **stack**—you always get exactly one of them.

(3)	a.	*The leaves **will might** fall.	(cf. *will maybe fall*)
	b.	*The leaves **must can** fall.	(cf. *must be able to fall*)

By contrast, *have* and *be* **can stack**, with a modal or with each other. And the order is always the same: the modal **must** be the highest auxiliary, the one that shows the distribution that we associated with the head T.

(4)	a.	The leaves **will have** fallen.	(Future + Perfect)
	b.	The leaves **will be** falling.	(Future + Progressive)
	c.	The leaves **will have been** falling.	(Future + Perfect + Progressive)
	d.	The leaves **have been** falling.	(Perfect + Progressive)

Some varieties of English, including Southern American English, and also some varieties of Scots do allow more than one modal in a clause—for speakers of these varieties, the equivalent of (3a) or (3b) might be grammatical (though there are restrictions on which modals can stack, and these restrictions are different in different varieties). When analyzing the syntax of these varieties, we might need a different hypothesis about where modal auxiliaries start out, and whether any of them also move to T in declarative clauses. Even in varieties where modals can co-occur with one another, though, it's still the case that all modals come before *have* and *be* auxiliaries.

If we check all these sentences for the distributional properties that we've associated with being in T—being before negation + adverbs like *always*, undergoing Subject-Auxiliary Inversion—it turns out that only the **first** auxiliary passes those tests. All the subsequent auxiliaries suddenly have the same distribution of main verbs. Let's see this for the Future + Perfect:

- *will* is in T:
  - Before negation: The leaves **will not** have fallen.
  - Before *always*: The leaves **will always** have fallen.
  - Subject-Aux inversion: **Will** the leaves have fallen?
- *have* is **not** in T:
  - Not before negation: *The leaves will haven't fallen.
  - Not before *always* (maybe not totally ungrammatical, but not totally acceptable): *The leaves will have always fallen.
  - Can't invert, alone or with *will*: *Have the leaves will fallen? *Will have the leaves fallen?

So where is the second auxiliary—or in the Future + Perfect + Passive, where is the **third** auxiliary?

Proposal (for English)
Only tense features, the modals, and nonfinite *to* start out in T—that is, only these morphemes truly belong to the functional category T. All other auxiliaries move to T, but they only do so if that T isn't already filled by a modal or *to*.

So when there's a modal in T, the lower auxiliary will appear in an extra VP layer—sometimes called a VP "shell". (We could instead label this phrase AuxP, or even PerfectP or ProgressiveP—if you read more about syntax you might encounter those labels, but for simplicity we'll call it VP here.) This is illustrated in Figure 6.34.

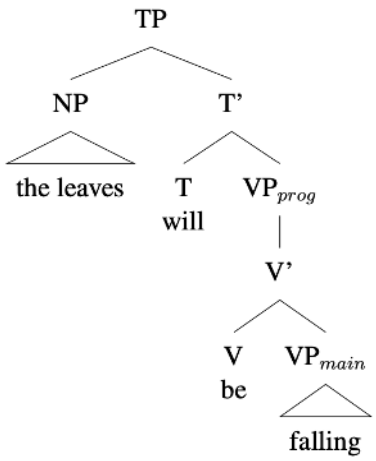


Figure 6.34 Tree diagram for [*The leaves will be falling.*], showing a progressive VP shell

But if there's nothing in T—or rather, if all that's in T is a tense feature—the auxiliary verb will **move** from V to T, as illustrated in Figure 6.35.

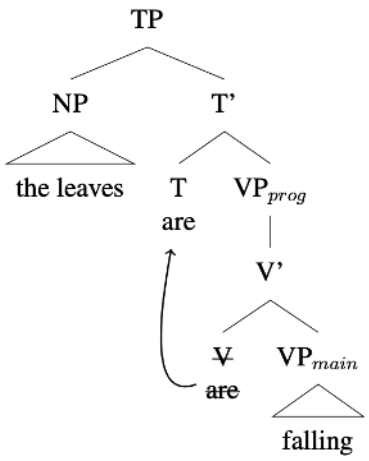


Figure 6.35 Tree diagram for [*The leaves are falling.*], showing a progressive VP shell and movement of auxiliary *are* to T

Very few verbs move in most contemporary varieties of Modern English. Only *be* (as an auxiliary and as a main verb copula), and *have* (only as an auxiliary) show evidence of moving to T.

The same isn't true in other languages, necessarily. For example in French (and in earlier stages of English), we have reason to think that **all** verbs move to T.

5.10.4.2: V-to-T OF ALL VERBS IN FRENCH

In contemporary English it's only *auxiliaries* that ever appear in T—main verbs always show a different distributions. But in French—and in earlier stages of English—when there's **no** auxiliary the main verb also appears in the T position.

French auxiliaries, like English auxiliaries, show up before negation, before auxiliaries like *toujours* ("always"), and can undergo Subject-Aux inversion (though only with pronominal subjects, and even then it isn't very natural in casual speech for most speakers).

(5)	Les feuilles ont tombé.
	the leaves have fallen
	"The leaves fell/have fallen."

(6)	Les feuilles (n')ont pas tombé.
	the leaves (NEG)have NEG fallen
	"The leaves have fallen."

(7)	Les feuilles ont toujours tombé.
	the leaves have always fallen
	"The leaves always fell / have always fallen."

(8)	Ont-ils tombé?
	Have-they fallen
	"Have they fallen?."

Negation in French is traditionally described as involving a *ne* before the tensed verb, and a *pas* after the verb—kind of like a circumfix. But in spoken French in both Quebec and France, the *ne* is almost never pronounced, and so it's marked as optional in

all examples in this section.

What's different about French is that **main verbs** show exactly the same distribution—whereas English verbs are after negation and adverbs, and can't do Subject-Aux inversion (instead they require the support auxiliary *do*):

(9)		Les feuilles (ne) tombaient pas.
		the leaves (NEG)fell NEG
		"The leaves didn't fall/weren't falling."

(10)		Les feuilles tombaient toujours.
		the leaves fell always
		"The leaves always fell / were always falling."

(11)		Tombaient-ils?
		Fell-they
		"Did they fall? / Were they falling?."

English verbs do **not** have the same distribution as auxiliaries—though they did in Early Modern English, ca. 1600s).

(12)		*The leaves fell not.

(13)		*The leaves fell always.

(14)		*Fell the leaves?

We can analyze this difference in **word order** between English and French by saying that while in English only *be* and auxiliary *have* move to T, in French **all verbs undergo V-to-T movement**. This is illustrated for (10) in Figure 6.36.

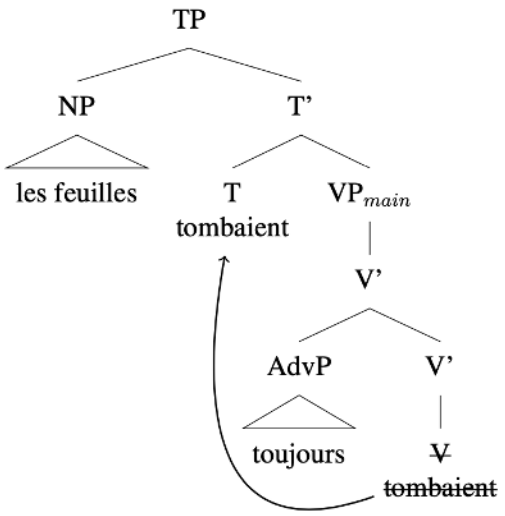


Figure 6.36 Tree diagram for [*Les feuilles tombaient toujours.*], showing a movement of the main V to T

We've now introduced two types of **movement** in our theory:

- Head movement: movement of a head to the next head position up in the tree.
- Phrasal movement: movement of a phrase to a higher specifier position.

Though we find them both in English questions (as T-to-C and WH-movement, respectively), what we see in English auxiliaries and with all French verbs is that these movement types can be found in other
contexts as well—and that languages can differ in what types of movement they exhibit.

5.10.5: Head movement and phrasal movement in passives

So far we've talked about how to *identify* passives—but what is their syntax like? Remember the pair of active and passive sentences we saw in Section 6.11:

(15)	a.	The pirates sank the ship.	(active)
	b.	The ship was sunk (by the pirates).	(passive)

In a theory of syntax that employs movement, the natural way to think about the passive is to say that its syntax (e.g. the presence of the passive *be*) prevents the subject from being introduced in the first place, leaving an empty position (indicated by an underscore).

(16)		[$_{TP}$ _ was sunk [the ship]]

Then because English is a language that always requires a subject, in Spec,TP, something needs to be done to fill that empty position. This is done by **moving** the object NP into the subject position:

~~the ship~~]

(16)		[$_{TP}$ [the ship] was sunk

This is a new case of **phrasal movement**: movement of an NP into subject position.

NP movement:

Move an NP into Spec,TP, to fill an otherwise-empty subject position.

We start with the theme argument *the ship* as the complement of the verb, and the passive auxiliary *be* in a VP shell. To get the correct output, we apply two instances of movement:

1. The passive auxiliary moves to T: **V-to-T movement**
2. The object NP [the ship] moves to the subject-position in Spec,TP: **NP-movement**

The result of these two steps of movement is illustrated in Figure 6.37.

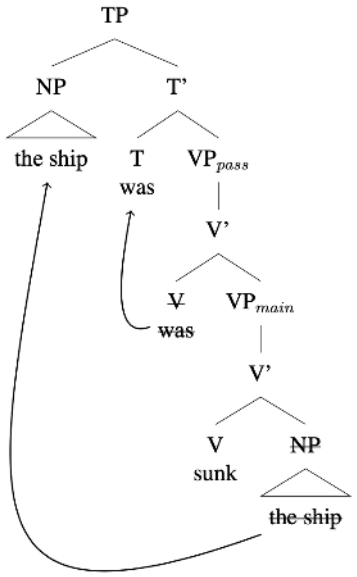


Figure 6.35 Tree diagram for [*The ship was sunk.*], showing a passive VP shell, movement of auxiliary *was* to T, and NP movement of the passive subject

This section has illustrated our final tool in accounting for word-order differences across languages: not just the parameters of head-initial vs. head-final ordering, but also what types of movement arise in what contexts.

5.10.6: Check your understanding

Coming soon!

5.10.7: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, the previous section was 6.11 Changing argument structure: Causatives and passives, and the next section is 6.21 Trees: Summary.

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5.11: Grammaticality

5.11.1: Grammaticality, from Sarah Harmon



5.11.1.1: Video Script

The last thing to talk about with respect to syntax or structure is grammaticality. This is to be a fascinating area, I find, because it really underlies this element of language that no one piece stands alone. We have already talked about how morphology and syntax will blend, and we have talked about how morphology and phonology blend. Grammaticality is how syntax and semantics blend, and that's an important aspect with respect to linguistics, especially given what Noam Chomsky has said in the past.

Let me explain. When Noam Chomsky first came up with what we now call to formative syntax or generative theory, there's a few names for it. When he first came up with that, his initial goal was to show that syntax and semantics are completely different things. In doing that, he established what grammaticality is. **Grammaticality** focuses on only the syntax and not the semantics. Grammaticality is how we know a sentence to work with respect to structure. Going back to that construction metaphor, if something is grammatical, then the beams are straight and true, everything is plumb, and the structure will stand. It doesn't tell you anything about the colors being used or the shape of the little spout that's coming off of some random wall. It is only talking about the internal structure: the studs, the roof, you get the point.

Chomsky's example sentence was this: *Colorless green ideas sleep furiously*. Now, when I say that sentence, you probably have a massive question mark on your face, and rightly so, because that sentence does not make sense. But it is a grammatical sentence, and that was Chomsky's point: that grammaticality is different than meaning. Meaning is a different aspect; certainly, there's nothing about that statement that makes sense semantically.

· If something is colorless it can't be green, that's just an oxymoron.

· Ideas can't have color anyway; they're abstract, they're not concrete.

· Ideas also cannot sleep; it's just impossible.

· Even if they could, they cannot sleep furiously, because it is impossible to sleep furiously. *Furiously* would imply emotion, where sleep is usually devoid of it.

So, it does not make sense semantically. But it does grammatically. It follows the phrase structure rules perfectly. Not only that, this is what helps to explain, in some ways, why we can get various combinations but they don't make sense. They make sense structurally, but they don't necessarily make sense semantically.

All of you have had experience learning a second language in some way, shape or form. One of the frustrating pieces of learning a new language is learning how the structure and the meaning combine. When we start to learn grammaticality, it starts to make some

sense. But until we're fluent, we will always produce sentences that maybe resemble a little bit of our *colorless green ideas asleep furiously*, in that they make sense structurally, you just wouldn't put those concepts together.

So then, what makes a sentence ungrammatical? It means that you have not followed the phrase structure rules. We always mark that in syntax with an asterisk. So, for example, those same words, the same lexicon, if I mess up the order and say *Furious sleep ideas green colorless*. That isn't ungrammatical sentence. How do we know? It breaks a whole bunch of phrase structure rules.

· The first one is that it has the verb phrase before the subject noun phrase; that's not going to work in English.

· There is an adverb out of place, although we have talked before about where that could happen so that one maybe is a little questionable, but certainly.

· It has the adjective after the noun not before it, which in English is not possible.

Grammaticality helps us in a number of ways, specifically with respect to understanding how the brain processes language. We're going to come back to that towards the end of the course. Suffice it to say that it helps us to understand the subconscious knowledge of a native speaker. You can add to that somebody who becomes a near-native speaker, somebody who has learned a language with such fluency that they may not say everything 100% perfectly, but they're very close. It tells us that this structure is part universal grammar and part acquisition. As children or adults, when we learn a language, we are creating these phrase structure rules, as it were. This is not a conscious thought; this is subconscious. We start kind of puzzling things together. But there has to be some sort of blueprint, if you were, to kind of explain what's going on.

With that, we will leave the world of syntax, and the next chapter enter the world of semantics, pragmatics, meaning.

6.1: Syntactic knowledge and grammaticality judgements

What kind of knowledge do we have about the syntax of language? Let's start by considering the sentence in (1):

(1)		All grypnos are tichek.

You might not know what a *grypno* is, or what it means to be *tichek* (because these are made-up words!), but you can tell that this sentence is still the right kind of "shape" for English. In other words, (1) is consistent with the way English speakers put words together into sentences.

Compare this with the sentence in (2):

(2)		*Grypnos tichek all are.

Unlike (1), (2) isn't the right shape for a sentence in English. Even if you did know what a *grypno* was, or what it meant to be *tichek*, this still wouldn't be the way to put those words together into a sentence in English.

Something we can be pretty confident about is that you've never heard or read either of these sentences before encountering them in this chapter. In fact, most of the sentences you encounter in this textbook are likely to be ones you haven't heard or read in exactly that order before. So that means that your internal grammar of English must be able to generalize to new cases—this is the **generativity** of language, something introduced back in Chapter 1.2.

As someone who uses language—in the case of (1) and (2), as someone who speaks and reads English—you can identify sentences that do or do not fit the patterns required by your internal grammar. In syntax we describe sentences that do match those patterns as **grammatical** for a given language user, and sentences that do not match required patterns as **ungrammatical**.

5.11.2: Grammaticality judgements in syntax

In syntax when we say something is **ungrammatical** we don't mean that it's "bad grammar" in the sense that it doesn't follow the type of grammatical rules you might have learned in school. Instead, we call things ungrammatical when they are inconsistent with the grammatical system of language user.

The evaluation of a sentence by a language user is called a **grammaticality judgement**. Grammaticality judgements as a tool for investigating the linguistic system of an individual language user—there is no way to get a grammaticality judgement for "English" as a whole, for example, only grammaticality judgements from individual English speakers. Sometimes you will see a sentence described as grammatical or ungrammatical "in English" or another language; technically this is a shorthand for saying that users of

the language generally agree about whether it is grammatical or not. In many cases different users of a language disagree about the status of a particular example, and this tells us something about **syntactic variation** in that language!

We are often most interested in examples that are **un**grammatical, because they tell us about the limits on building sentences in a language. The convention in linguistics is to mark ungrammatical examples with an **asterisk** (*) at the beginning of the sentence, sometimes called a **star** (slightly easier to say). Whenever you see that symbol in front of an example in this chapter, it indicates that the example is ungrammatical in the linguistic sense.

Sometimes we want to indicate that a sentences is weird because of its meaning, rather than its syntax. In these cases we use a hashtag symbol (#) instead of a star.

For example, consider an example like (3):

(3)		#The book pedalled the bicycle harmoniously.

This sentence is the right *shape* for English, it just doesn't make any sense. So we would say that it's grammatical but semantically odd, and that's what the hashtag symbol indicates.

Most of the sentences we will consider in this chapter are ones that many English speakers (but not all) share similar judgements about. If you disagree with any of the judgements reported here, you can take the opportunity to think about what that tells you about your own grammar, and whether the difference could be explained using the tools we develop here, or if it shows that we would need to revise our theory of syntax in other ways!

5.11.3: The goals of syntactic theory

Our goal in syntax is to develop a theory that does two things:

1. predicts which sentences are grammatical and which ones are ungrammatical, and
2. explains observed properties of grammatical sentences.

But we also want to build a theory that can be used to explain not just properties of English, but properties of *all* human languages. In much of this chapter we'll focus on the syntax of varieties of English, because that's a language that's common to everyone who reads this textbook, but we will often have opportunities to see how other languages show us the scope of variation for syntax in human languages.

What kind of theory do we need to make these kinds of predictions? If languages were **finite** we could simply list all the good sentences and be done. But any language user can generate sentences that no one has ever encountered before, and other people can understand those sentences, so what we "know" when we know the syntax of a language must be more than just a list of grammatical sentences. In the next section of this chapter, we'll see that what we know about syntax can't be just about the order of words, it has to be something about their grouping (**constituency**) as well.

5.11.4: Check your understanding

5.11.5: Navigation

If you are following the alternative path through this chapter that interleaves core concepts with tree structures, you should continue with 6.2 Word order.

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5.12: Exercise your linguistics skills.

Exercise 1. *Intermediate; 6.2.* An important skill for anyone studying linguistics is to come up with potential sentences, and test whether they're grammatical—and it's important to remember that grammaticality judgements don't describe what is "supposed" to be correct, but what fluent users of the language actually do. For this exercise, come up sentences that match the following descriptions, in a language you are fluent in. This exercise is likely to be easiest to do for the language(s) you first acquired as a child, or for the language(s) you use most often day-to-day at home or work.

- 2 fully acceptable sentences (neither ungrammatical nor semantically odd)
- 2 ungrammatical sentences (*)
- 2 grammatical but semantically odd sentences (#)

Exercise 2. *Basic; 6.2.* For each of the following sentences, do the following: (i) determine whether the sentence is simple, compound, or complex; (ii) determine whether the sentence is declarative, interrogative, or imperative; (iii) identify the main predicate, and state whether it is intransitive, transitive, or ditransitive; (iv) identify the subject and (if applicable) the direct and indirect objects.

a. The children read the book.
b. I loaned her some money.
c. The weather is cold.
d. Emily may win the race.
e. I have finished my homework.
f. My very best friend arrived recently.
g. You can easily recognize the town hall.
h. We always talked in the kitchen.
i. The weather report said that it would be colder.
j. Everyone has already left but someone forgot their phone.

Exercise 3. *Basic; 6.3.* For each of the following sentences, determine the category of the bolded phrase(s):

a. Peter sat in **the kitchen**.
b. Everyone **likes chocolate**.
c. Alice bought a **very rare** book.
d. **The people we talked to** all admired **our ideas**.
e. They **almost always** eat **on the porch**.

Exercise 4. *Intermediate; 6.3.* Consider the following sentences of a constructed language, Language X. Based on these examples, what is the basic order of subject, object, and verb in Language X? Is this language head-initial or head-final? (Data adapted from the random constructed language generator Vulgar.)

a. Tsa akisesho ku ipapu. (English translation: "I went to the school.")
b. Qo itsemoj chetsupu. (English translation: "They read the book.")
c. Qo wadij fukapu. (English translation: "They caught the cat.")
d. Wadi hinpu. (English translation: "The cat slept.")
e. Tsa qup ij pasu shapu. (English translation: "I sent them a letter.")
f. Qo pasuj chetsupu. (English translation: "They read the letter.")

Exercise 5. Intermediate; 6.4. For each bolded string of words in the following sentences, apply two constituency tests to determine whether the words form a syntactic constituent.

a. A **large golden** fish is **swimming in the pond**.
b. **Tomorrow we might** take a drive to visit **some friends**.
c. **Some friends** of hers have been **in the audience** every evening.
d. **What I said** was that the correct answer **will surprise** you.

Exercise 6. *Basic; 6.5 (and 5.5).* In the following paragraph, identify all the nouns, verbs, and adjectives. This text is drawn from Swiss Sonata by Gwethalyn Graham, which is in the Public Domain in Canada.

> "The main door of the school is on the side away from the town. The drive leading to it is long, cutting straight across between the tennis courts after it leaves the big wooden gates, then curving round the extreme edge of the gardens until, after a long, straight stretch up the slope, it ends in the courtyard by the front door. It takes about five minutes' fast walking to get from the gates to the grateful seclusion of the court during which you become thoroughly self-conscious as you notice the eyes watching you from the windows. Once you reach the corner of the house you are safe."

Exercise 7. *Basic; 6.5.* In the following sentences, give the category of all the words from closed-class categories. This text is drawn from Swiss Sonata by Gwethalyn Graham, which is in the Public Domain in Canada.

> "All the rooms on the ground floor open off the T-shaped front hall. When you come in from the courtyard the doors of Mlle Tourain's study are directly opposite you; on your right are the kitchens and laundry-rooms and between them and the study, occupying the whole corner, is the dining-room. On your left, behind the big dark staircase which curves up to the first floor, is the girls' living-room, and in front of it on the south-east corner, the main classroom."

Exercise 8. *Basic; 6.5.* In the following sentences, identify all the modal auxiliaries, non-modal auxiliaries, and the main verb uses of *have* and *be*. This text is drawn from Swiss Sonata by Gwethalyn Graham, which is in the Public Domain in Canada.

> "Some day they are going to get it mended but at present they are too busy, for Mlle Tourain is correcting proofs for the second volume of her work on the history of Swiss independence, which will appear next autumn, and she, Mary Ellerton, has no time for anything, since she dismissed the housekeeper and has her job as well as that of assistant principal."

Exercise 9. *Basic; 6.6.* For each of the following sentences, do the following: (i) identify every verb and every subject; (ii) identify the embedded clause and the main clause; (iii) determine whether the embedded clause is a statement, a question, or an infinitive; (iv) identify the complementizer.

a. Some meteorologists believed that the storm would hit the coast.
b. Every person in town worried that the mayor was embezzling funds.
c. We wondered if it would rain tomorrow.
d. My friend asked if I like comics.
e. I want everyone to leave.

Exercise 10. *Basic; 6.7.* Below are a series of Yes-No Questions in English. Undo Subject-Aux Inversion to generate the corresponding statements.

a. Was there someone at the door?
b. Would your friend like to come with you?
c. Can you believe what they were saying?
d. Have you heard the story everyone has been talking about?
e. Were they waiting for a long time?
f. Does it matter?
g. Do birds that swim also fly?
h. Have the people who read the notes asked any questions?
i. Did you ever wonder about it?

Exercise 11. *Basic; 6.8.* Below are a series of statements in English with one or more phrases underlined. Apply relevant transformations to generate corresponding content questions, one question for each underlined phrase. For example, for "They are reading a book." the corresponding content questions would be "Who is reading a book?" and "What are they reading?"

a. Someone is playing the bagpipes outside.
b. The library will ask to see proof of **your address**. (form questions for "proof of your address" and "your address")
c. Several people have been talking about the recent scandal.
d. Frogs use their tongues to catch flies.
e. They always go to the beach in the summer.

Exercise 12. *Basic; 6.10.* The following sentences are taken from The Venturesome Voyages of Captain Voss, by John Claus Voss, which is in the Public Domain in Canada. For each sentence, identify the thematic role of each NP.

> Because I had found, from the day I first met Dempster on Cocos Island till he died, that he was a straightforward and reliable man, I have decided to place confidence in you. I now ask, can you and will you procure for me a vessel and fit her out properly, sail with me to Cocos Island and assist me to put the treasure on board and take it to Victoria?

> The wind freshened considerably and hauled round to the west, at the same time throwing up a lively choppy sea, which made the little vessel jump about worse than a bucking horse.
>
> All three ships under full sail passed Cape Flattery towards evening, shaping their courses toward the south-west with a fresh easterly breeze.

Exercise 13. *Intermediate; 6.11.* The following paragraph is taken from Swiss Sonata by Gwethalyn Graham, which is in the Public Domain in Canada. The main verb, together with any auxiliaries, has been underlined in several clauses. For each such clause, say whether it is passive or active.

> Her eyes reached Miss Ellerton, the games mistress, who, after a few impatient glances in Mlle Tourain's direction, had got up from her chair and wandered over to the french windows where she was standing now, holding the curtain back with one hand and looking over the lovely grey town where dusk already lurked here and there. Some of the light which yet remained in the outer world was caught in her hair and outlined her small features so that the others, sitting patiently in their chairs, were aged by their contrasting dullness. Amélie Tourain leaned forward a little and switched on her desk light, then remained motionless looking at the girl by the window. An unaccountable conviction that Miss Ellerton was in some way connected with the turmoil in her mind had complete possession of her.

Exercise 14. *Basic; 6.13–6.15.* Draw trees for sentences (a) through (e) in Exercise 2.

Exercise 15. *Intermediate; 6.13–6.15.* Below are three sentences from Japanese. You can ignore morphological alternations in the form of the Japanese word for 'three' (*sanninno* in B and *sandaino* in c). For the purposes of this question you can assume numerals like 'three' are determiners (d) in Japanese, even though we would usually treat them as numerals (Num). Data for this question drawn from Crabtree & Powers 1991: 209; Sugisaki 2011:2.

Describe in words how the order of words in NP, VP, and PP are **different** from the ones for similar categories in English. Based on the templates for specific phrase categories, provide a general X-bar schema that can generate all three Japanese sentences provided here. Draw tree structure diagrams for sentences (b) and (c).

a. Taroo-ga ringo-o tabeta.
   Taroo-NOM apple-ACC ate
   'Taro ate an apple.'
b. Sanninno gakusei-ga kita.
   three student-NOM came
   'Three students came.'
c. Gakusei-ga sandaino kuruma-de kita.
   student-NOM three car-in came
   'Students came in three cars.'

Exercise 16. *Basic; 6.16.* Draw trees for sentences (f) through (h) in Exercise 2.

Exercise 17. *Intermediate; 6.17.* Groucho Marx has famously joked, "One morning I shot an elephant in my pyjamas. How he got in my pyjamas I don't know." Draw the two tree diagrams that correspond to the two separate meanings of the sentence, "*I shot an elephant in my pyjamas*."

Exercise 18. *Basic; 6.18.* Draw trees for the sentences in Exercise 9, which all involve embedded clauses.

Exercise 19. *Basic; 6.19.* Draw trees for the following sentences, which all involve main clause questions in English. Show any instances of movement with arrows, crossing out the relevant head or phrase in its original position.

a. Were they waiting a long time?
b. Does it matter?
c. Who can bring snacks?
d. What book were you reading?
e. Where is that train going?
f. When was this building built?

Exercise 20. *Basic; 6.20.* Each of the following sentences is passive. For each one, come up with a corresponding active sentence (in most cases this will require inventing an agent). Draw trees for these sentences, showing any instances of movement with arrows, crossing out the relevant head or phrase in its original position.

a. She was being followed.
b. Their secrets were revealed by a newspaper story.
c. This cheese has been aged for 3 years.
d. That scarf was knit on very small needles.
e. Was the mystery solved?

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CHAPTER OVERVIEW

6: Meaning- Semantics and Pragmatics

Learning Objectives

When you've completed this chapter, you'll be able to:

- Acknowledge the plurality of linguistic theories concerning the status of the lexicon, explain the differences between each theory, and evaluate the pros and cons of each theory;
- Explain why the dictionary is not the ultimate authority of linguistic meaning;
- Analyse linguistic meaning critically based on descriptive observations;
- Gain a general understanding of what kinds of concepts lexical meaning encodes in language;
- Explain the difference between sense and denotation;
- Use diagnostics to identify entailments, implicatures, and presuppositions;
- Evaluate the usefulness of each kind of meaning in linguistic analysis;
- Appreciate the complexity and diversity of linguistic meaning.

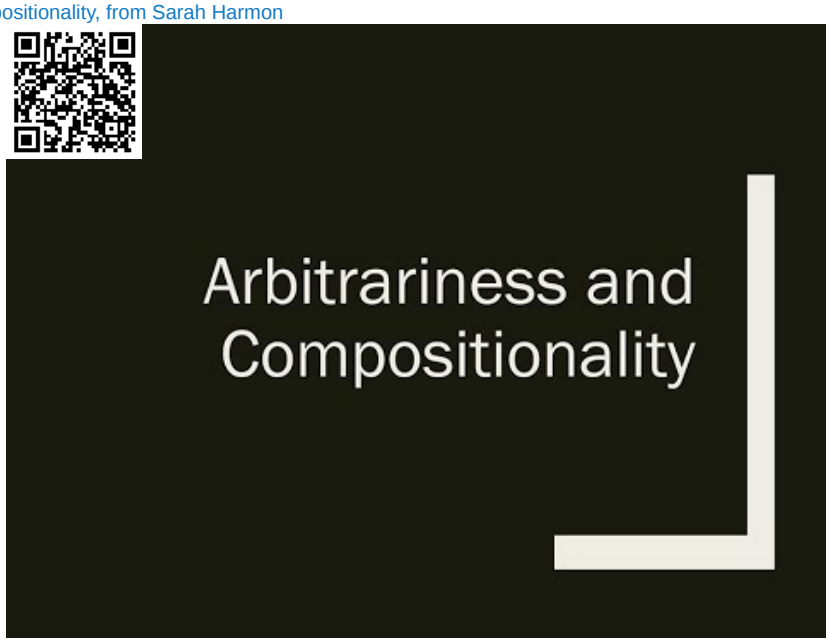
This chapter is about linguistic meaning, particularly **semantics**: how the meaning of words combine to form the meaning of sentences. We will start by examining lexical meaning: what goes into the meaning of a word and other smaller linguistic expressions stored in your mental lexicon. We will examine various theories of lexical meaning and evaluate the pros and cons of each one. The latter half of the chapter focuses on case studies of linguistic meaning across categories and across languages, and along the way, we will think about what it means for the meaning of one word to combine with the meaning of another word. We will examine various data across categories and across languages in order to appreciate the complexity of human semantic competence.

6.1: Arbitrariness and Compositionality
6.2: The mental lexicon
6.3: The nature of lexical meaning
6.4: Events and thematic roles
6.5: Why not the dictionary?
6.6: Pragmatics Definitions
6.7: What does this sentence "mean"? Entailments vs. implicatures
6.8: Cross-community differences in discourse
6.9: Conversational implicatures
6.10: The Cooperative Principle
6.11: Illocutionary meaning
6.12: Deixis
6.13: Exercise your linguistics skills

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6.1: Arbitrariness and Compositionality

6.1.1: Arbitrariness and Compositionality, from Sarah Harmon



6.1.1.1: Video Script

With respect to arbitrariness and compositionality, there are a lot of the pieces that you're going to see below in what Catherine Anderson wrote that are exceptional, but I think they need a little bit of setup now. When we talk about semantics, one of the things that is kind of important to remember, is the fact that this is really like philosophy in some ways that we're going to talk about really abstract concepts. Meaning is harder to imagine sometimes than the structure of a phrase or how we put a lexicon together with different morphemes. To start off, let me start talking about a few things that are going to be closer to what you may hear in a philosophy class; there's a reason for that and I'll get to it.

With respect to semantics, we always have to start off in the same place, and that is talking about an **ontology**. In linguistic terms, an ontology is pretty close to what you hear in a philosophy class: it is a box with all the possible meanings. Each language assigns a lexicon or a phrase to that meaning; that's what we call **lexical meaning** or **lexical semantics**. Let's unpack that a little bit, because that might be a little hard to understand. I like thinking of an ontology as a box, a box for each given language and, in many cases, you can say a specific dialect. You can say that that box come has an entire litany all of the possible phrases and lexicons and the meaning associated with it, so they are connected in some way. What happens is that as fluent speakers of a given language, whether it is our native language or one that we have learned, we pull from the items out of that box and we import it into our **entailment**, our mental lexicon. That mental lexicon that we talked about in morphology comes in here, because that is how we have built our language, we have pulled items from the ontology we have entailed certain other pieces to that and have built up our mental dictionary or mental lexicon. This really encapsulates a lot of what we do in semantics, because everything that we talked about with respect to semantics, and even pragmatics, which we'll get to later, has to do with understanding what are the items in that box, what are the lexicon and phrases, as well as the meaning in that ontology.

We have talked about this gentleman before in chapter one, as well as when we got to morphology: Ferdinand de Saussure. As you can see, he lived from the middle of the 19th century into the early part of the 20th century. We already talked about his Principle of the Arbitrary, but let's come back to that to refresh our minds a bit. It really is the cornerstone of semantics; you have a hard time understanding anything in semantics without understanding the arbitrariness of language. I talked about him briefly earlier; he was Swiss mathematician, logician, and philosopher that used these tools to look at language. He is a fascinating individual; at a different point in time, I might get into it.

For now, his **Principle of the Arbitrary** is what we need to focus on. I talked about earlier that you have, for example, *sofa*, *couch*, *davenport*; three different terms, and for most of us we use at least two of those to describe the same piece of furniture. Or, we talk about a *groundhog* or *woodchuck* and it's the same animal. Even how *air*, *food* and *water*, the three things that human beings need to live, that none of those terms are the same in any two languages. We use different lexicon in every single language to describe the same three things that we all need. That is proof of arbitrariness, that any given language arbitrarily assigned a lexicon or a phrase to a specific meaning. That's exactly what the Principal the Arbitrary is: connecting the **reference** to the **meaning** or the **sense**. Those were Saussure's terms and when he did this; he had a different aspect for us to think about. He described accurately that when we talk about the *morning star* and when we talk about the *evening star*. It's the same heavenly body. What does that mean? You may have heard those terms before, the *morning star* and the *evening star* and; if not, the *morning star* is the last heavenly body, the last thing we see in the sky before the sun comes up and makes it so bright that we can't see any stars. The *evening star* is the first thing we see once the sun goes down is the first heavenly body that we see. It isn't actually a star—it's the planet Venus—but even still, we use this these two terms to refer to the exact same thing. As Saussure described, that is arbitrary; we arbitrarily name it a different thing, depending on the time of day. That this happens in English or maybe used to happen (there aren't too many people who say *morning star* and *evening star*), but arbitrariness does happen in every language.

Really what we're saying is that a reference or a lexicon or phrase that we use is really a set of **truth values**, meaning that, if it is correctly attaching or entailing to a certain meaning that it's a **true reference**: it's true for me, it's true for you. If it's not, then it's a **false reference**. Let me give you an example. If I hold up this device and call it my *phone* or my *telephone* or my *mobile phone* or my *cell phone*, all of those are true references, meaning that in any dialect of English this thing would be considered a 'phone'. It could be any or all of those lexicons. But if I hold this thing up and I call it a *pencil*, that's going to be a false reference, because in no dialect of English does this apparatus get connected to or entailed to a 'pencil'; it just doesn't happen. Let me give you another example. If I say, that is a true reference, because this thing that in English we call 'sky', it's the thing that is above us when we go outside right; get rid of the clouds and what you see is the sky. That thing up there that thing has a color to it, or at least that we perceive and that color is associated that hue is associated to the term *blue*, so that's a true reference. If I say *the sky is green*, for most all of you, that would be a false reference, because in no way does that color get correlated to the term 'green'. I will say, though, if you are from an area or have spent time in an area that is prone to tornadoes, then you know what that phrase means. If you have the unfortunate instance of being in an area when a tornado is about to drop, the clouds look green; the light bounces off the clouds in such a way that it looks green, and so you say *the clouds are gr*een or *the sky is green*. In that specific reference, it would be true, but for most everybody else, it would be false.

If we talk about Saussure here and the Principle of the Arbitrary, then we have to include Gottlob Frege, who also came from Switzerland. He's also a mathematician, logician, and philosopher of language and he worked alongside Ferdinand de Saussure. He came he came up with the **Principle of Compositionality** and it is equally important when we talk about semantics; you can't talk about semantics without either the Principle of the Arbitrary or Principle of Compositionality. This principle is actually pretty straightforward and I probably don't need to explain it very much. It is that the meaning of the whole is determined by the meaning of the parts and the way they combine. The components help to form and shape the meaning of the overall. That pretty much makes sense, but I'll give you a couple of examples. If we think about this morphologically, then certainly if we have a term *unbelievable*. All we need to do is look at the individual morphemes that are associated with that lexicon, note the meaning of the different morphemes, and we can put together the meaning of the full lexicon. In the term *unbelievable*, we have a root *belief*, we have a prefix *un-*, which means 'not' and it's a negator, and we have a suffix, a derivational suffix, that means 'able to', *-able*. 'Not' 'believe' 'able'; 'to not able to believe'—that's what *unbelievable* means.

It even helps us to understand the history of how certain terms or certain phrases get changed over time. For example, if I say *holiday*, you have a certain image in mind for most English speakers, that means just a day off. It may include a vacation; certain dialects of English equate a *holiday* to *vacation*. However, if I told you that, historically, that it was a sacred day or a holy day, that may not be the meaning of it now, but you can see the history of that, and you can understand how it could come to mean that. These are examples of the Principle of Compositionality: the parts and the way they combined inform the meaning of the whole.

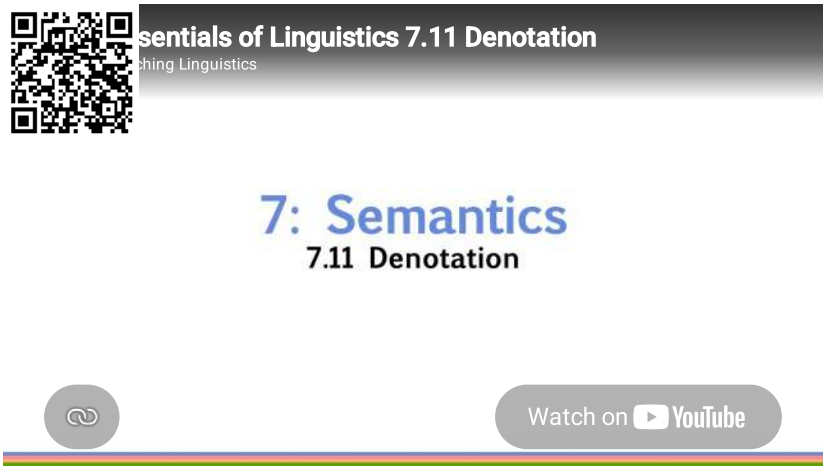
We can also talk about when there is a **lack of compositionality**. We already have in the previous chapter, when I talked about grammaticality and I talked about the statement that Noam Chomsky came up with: *colorless green ideas sleep furiously*. We talked about how it is a grammatical sentence structurally; it follows the phrase structure rules of English. Why it doesn't make sense is because it lacks compositionality; the meaning of the individual pieces, that they don't work together. In semantics we call that **anomaly**; an anomaly is when there is a lack of compositionality. Most of the time, anomaly produces a lack of understanding; you don't understand what somebody is trying to communicate.

However, there are times that anomaly can be massaged a little bit; it can be understood, given a context. One example is, **metaphors**. If I say *there is a fork in the road*, what I'm saying has nothing to do with an eating utensil in the middle of the roadway. In that sense, there is anomaly, because there's a lack of compositionality. As an English speaker, you understand what I'm trying to say; I'm describing a situation in which a single road forks or splits into two or more subsequent roads. Because you are an English speaker, you understand what that metaphor is trying to say. That is an example of a bit of **elasticity** with this Principle of Compositionality, that we can play with this a little bit. This also includes **idioms**, and it includes something called **collocations**. A collocation is a combo: X and Y. They are understood as a unit, and they have a little bit of a metaphor quality to it. For example, if I was describing somebody in their late 40s through early 60s, and they are a dark haired individual but there's quite a bit of gray sprinkled throughout their hair. A term we might use in English is *salt and pepper*, that that person has *salt and pepper hair*. If I just said, *salt hair* or *pepper hair*, you wouldn't understand what I was trying to say. If I say, *salt and pepper*, together, that is understandable, as a chunk of meaning. It stretches that Principle of Compositionality just a little bit, but it's understood because of the context, because that phrase is part of the ontology of English. I'll give you another example. I used to have a neighbor who did not tell stories very well, and one of the things they used to do was not give very much in the way of detail. If you talked to them after a trip, they would say they went *here and there*, and did *this and that*. *Here and there*, *this and that*, those are two collocations. They are general phrases to explain that there was probably nothing important going on: they didn't go to anywhere that they felt was interesting, or they didn't want to tell us where they went. Either way, they used two different collocations to describe his vacation.

All of these expansions of the Principle of Compositionality and the Principle of the Arbitrary inform everything with respect to semantics. From this point going forward, both of those principles will have a role in every aspect of semantics and pragmatics.



7.11: Denotation



6.1.1.1: Sense vs. denotation

So far in this chapter, we have spent a lot of time on lexical meaning: the meaning of words and other linguistic expressions you store in your mental lexicon. In doing so, we have been analysing meaning in term of the **sense** of the linguistic expressions. The sense of a word is what that word expresses; you store the sense of listemes in your mental lexicon.

Figuring out the sense of any given word is a difficult task. Let's take a look at a summary of what we have been able to figure out about word senses so far.

1. It's probably not just a list of necessary and sufficient conditions;
2. It's probably tied to concepts in some way;
3. Verbs (and other predicates) specify how many arguments it takes, and what role these arguments play;
4. Nouns specify whether it's count (bounded) or mass (unbounded);
5. Adjectives specify whether it's stage-level (bounded) or individual-level (unbounded);
6. Some adjectives have a degree argument, some do not.

What we've done is identify some major patterns in word senses, but this of course doesn't fully answer the question "what do words mean?". If we ask right now what the sense of the adjective *sour* was, our best approximation would be '*x* is **sour** to degree *d* '. You may still be wondering, "but what does it mean for something to be *sour*, exactly, though?". Similarly, we know that the lexical semantics of *pencil* says that it's a count noun, but what makes a pencil a pencil?

Some linguists have proposed that word meaning encodes things like what parts it has (e.g., a *pencil* is something consists of graphite or a similar substance), what its purpose is (e.g., a *pencil* is something that is used for writing), and how it came into being (e.g., *pencil*s are man-made, not found in nature) (Pustejovsky 1995). Much of this is still on-going research in linguistics.

Although words like *pencil* have a somewhat articulable meaning, there are other words like *sour* whose sense is actually quite hard to characterise, except that it's, well… that sour taste. What about the word *care*? What does it actually mean for someone to *care* about something? What's the different between a *jacket* and a *coat*? Are hotdogs *sandwiches*? If we focused on the sense of a specific word, we could write a whole book on it! Sense is fun to think about, but if we focus too much on a single word, we can lose sight of the bigger picture. Generally, lexical semanticists are not interested in "pinning down" the exact meaning of any particular word. Instead, they ask more general questions like: "What lexical meaning patterns do we see across different words?", "What semantic classes of nouns, verbs, and adjectives are there?", "What is the nature of lexical meaning in the lexicon?", "How is lexical meaning represented in our minds?", "How are lexical entries organised in our lexicon?", and "How does lexical meaning relate to cognition?".

There is another angle of analysing linguistic meaning: **denotation**. If you were really pressed by someone to say what the meaning of *sour* was, you might eventually grab a lemon and say, "Look, *this* is sour, OK! It's whatever this is!". This is a way to talk about the meaning of the word *sour* via denotation. The **denotation** of a linguistic expression is what that linguistic expression points to in the actual world.*Sour* points to all sour things in the world, including lemons, limes, grapefruit, vinegar, pickles, etc. The denotation of *pencil* would be the set of all things that are pencils in the actual world.

6.1.2: More about denotation

We just said that **denotation** is what the linguistic expression points to in the actual world, but it's actually slightly more complicated than that. When we say that the denotation of a word is what it points to in the *actual world*, we run into problems when we want to analyse the meaning of words like *unicorn*, or names like *Mario* (the character from the Nintendo games). If denotations were what these words points to the *actual world*, then that would be nothing (what mathematicians call **the empty set**) — because unicorns and Mario do not actually exist in the real world. That means if we take word meaning to be denotations, then *unicorn* and *Mario* would be meaningless. But we don't want to say that! Surely, they are meaningful still. So more accurately, **denotation** is what the linguistic expression points to is our ***cognitive representation* of the actual world.** So words point to the abstract representation of the world that we have in our cognitive faculty, and not the actual things out there, so to speak. Fictional things can certainly have a representation in our cognition, so if we think of denotation this way, even words like *unicorn* and *Mario* have "things" they point to in our cognitive faculty. For simplicity, we will say "in the actual world" when discussing denotations in this textbook, but keep in mind that technically, it's the *cognitive representation* of the actual world in our minds.

Denotation and sense are related, which is why it is useful to talk about both. Sense is what you store in your head as the semantic information of that word. And whatever this internal information is, *that*'s the knowledge that allows you to point to things out there in the real world and say, yes, that's sour, no, that's not sour, etc. So the two modes of meaning are connected in that the sense of a word is what you use to figure out the denotation of that word. So even without knowing the exact sense of a word, we can still get a lot of insight about how meaning works in language.

To understand the difference between sense and denotation, consider the following map. Let's say that this map represents an actual town in Ontario.

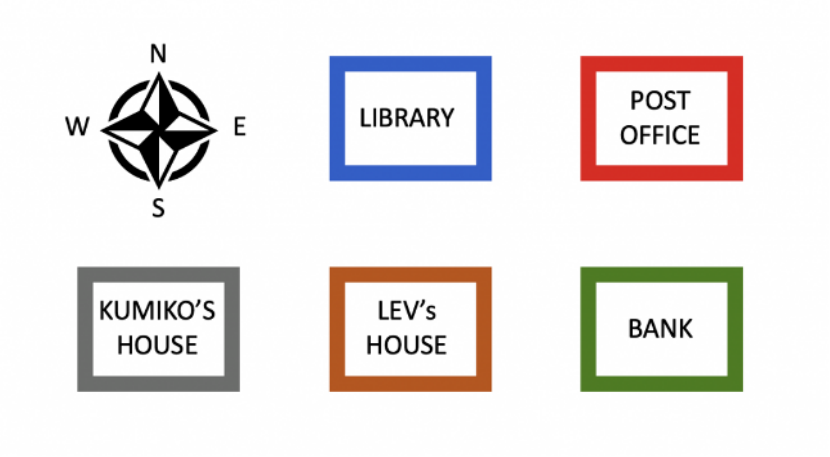


Figure 6.1.1. Map to show the location of Post Office.

Let's say that you are explaining to someone where the post office is in this town. There are several ways to describe its location, including (1) and (2).

(1)		The building to the north of the bank
(2)		The building to the east of the library

The phrases in (1) and (2) have **different senses**: the phrases don't contain identical words (e.g., *north* vs. *east*, *bank* vs. *library*), so the internal semantic content of each phrase would be different. However, (1) and (2) have the **same denotation**: the post office in this town. Although described differently, both phrases point to the same thing.

Consider also an expression like (3).

(3)		My house

Imagine that Kumiko said (3). If that were the case, the expression in (3) would point to Kumiko's house in this town (represented by the bottom left box on the map). If Lev said it though, this same expression would point to Lev's house (represented by the bottom middle box on the map). This means that *my house* has a different denotation depending on who says it. It has the same sense no matter who says it though: something along the lines of 'the place of living that is associated with the speaker'.

6.1.3: The denotation of words

Denotation gives us a fairly efficient way to talk about the meaning of words. For *sour*, you are essentially saying, "*sour* is whatever property that all of these sour things have in common." You are pointing to that group of sour things. So, we can characterise the denotation of one-place predicates (predicates that only take one argument: some nouns, adjectives, and intransitive verbs) as **sets** of things. A **set** is a collection of things. In (4), ⟦x⟧ (*x* enclosed in double brackets) should be read as 'the denotation of the linguistic expression *x* '.

(4)	a.	⟦sour⟧ = the set of all sour things in the actual world
	b.	⟦pencil⟧ = the set of all pencils in the actual world
	c.	⟦snore⟧ = the set of all things that snore in the actual world

You might find it unintuitive that verbs denote a set of individuals too. But think about it this way: if someone asked "Who snores?", you can answer "they do" and point to the people that have this snoring property.

We will treat the denotation of proper names (like *Nathan Sanders*, the name of a linguist, who happens to be one of the co-authors of this textbook) to be the particular individual that that the name is pointing to in that context. In other words, the denotation of *Nathan Sanders* is the individual Nathan Sanders in the actual world. Sometimes the denotation of a name is abbreviated as the initial letter of the name (and bolded), like in (5b).

(5)	a.	⟦Nathan Sanders⟧ = the individual Nathan Sanders in the actual world
	b.	⟦Nathan Sanders⟧ = **n**

6.1.4: **Constants and variables**

The symbol that stands for the denotation of Nathan Sanders (in this case the bolded lowercase **n**) is called a **constant**. A constant is different from a variable. Recall that a variable is a placeholder for other values; it's called a variable because what it stands for can vary. A constant has a fixed value: what it stands for cannot be altered. So in (5), the constant **n** always stands for the individual Nathan Sanders. Any letter or symbol can be used as constants or variables, although traditionally, letters towards the beginning of the alphabet in English are typically used for constants (e.g., **a**, **b**, **c**) and letters towards the end of the alphabet tend to be used for variables (e.g., x, y, z). In this textbook, constants will be bolded, but variables won't be.

When a linguistic expression **denotes** (points to) a unique individual, this can also be called the expression's **reference**. For example, a name like *Nathan Sanders* points to a unique individual, so the individual Nathan Sanders is this name's reference. We can also say that the name *Nathan Sanders* **refers** to that individual.

It should be re-emphasized here that words like *sour*, *pencil*, *snore*, and *Justin Trudeau* denote actual things in the actual world. When we say "⟦sour⟧ = the set of all sour things in the actual world," we are not saying that the denotation of the word *sour* is the phrase (the linguistic expression) *the set of all sour things in the actual world*. We are quite literally saying that the word *sour* points to actual *sour* things that exist out there in the real world (or at least, our cognitive representation of them; see note above). The following representation may be helpful for imagining what denotation really is:



Figure 6.1.2. The (partial) denotation of sour. (lemon, lime, grapefruit, sour candy, vinegar, umeboshi (Japanese pickled plums) — and all other sour things in our world!)



Figure 6.1.3. The denotation of Nathan Sanders.

Because we don't always have the time to find stock images to represent the denotation of a linguistic expression, in this textbook, we will use the convention in (4) and (5).

Thinking of meaning in terms of the linguistic expression's denotation is useful in various ways. For example, how can we characterise the compositional meaning of the sentence *Nathan Sanders snores*? The denotation of *snore(s)* is the set of all things that snore in the actual world, and the denotation of *Nathan Sanders* is the individual Nathan Sanders in the actual world. What *Nathan Sanders snores* means, then, is that this individual Nathan Sanders is among this set of things that snore in the actual world.

6.1.5: The denotation of sentences

We know what some words denote now; how about sentences? What do they denote? One property of a sentence is that it has a **truth value**. There are two truth values in language: the abstract truth value true (sometimes written as T or 1), or the abstract truth value false (sometimes written as F or 0). To say that a sentence has a truth value means that a sentence is always either true or false. Words and non-sentential phrases don't have truth values. You can see if a linguistic expression has a truth value or not by embedding it in the construction "It is true/false that…", like in (6).

(6)	a.		It is true/false that **Nathan Sanders snores**.
	b.	*	It is true/false that **Nathan Sanders**.
	c.	*	It is true/false that **snores**.
	d.	*	It is true/false that **lives in Canada**.
	e	*	It is true/false that **in Canada**.

(6) shows that only sentences have truth values. Taking this observation, we can actually think of the denotation of sentences as its truth value: either the value T or the value F. In other words, sentences "point to" these abstract truth values. (7a) shows the denotation of a sentence that is true, and (7b) shows the denotation of a sentence that is false.

(7)	a.		⟦Nathan Sanders is bald⟧ = T
	b.		⟦Nathan Sanders is not bald⟧ = F

It is crucial to observe here that you need world knowledge in order for you to determine the denotation of a sentence. Oftentimes, we know enough about the world that we know whether a sentence is true or false (like the above examples). However, the more realistic view is that we don't know everything about every single thing in the world. Take the sentence *My neighbour's cat's liver weighs 326 grams* for example: what's the denotation of this sentence? It it true or false? The sentence surely has a truth value, but we don't have the relevant world knowledge to actually determine the truth value. This is why we often express the denotation of a sentence as its **truth condition** (the circumstances that yield a certain truth value). The truth condition of *My neighbour's cat's liver weighs 326 grams* is shown in (8).

(8)			⟦My neighbour's cat's liver weighs 326 grams⟧ =	T if my neighbour's cat's liver weighs 326 grams in the actual world, F otherwise

It might help to think of it this way: if we really wanted to, we could figure out if the sentence in (8) is true or false. Whether we can or want to is another matter. What's more relevant is that we know what circumstances would make the sentence true or false.

6.1.5.1: **If and only if**

The denotation in (8) can also be written as "T **if and only if** my neighbour's cat's liver weighs 326 grams in the actual world". *If and only if* means 'provided that': T provided that my neighbour's cat's liver weighs 326 grams in the actual world. This means that if my neighbour's cat's liver weighs 326 grams, then the truth value is T, and that if the truth value is T, then my neighbour's cat's liver weighs 326 grams. So, "if and only if" (sometimes also abbreviated as "**iff**") means that the implication goes both ways. This is the same thing as what (8) says.

The formula for the denotation of a sentence should be seen as: truth condition + world knowledge = truth value. If we reframe (8) in terms of truth conditions, we get something like this:

(9)	a.		⟦Nathan Sanders is bald⟧ = T if Nathan Sanders is bald, F otherwise
	b.		⟦Nathan Sanders is not bald⟧ = T if Nathan Sanders is not bald, F otherwise

In this case, we can combine our world knowledge with each truth condition to get T in (9a) and F in (9b), which is what was shown in (7). If you do have the relevant world knowledge to determine the truth value of a sentence, you should write out the actual truth value, like in (7). If you don't have the relevant world knowledge, you can write the denotation of the sentence as a truth condition.

In summary, intransitive verbs, adjectives, and nouns denote sets, proper names denote an individual, and declarative sentences denote truth values. In the rest of this chapter, we will look at various semantic phenomena that denotative meaning is equipped to explain.

6.1.6: Check your understanding

6.1.7: References

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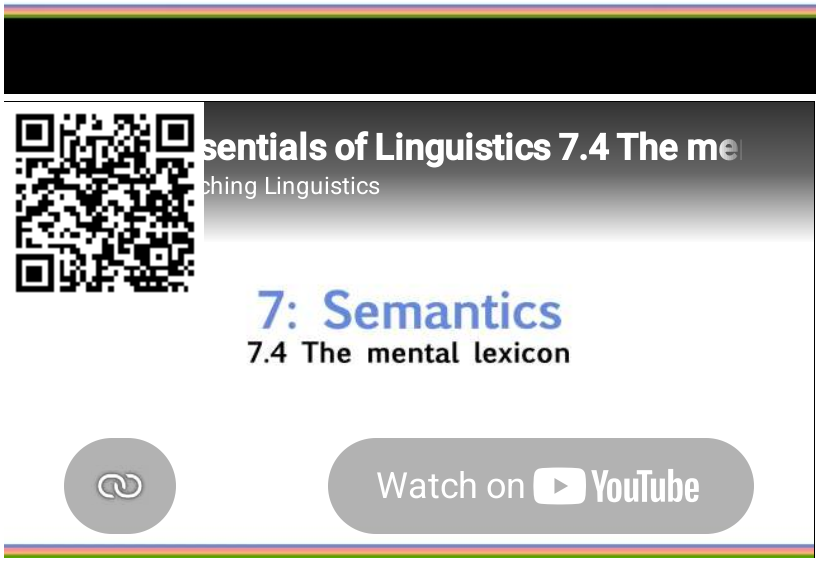
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6.2: The mental lexicon





In the previous chapters, we looked at some of the **regularities** that occur in language: predictable patterns that are rule-based. For example in English, the plural -s /z/ turns into [ɨz] after sibilant (= high pitched, hissy) consonants. That's a **regular** pattern, because if you encounter a count noun that ends in a sibilant consonant, we can predict that the plural marker would be realised as [ɨz]. You can tie regularity to predictability: if something is predictable, it's a regular rule. Imagine that a new beverage called *Loquesh* [lowkwɛʃ] was invented in Canada. Even though you have likely never heard this word before in your life, you can still predict that if we pluralised it using regular English plural morphology, it would be pronounced [lowkwɛʃɨz] and not *[lowkwɛʃz] or *[lowkwɛʃs]. The regular rules in your mind as a language user is a part of the language user's grammar (or **mental grammar**; see Chapter 1).

Some things in language, however, are not predictable like this. Some things are **irregular**. For example, consider the morpheme *goose*. The fact that the stream of sounds [ɡuws] (*goose*) refers to the large waterbird with a long neck is not a predictable pattern in English. As discussed in Chapter 1, this connection between the pronunciation and the meaning is **arbitrary**. It's not that the sound [ɡ] means 'long neck', [uw] means 'water', [s] means 'beak', etc.: we just happen to use this combination of sounds to refer to this animal in English. If the sound-meaning connection *were* meaningful, we would expect that a similar sequence of sounds would be used in all languages to refer to a goose. But this of course does not happen. In Ojibwe it's *nika* [nika], and in French it's *oie* [wa], for example. Sign-meaning correspondences of morphemes are irregularities in language, because you simply must memorise the fact that in your language community, certain sequences of sounds/signs mean certain things. These irregularities — the things that *cannot* be predicted by rules — are stored in your **lexicon**, which is a part of your mental grammar or linguistic competence.

6.2.1: Morphology recap!

A **free morpheme** is a morpheme that can stand on its own as a word. A **bound morpheme** is a morpheme that cannot stand on its own as a word.

The lexicon (also sometimes called the **mental lexicon** in this context) is a language user's mental storage of that linguistic information that cannot be captured by rules. So this means that the lexicon stores linguistic units whose meaning cannot be predicted from its subparts. Meaning that cannot be predicted from its subparts is called **non-compositional** meaning. For example, **free morphemes** like *goose*, *luck*, and *go* in English have non-compositional meaning; you can't break down its meaning into smaller parts. Therefore, they get stored in the lexicon. **Affixes** also have non-compositional meaning, so morphemes like *-s*, *-ly*, *un-*, *-er*, and so on also get stored in the lexicon.

Idioms are stored in the lexicon too. *Over the moon* is an example of an idiom: it is a meaningful sequence of words, but the meaning is not compositional.When someone says that they are *over the moon*, they likely are not literally over the moon; in spoken North American English, this means that this person is extremely happy. Because this idiomatic meaning of *over the moon* does not break down into the meaning of *over*, the meaning *the*, and the meaning of *moon*, the meaning of this idiom is non-compositional. It's important to remember that different language communities have different idiomatic phrases. In North American English, *piece of cake* is an idiom that means 'easy'. But if you say in Japanese *ke:ki hito-kire* 'cake one-slice' (literally 'piece of cake') with the intention of saying that something is easy, you are not going to be successful. A Japanese speaker may use the idiom *asameshi-mae* 'breakfast-before' (literally 'before breakfast) to express that something is easy, though! In American Sign Language, TRAIN GONE SORRY (as shown below) is an idiom that roughly means 'you missed what was said, and I'm not going to repeat it.' In French, the phrase *les carottes sont cuites* (literally 'the carrots are cooked') means 'it's too late, there's nothing more you can do'. In each language community, there are different idioms.

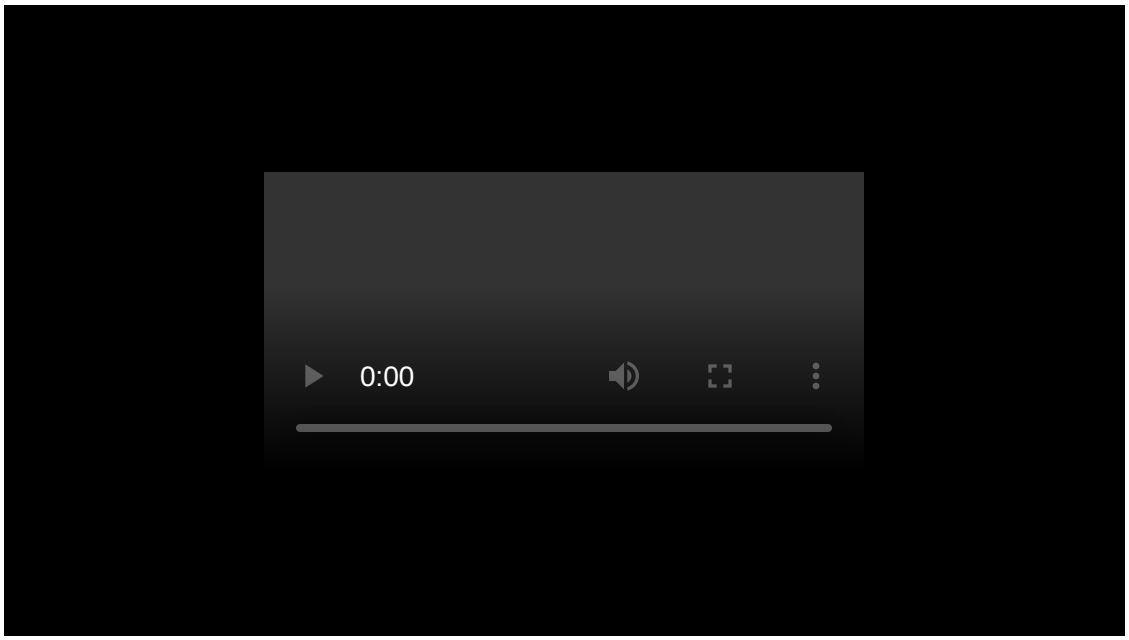


Figure 6.2.1. TRAIN GONE SORRY (American Sign Language)

Under the same reasoning as idioms, it can be said that non-compositional **compounds** like *hotdog* (it's non-compositional because a *hotdog* is not a dog that is hot) are stored in the lexicon, too. Compositional compounds like *dog leash* are probably not stored in the lexicon: *dog* would have its own entry and *leash* have its own separate entry.

Other things *not* stored in the lexicon are words like *skater*, *unluckily, reclassify*, and other multimorphemic words. These words have **compositional** meaning because their meaning is predictable from their subparts: *skate* and *-er* for *skater; un-*, *luck, -y,* and *-ly for unluckily*, and *re-*, *class*, and -ify for *reclassify.* The idea is that you don't have to "memorize" what *unluckily* means. You memorise the meaning of *un-*, the meaning of *luck*, the meaning of *-y*, and the meaning of *-ly* separately — and then morphosyntactic rules in the grammar put them together as *unluckily*. Similarly, phrases and sentences with compositional meaning

are not stored in the lexicon, either. For example, a phrase like *over the candle* (as in *I placed a jar over the candle*) is not stored in the lexicon, provided that it is not an idiom in that language community.

We will use the term **listeme** to refer to anything that has a lexical entry in the lexicon. This is an umbrella term that includes morphemes, idioms, and some compounds. They are called *listemes* because they are *listed* in the lexicon. Each listeme in the lexicon has a **lexical entry**, which contains the linguistic expression's phonological, syntactic, and semantic information. So for the lexical entry of *goose*, it lists its pronunciation (/guws/), its syntactic category (noun), and of course, its meaning, or the **sense** of that listeme.

Note that the mental lexicon is not like a literal dictionary, so some things you find in a dictionary entry are not necessarily found in a lexical entry. For example, if a language has a writing system, some users of that language may know how words are spelled. However, **spelling** is not something you *have* to know in order to be a language user. Have you ever spoken to a 5-year old? Children are language users, too! It's entirely possible for children to use words accurately in conversations without knowing how to spell the words. This is why we will not discuss spelling as a part of lexical knowledge in this chapter. The **etymology** of the listeme is not something you necessarily know when you "know" the listeme, either. If you are a word history enthusiast, you might know that *goose* comes from Old English *gōs*, but certainly a 5-year old would not know this (many adults don't, either!). Unlike phonology, syntax, and semantics, etymology is not something you naturally pick up when you are first learning a word. For this reason, we will also exclude etymology from our discussion of lexical knowledge in this chapter.

Some linguists say that **irregular inflected forms** of words are stored in the lexicon, too. For example, the past tense of *go* is not **goed*, but rather *went*. The plural form of *goose* is *geese*, not **gooses*. Since expressions like *went* and *geese* are irregular patterns that must be memorised, it can be hypothesised that they have their own lexical entry in the lexicon, too.

To summarize, the lexicon is the storage of irregularities in a language. Each lexical entry in the lexicon comes with a listeme's phonological, syntactic, and semantic information. This leaves us with the big question of this chapter: what goes into the semantics of a lexical entry? What even is word sense? We will begin to address this in the next section.

How to be a linguist: Whose lexicon?

It's important to remember that even within one language community, one language user's lexicon may not be exactly the same as another language user's lexicon. For example, my brother and I are both Japanese speakers, but there may be some words he knows that I don't know, and vice versa. But when I compare my Japanese lexicon to my brother's lexicon, there is enough overlap that we are able to communicate with each other. As a Japanese-American individual who grew up speaking both Japanese and American English, I occasionally find that the meaning of some words in my American English lexicon are different in specific ways from the meaning that other American English speakers have. I've gotten funny looks from people for calling green traffic lights in Canada *blue*. *Ao* in Japanese is typically translated as 'blue', and for the most part it points to the same shade that the English word *blue* points to. But *ao* is also used to describe "green" things sometimes, including green traffic lights, green apples, and vegetables. Because of this, I have the impulse to call traffic lights *blue* in English. It is entirely possible that my lexical representation of the word *blue* in English is not the same as that of many Americans. It is also equally possible that not all Japanese-English bilinguals have the same representation as I do! Does this mean that I have the "wrong" meaning of *blue* stored in my head? I don't think so. It just happens to be the case that *blue* means a certain thing in my **idiolect**. In this chapter, we use commonly attested linguistic data to make inferences about lexical meaning at a general level. So in this textbook you won't find me discussing how *blue* in English can also mean 'green'. But I'd like to explicitly acknowledge here that semantic variation exists, in the same way that phonological, syntactic, and morphological variation exist. So for example, in this chapter I might say "*she is very alive* is descriptively well-formed in Canadian English", but it is entirely possible that some people will find it ill-formed in their dialect or their idiolect. Where semantic variation is especially common, notes will be made — but in general, know that it's OK if your judgment varies, and that your idiolect is valid. When you encounter semantic variation, we hope that you will practice your linguist skills and ask questions like "in what descriptive ways is my idiolect/dialect different from the one described here?", "to what extent can meaning vary across languages?", and "what might this tell us about how meaning can change over time?". The purpose of this chapter is to highlight interesting semantic patterns within and across languages, rather than to describe the lexicon of any particular person, or to describe the meaning of any particular word.

6.2.1.1: Check your understanding

6.2.1.2: References

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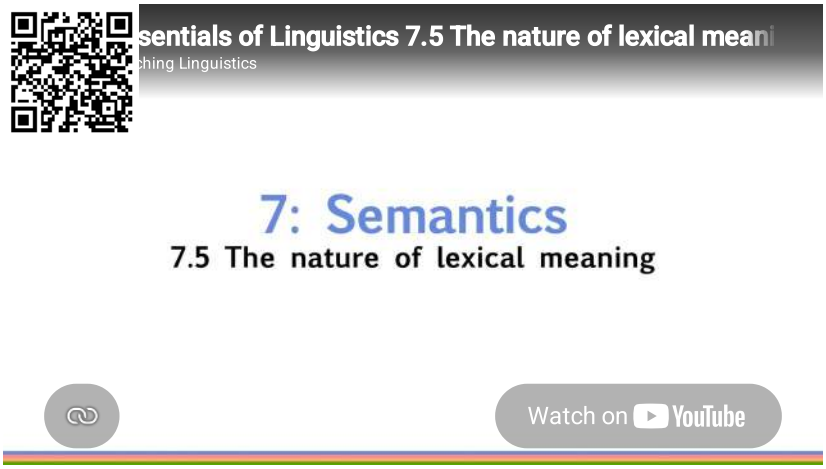
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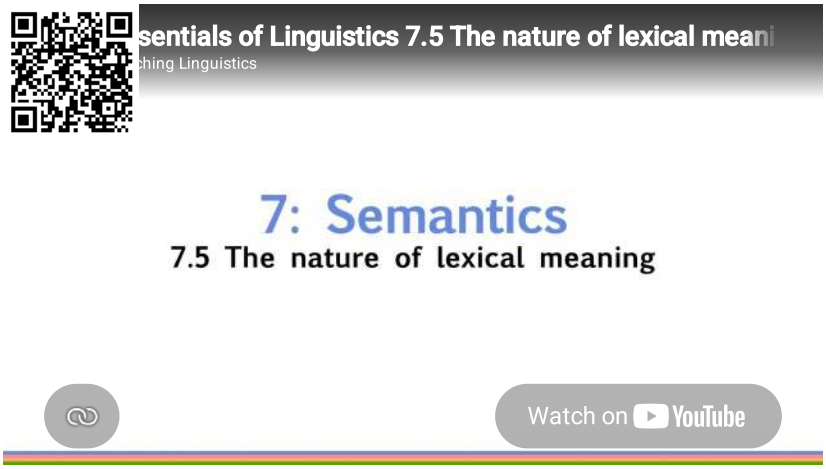
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6.3: The nature of lexical meaning

Video Part 1:



Video Part 2:



6.3.0.1: Lexical knowledge vs. world knowledge

We are now ready to address the big question of this chapter: what is lexical meaning, anyway? The nature of lexical meaning is still under considerable debate. We will outline a few theories of lexical meaning here.

To appreciate what a difficult question "what is word meaning?" is, let's take a look at an example first: the English word *chair* (the one that refers to a piece of furniture). There are lots of things that you know about chairs, based on your life experience. In other words, you have a lot of **world knowledge** (sometimes also called **encyclopedic knowledge**) about chairs. World knowledge is a part of your general **cognition**, which is the collection of mental processes used for gaining new knowledge. Your concept of **chair** that you have in your mind is a subset of this world knowledge. Concepts are building blocks of thought, so your concept of *chair* is your abstract understanding of what a chair is. The linguistic expression *chair* has some sort of connection with some group of concepts; this connection is what lexical meaning, or sense, is.

Now, the question is what the relationship between the lexical entry for *chair* and your concept of chairs is. One basic question we must ask is whether lexical meaning and concepts are separate things, or whether lexical meanings *are* concepts. If we say that they are separate things, the architecture of the mind might look like something like Figure 6.3.1. The star in the image indicates what "sense" is under this theory.

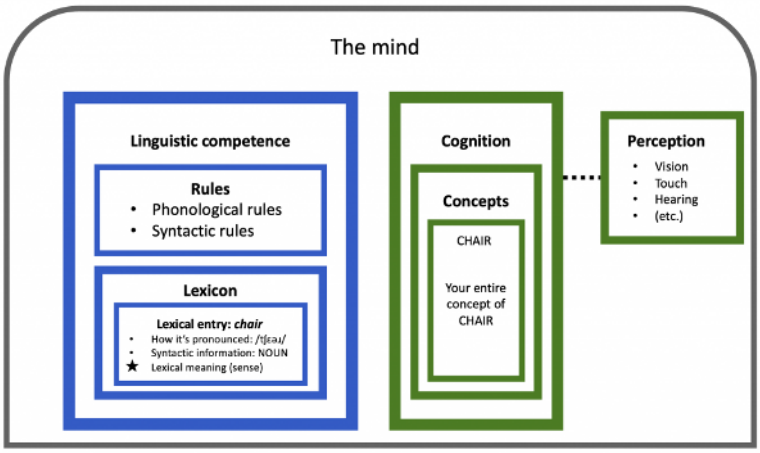


Figure 6.3.1. The lexical meaning is completely separate from concepts.

Under this approach, the lexical entry for *chair* would come with its phonological information (how it's pronounced or signed), its syntactic information (syntactic category), and its semantic information: the lexical meaning, or sense. One way to think about it is that *chair* would come with a "definition" of sorts. Earlier works in lexical semantics tended to have this kind of "meanings as definitions" kind of approach, including Jerrold J. Katz and colleagues' work from the 1960s and 1970s (Katz and Fodor 1962, Katz and Postal 1964, Katz 1972). This approach assumes that this definition is purely linguistic in nature. This definition would be consistent with your concept of chairs: what you know about chairs informs the definition of it. But strictly speaking, the meaning itself is not a concept. If we assume a separation of lexical knowledge and world knowledge like this, we might think that maybe things like "it's a countable object", "it's for sitting on", "it has a back", "it has a seat", and so on would be included a part of the lexical knowledge. Non-lexical world knowledge of chairs might include things like "you can stand on it", "it's often made out of wood," "it can be bought", "people usually buy matching chairs for their kitchen table", "IKEA sells chairs," "there's a game where you play music and walk around chairs, and you have to sit in one when the music stops", "I love chairs", and so on. By traditional standards, non-lexical knowledge is usually thought to include things like subjective feelings evoked, and properties that are described with non-universal qualifications like "usually" and "often". However, what's considered lexical knowledge vs. not is a hard distinction to draw, and there is not a consensus about what counts as linguistic knowledge vs. world knowledge. Things like "people usually buy matching chairs for their kitchen table" certainly feels like it's not a part of the "definition" of *chair*, but what about something like "it usually has four legs"?

Some linguists would argue that only the **necessary and sufficient** conditions for *chair* would be a part of its lexical meaning — only enough information to distinguish it from other classes of objects. To use the terminology from 7.3, the lexical meaning would only include things that the statement *x is a chair* would **entail**. So if x is a chair, then the necessary and sufficient conditions of *chair* might be describable as the following "check list":

- the purpose of x is to seat one person;
- x has a seat;
- x has a back.

To illustrate another example, the necessary and sufficient conditions of *doe* might be:

- x is a deer (a kind of animal);
- x is an adult;
- x is female.

These are called "necessary and sufficient conditions" because these conditions are necessary for distinguishing the *doe* category from other categories, and these conditions are also sufficient for the distinction (i.e., no more conditions need to be added). So for *doe*, it's **necessary** that we specify "x is a deer": without it, we would incorrectly include other adult female animals in the *doe* category, such as cows. "x is female" is also necessary; without it, we would incorrectly include other adult deer, like bucks. Collectively, these four conditions are **sufficient**: we don't need additional conditions like "x lives in a forest"; some does live in mountains. The listed conditions are *sufficient* because that's the minimum number of conditions needed for distinguishing does from non-does.

The limitation of this "checklist" approach to lexical meaning is that the boundary between categories of things is not as sharp as the theory makes it out to be. *Chair* and *doe* might be relatively intuitive categories (well, personally, I have uncertainties about a chair requiring a back; try an online image search for "backless chair" in quotation marks, and see what you think!). But what about other things? What makes something a jacket vs. a coat? What does it mean for something to spin vs. rotate? How much moisture is required for you to call something moist? Is a hotdog a sandwich? Try searching the phrase "the cube rule" on the internet to see some people's comically unsuccessful attempts at coming up with necessary and sufficient conditions for certain food categories.

Experiments show that people often do not have sharp judgments about categories of things. Consider the images in Figure 6.3.2 below, which are inspired by the stimuli from Labov (1973)'s study.



Figure 6.3.2. Cup or bowl?

Your task is this: categorise each of the objects labeled 1 through 5 as a cup or a bowl. Most people agree that 1 is a cup, while 5 is a bowl. People are usually much less confident about the objects in 2 to 4, especially 3, and there tends to be disagreement about them. If we hypothesise that in our mental lexicon, there are clear necessary and sufficient conditions listed for cup, we should be able to categorise 1 through 5 as a cup or not, no problem. The fact that we cannot suggests that there's more to meaning than listing minimal requirements for it. Interestingly, participants in an experiment like this find information like "what goes into this thing" helpful in the categorisation process. For example, if the object in 3 had mac and cheese in it, people would likely say that it's a bowl. If it had tea in it, people are more willing to say that it's a cup. It seems that category boundaries are fuzzy, and a lot more world knowledge goes into the lexical meaning of words than just "necessary and sufficient" conditions.

6.3.0.1: Are lexical meanings concepts?

The first theory of lexical meaning that we examined (in Figure 6.3.3) assumed that lexical meaning is a distinct thing from concepts. A competing theory of lexical meaning is that lexical meanings *are* concepts. In other words, in this approach, the listeme *chair* in the lexicon does not have a "definition" in the lexical entry — the concept that is associated with *chair* is the "meaning". Figure

7.6 illustrates one way in which this kind of approach can work. Once again, the star in the diagram indicates what the "sense" of the word is under this approach. Try comparing it with Figure 6.3.3 from earlier.

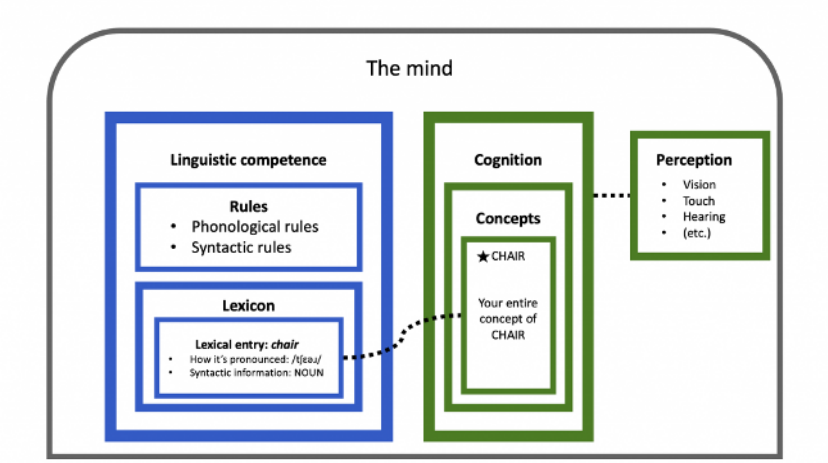


Figure 6.3.3. The lexical meaning of chair is the entire concept of chair.

This version of the "concepts as meaning" theory is what we might call the *maximalist* approach: literally, the "meaning" of *chair* is every single thing you know about chairs, including things like "IKEA sells chairs" and "there's a game where you play music and walk around chairs, and you have to sit in one when the music stops". Ray Jackendoff (1976)'s Conceptual Semantics (CS) is one such theory. In Conceptual Semantics, only the phonology and the syntax of the listeme resides natively in the lexicon. The lexical entry doesn't contain a separate semantics of the listeme — the meaning is the conceptual representation in your cognition that the listeme is tied to. One reason for theorising that our language faculty has access to our general cognitive faculty is the fact that language is something that we use to respond to things we perceive. We describe things we see, touch, hear and so on.

A more *intermediate* approach might lie somewhere in between the "meaning as definition" approach and the "meaning as concepts" approach. In this kind of approach, listemes do have a semantic representation in the lexical entry in the lexicon (as in Figure $PageIndex3$), but the lexical meaning has access to the cognitive conceptual module in limited ways. Here is something all semanticists can agree on: there are linguistic phenomena that are sensitive to certain concepts.



Figure 6.3.4. A prototypical cup.

For example, *I started a meal* in English can mean 'I started eating a meal' or 'I started preparing a meal', while *I started a book* means 'I started reading a book' or 'I started writing a book.' The first meaning for each word refers to the **intended purpose** of that object, and the second meaning points to **how that object came into being**. We can see from data like this words activate concepts like "purpose of the object" and "how the object came into being". One way to analyse this in terms of the architecture of the mind is that the lexical meaning of *meal*, *book*, *chair*, *cup*, etc. (and all nouns, in fact) on the linguistic competence side has a template that says "specify the intended purpose of this object" and "specify how this object comes into being". Then, it retrieves the needed information from your concepts on the cognition side. This is roughly the approach that James Pustejovsky's Generative Lexicon Theory (1995) takes, among others.



Figure 6.3.5. A prototypical chair.

Regardless of whether you think lexical meanings are concepts or not, one thing that neither approach has explained so far is **prototype** effects. We already saw in the "cup or bowl?" experiment that some things are "clearly" cups or "clearly" bowls, and some things are in the grey area. Even if you couldn't tell me what *exactly* makes



Figure 6.3.6. A non-prototypical chair.

a cup a cup, you probably have intuitions about what a typical cup looks like: for many Canadians, a **prototypical** cup is probably like the one in Figure 7.8. A prototypical member of a category is very central to that category; a prototypical cup is a very cuppy cup. If I asked you to imagine a chair, what do you immediately think of? Many of you probably imagined something like Figure 7.9 (a prototypical chair), rather than something like Figure 6.3.6 (a non-prototypical chair).

If I asked you to name 5 bird species, what would you write down? Typically, things like *robin* and *sparrow* are at the top of the list for many people, but birds like *penguin* are not named as frequently. These kinds of experiments, made famous by Eleanor Rosch, suggest that our minds organise concepts by prototypicality (Rosch 1973, 1975, among others).

If we assume the "meanings are concepts" approach to lexical meaning, then we might modify the architecture of the mind to look like this:

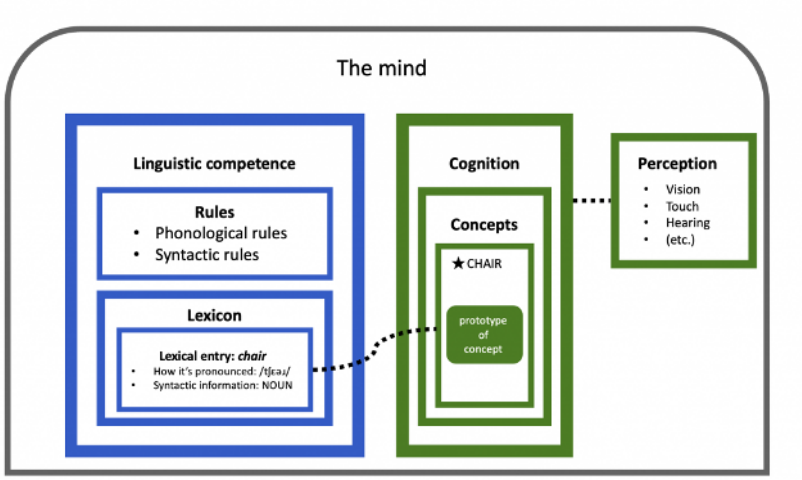


Figure 6.3.7. The lexical meaning of chair is the entire concept of chair, but the concept has a structure, organised by prototypicality.

Under the kind of theory illustrated in Figure 6.3.7, we would still assume that the lexical meaning of *chair* is the concept associated with *chair*, but this concept would have more structure to it. Previously, the concept of *chair* was an unorganized collection of what you know about chairs. So, "musical chairs is a game that involves chairs" and "sometimes chairs have one leg" would have had equal importance as something like "the purpose of a chair is to seat one person". Under a prototype theory of concepts, the concept of *chair* would be organized by prototypicality, with the prototype of the concept being at the "core". This means that at the "center" of what you know about chairs would be, for example, the fact that a chair is for seating one person, and that it typically has four legs. What's at the "center" of the concept would have more prominence in the organization of the concept. In other words, what's at the center would be considered more important for what it means for something to be a chair. Less central information, like how musical chairs is a game that involves chairs, and how sometimes chairs have one leg, would be farther away from this conceptual core. This accounts for why we tend to think of the most prototypical example of a category when asked to name a member of that category.

6.3.1: Language, power, and our relationship with words

Regardless of what theory of lexical meaning we adopt, there is no denying that our individual lived experiences shape our relationship with words. This of course means that our experience in the world affects our understanding of word meaning (e.g., a fashion enthusiast's understanding of the meaning of *purse* may be very different from a non-fashion-enthusiast's!), but there are other effects, too. For example, in one study of 51 veterans, researchers found that veterans with PTSD (Post-Traumatic Stress Disorder) and veterans without PTSD process combat-related words differently (Khanna et al. 2017). Particularly, in a **Stroop test** where participants have to say the name of the color that a word is written in (instead of reading the word itself), veterans with PTSD (31 of the 51 participants) responded significantly slower to combat-related words than they did to more neutral words and "threatening" words that are unrelated to combat. Veterans without PTSD (20 of the 51 participants) did not show a significant difference in their response time to different categories of words. The researchers also examined the veterans' brain activity during this kind of task, and found that veterans with PTSD have reduced activity in the part of the brain that regulates emotional regulation. As discussed in Chapter 1, words are powerful, sometimes triggering strong emotional and physiological responses. Words that are non-traumatic to you may have a completely different effect on other people. This is something we might want to be considerate of in thinking about how words are used. The "literal" meaning of the word is not the only thing invoked when a word is uttered, and some words come with a lot of baggage, sometimes personal, sometimes more widespread as cross-generational trauma (especially for marginalized communities). So if someone says "hey, that word is painful for me to hear/see," let's try not to dismiss their claim based on just the literal meaning of the word, and based on just your personal perception that the word is unproblematic.

Whatever your theory of lexical meaning you side with, what we do know is that certain pieces of information affect how a word behaves grammatically. For example, *I drank the chair* sounds distinctly odd compared to *I drank the tea* — this data suggests that concepts concerning the state of matter of physical objects matter for language. In the sections that follow, we will investigate what other sorts of information language tends to care about across languages. This will help us answer questions about lexical meaning at a more global level: what categories of meanings are there in language?

6.3.1.1: Check your understanding

6.3.1.2: References

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7: Semantics
7.7 Countability

7.7: Countability

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A fundamental aspect of nominal meaning is whether the entity is countable or not. Descriptively, nouns that are countable can be pluralized, can appear with numerals, and take the determiner *many*. All of the nouns (bolded) in (1)-(3) are called **count nouns** in English because they have these properties.

(1)		I bought these **shirt**s today.
(2)		Beth needs three **chair**s in this room.
(3)		There are so many **cup**s on the shelf.

There is another class of nouns which cannot be pluralized in English, like *dirt*. Nouns like *dirt* are called **mass nouns**. They often point to substances or entities that are otherwise considered to be a homogenous group. For example, *rice* is also a mass noun in English. In principle individual grains of rice can be counted, but linguistically *rice* behaves like a mass noun. Mass nouns resist pluralization, cannot take numerals, and takes the determiner *much* rather than *many*. This is shown in (4)-(6).

(4)	a.	*	That is a lot of **dirt**s.
	b.		That is a lot of **dirt.**
(5)		*	Beth needs three **mud**s for this garden.
(6)	a.	*	There are so many **rice**s in the rice cooker.
	b.		There is so much **rice** in the rice cooker.

Conceptually, count nouns are countable in the sense that, for example, if I have one cup on the table and then put another cup on the table, this results in two distinct, separate cup entities where the boundary of each one is perceptible. We say that count nouns are **bounded** for this reason. Mass nouns like *dirt* is different because if I have a pile of dirt on the table and add more dirt to it, you still have just one pile of dirt, just larger. So mass nouns are **unbounded**.

You may have noticed that in (4)-(6), pluralised mass nouns sound acceptable in certain contexts. For example, saying *a lot of dirts*, *three muds*, or *many rices* gives rise to the **kind** interpretation: a lot of kinds of dirt, three kinds of mud, and many kinds of rice. Like this, mass nouns can often be used in a "count" way.

Besides counting the kinds of the mass noun, another way to make mass nouns countable is to put them into containers. For example, nouns like *water* and *pudding* are homogenous substances and therefore are fundamentally a mass noun, but when pluralised they have a fairly natural interpretation in which you are counting the number of containers that contain the substance. This is shown in (7)-(8).

(7)	a.		There is so much **water** in the sink.	(mass)
	b.		Can we have two **water**s?	(count, 'two glasses of water')
(8)	a.		There is a lot of **pudding** in this bowl.	(mass)
	b.		There are four **pudding**s in the fridge.	(count, 'two cups (containers) of pudding')

The reverse is possible as well: in some contexts, fundamentally count nouns can be used in "mass" ways. *Pumpkin* for example is at the basic level a count noun, but if for example a truck carrying a bunch of pumpkins crashed on the highway and the pumpkins got smashed and got everywhere on the road, you can use it in a "mass" way. This is shown in (9)-(10).

(9)			There are many **pumpkin**s on the truck.	(count)
(10)			The pumpkin truck crashed on the highway and there was so much **pumpkin** everywhere.	(mass)

What we learn from these observations is that nouns lexically encode whether it is a count noun or a mass noun in its lexical entry. However, there also seems to be a rule in English where a mass noun can be converted into a count noun, and vice versa.

Whether a noun is linguistically count or mass varies from language to language. Consider (11) and (12). For example in Halkomelem (Hul'qumi'num), an indigenous language spoken by various First Nations peoples of the British Columbia Coast, *fog* can be readily pluralized, giving rise to the meaning 'lots of fog'. In French, singular *cheveu* is interpreted as 'a strand of hair,' while *cheveux*, which is morphosyntactically marked plural, is interpreted as 'a mass of hair,' as in the hair on your head.

(11)		Halkomelem			
		tsel	kw'éts-lexw	te/ye	**shweláthetel**
		1sg.s	see-trans.3o	det/det.pl	**fogs**
		'I've seen a lot of fog' (Wiltschko 2008)			

(12)	a.	French			
		Il y a	**un cheveu**	dans	ma soupe
		there.is	**a hair**	in	my soup
		'There is a strand of hair in my soup'			

	b.	Je	veux	me brosser	les **cheveux**
		I	want	myself to.brush	the.pl **hairs**
		'I want to brush my hair'			

It is also worthwhile to note that some languages like Japanese do not have productive morphosyntactic plural marking. For example, (13) can be interpreted as 'bring cups' or 'bring a cup' depending on context.

(13)		Japanese	
		koppu	mottekite
		cup	bring
		'Bring cups / a cup'	

Some linguists have analysed languages like Japanese as having only mass nouns (Chierchia 1998). This does not mean that you cannot count things ever in Japanese. Japanese has a rich system of **noun classifiers**. Similar to the way in English hair is counted as 'one *strand* of hair,' 'two *strands* of hair,' etc., Japanese has morphemes that attach to numerals to turn mass nouns into bounded bits. Which morpheme is used depends on the semantic classification of the noun being counted. Consider the data in (14).

(14)		Japanese		
	a.	kami	3-**mai**	kudasai
		paper	3-**CL**	give
		'Please give me 3 pieces of paper' (Classifier: thin sheets)		
	b.	enpitsu	2-**hon**	kudasai
		pencil	2-**CL**	give
		'Please give me 2 pencils' (Classifier: long cylindrical objects)		
	c.	kuruma	1-**dai**	kudasai
		car	1-**CL**	give
		'Please give me 1 car' (Classifier: object with mechanical parts)		
	d.	neko	12-**hiki**	kudasai
		cat	12-**CL**	give
		'Please give me 12 cats' (Classifier: smallish quadripedal animals)		
	e.	tori	4-**wa**	kudasai
		paper	4-**CL**	give
		'Please give me 4 birds' (Classifier: animals with wings)		
	f.	tomato	5-**tsu** / 5-**ko**	kudasai
		tomato	5-**CL** / 5-**CL**	give
		'Please give me 5 tomatoes' (Classifier: general)		

The bolded morpheme (glossed as "CL" for "Classifier") is the classifier in each sentence. The idea is that literally saying something like '2 pencils' (**2 enpitsu* or **enpitsu 2*) is ungrammatical in Japanese. You must use a classifier when counting things. Nouns in Japanese are categorised into grammatical groups that are roughly semantically-based. For example, "thin, flat objects" forms a category, whose typical member include objects like paper, posters, and pizza. Nouns in this class use the classifier *-mai* as in (14a). The classifier *-hon* in (14b) is typically used for *long*, thin, often cylindrical objects like pencils, pens, and drinking straws. *-dai* in (14c) is used for typically mechanical objects with perceptible parts (e.g., cars, trucks, and computers), *-hiki* in (14d) for smaller quadripedal mammals (e.g., dogs, cats, hamsters), and *-wa* in (14e) for animals with wings (e.g., chicken, sparrow, eagle). *-tsu* and *-ko* are the "elsewhere" classifiers that can be used for a more heterogenous group of inanimate nouns that don't fall into a specific class (e.g., tomatoes, pebbles, cushions, etc.). Some members of a noun class can be surprising: for example, *usagi* 'rabbit' takes the classifier typically used for animals with wings (*-wa*), likely because their ears are perceived to be like wings. *ke:ki* 'cake', if whole, takes the classifier *-dai* for "mechanical objects with perceptible parts" and if by the slice, the classifier *-kire* for "slices" or *–pi:su* for "pieces".

How to be a linguist: Context matters!

We see from the discussion of the mass/count distinction that the **context** matters when you are making (or asking for) **acceptability judgments** about sentences. We saw in the previous "How to be a linguist" that what's felicitous or infelicitous is often very informative of the semantics of a word. Here's another tip. When making (or asking for) acceptability judgments, be very

careful about what's actually well-formed vs. ill-formed. For example, what do you think about (15)?

(15) I swam in vanilla extract.

You might have the intuition that there is *something* unusual about this sentence — but should we conclude from this that this is a semantically bad sentence? Hold on! Not quite. (15) might sound odd out of the blue because based on your world knowledge, you know that vanilla extract is usually used in small amounts — not a large enough quantity to swim in. However, with a proper context like in (16), this is a perfectly natural thing to say:

(16) (Context: I work at a vanilla extract factory, and while I was examining the quality of the product, I fell in a 4000-gallon tank of vanilla extract.)

I swam in vanilla extract.

The moral of the story is that make sure you think about the context carefully when examining data. Is the sentence bad in all contexts, or just certain ones? In fact, the difference that the context makes may be quite informative in terms of what a linguistic expression means. Consider (17) and (18): same sentence, same emoji, but different context.

(17) (Context: Your friend's dog did a cute and funny trick at a dog show)

Your dog was so cute 😂

(18) (Context: At the funeral service for your friend's cute dog that passed away)

#Your dog was so cute

Your dog was so cute without the emoji would be fine in both (17) and (18); the addition of the emoji is what matters. For many readers, the emoji is infelicitous in (18). This tells us something about the meaning of this particular emoji: it doesn't mean SAD-crying! The context in (17), where the emoji *is* felicitous, suggests that it means LAUGHING-crying: it perhaps means that something is funny. Try this same-sentence-different-context approach yourself with the upside-down smiley emoji, 🙃. What does it mean? When do you use it? Back up your intuition with an example sentence. Construct a sentence with this emoji, and come up with two different contexts: one in which the emoji is felicitous, and another one in which the emoji is infelicitous. If this emoji is not a part of your lexicon, do the same exercise but ask someone else who uses the emoji for the **acceptability judgement**: "Is this sentence natural in this context? How about this context?". Can you infer from their response what sentiment the upside-down smiley indicates? (See "Check your understanding" at the end of this section for a sample answer.)

This kind of approach to meaning may be useful whenever you encounter a new word (either in your first language or additional language(s)!). Instead of just asking "What does this word mean?", consider asking linguist questions like "In what kinds of contexts do you use this word in? Where can you *not* use it?"! This will get you a more nuanced picture of the meaning of that word!

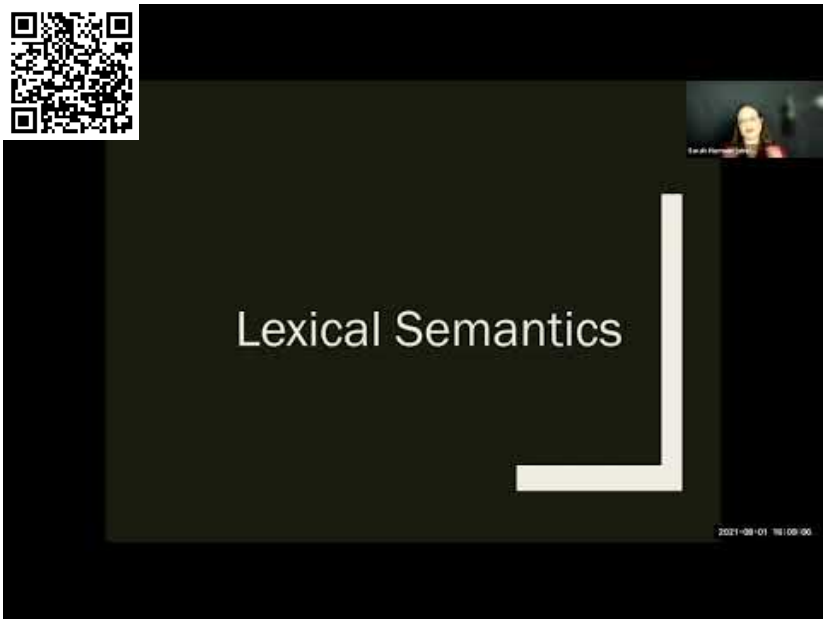
6.3.1.1: Check your understanding

6.3.1.1: References

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6.3.2: Lexical Semantics, from Sarah Harmon



6.3.2.1: Video Script

Catherine Anderson does a really great job of setting up lexical semantics, but there's a few more pieces that I want to cover. One has to do with these connections between reference, so the lexicon or phrase, and the meaning they are associated with.

Almost assuredly you have heard of **synonyms** before. They are the quintessential proof that language is arbitrary, because if you have similar or same terms for the similar terms for the same meaning, that's arbitrariness.

Antonyms, you almost assuredly have heard of them before. There are three different kinds of antonymy: complimentary, gradable, and relational. **Complimentary antonyms** are this or that: *on/off*, *alive/dead* (sorry, zombie fans, there's nothing in between!). **Gradable antonyms** are the opposite; they are along a gradation or scale: *hot/cold* but that there is a whole bunch of other temperatures in between. **Relational antonymy** does have to do with some kind of relationship: *employer/employee*, *parent/child*, *teacher/student*.

Homophones; you may have heard them as homonyms before. Homophones is what we say in linguistics. They have the same sound, but two completely unrelated backgrounds or origins. In morphology I talked about this before, when I talked about the word *bank*; that lexicon has two different entries and they're unrelated. One is the financial institution, and the other is the side of a river. *Seal*, is another one, whether you're talking about the animal or the thing you use to close a document or paper. That is a homophone because they have two completely different meanings and they're completely different origins.

There's three more than I want to go through that you may have heard of before, but maybe not. The first is **polysemy**. Polysemy is different than homophony; remember homophony has to do with different origins. Polysemy, as the name implies, means they have the same origin just multiple levels of meaning. *poly-* = multiple, *-semy* = meaning. If I say the English term *sheet*, you think of something flat of something thin and flexible or pliable. *A sheet of paper; a sheet of linen.*

A **hypernym** is a greater subset. Instead of talking about a specific aspect of something like a *red*, *blue*, *pink*, or *purple* thing, you talk about a *color*: 'oh it's got a lot of *color*'. That's a hyponym. Instead of talking about a *tiger*, *lion*, *cheetah*, *leopard*, *lynx*, or *bobcat*, you talk about *felines*. That's a hyponym.

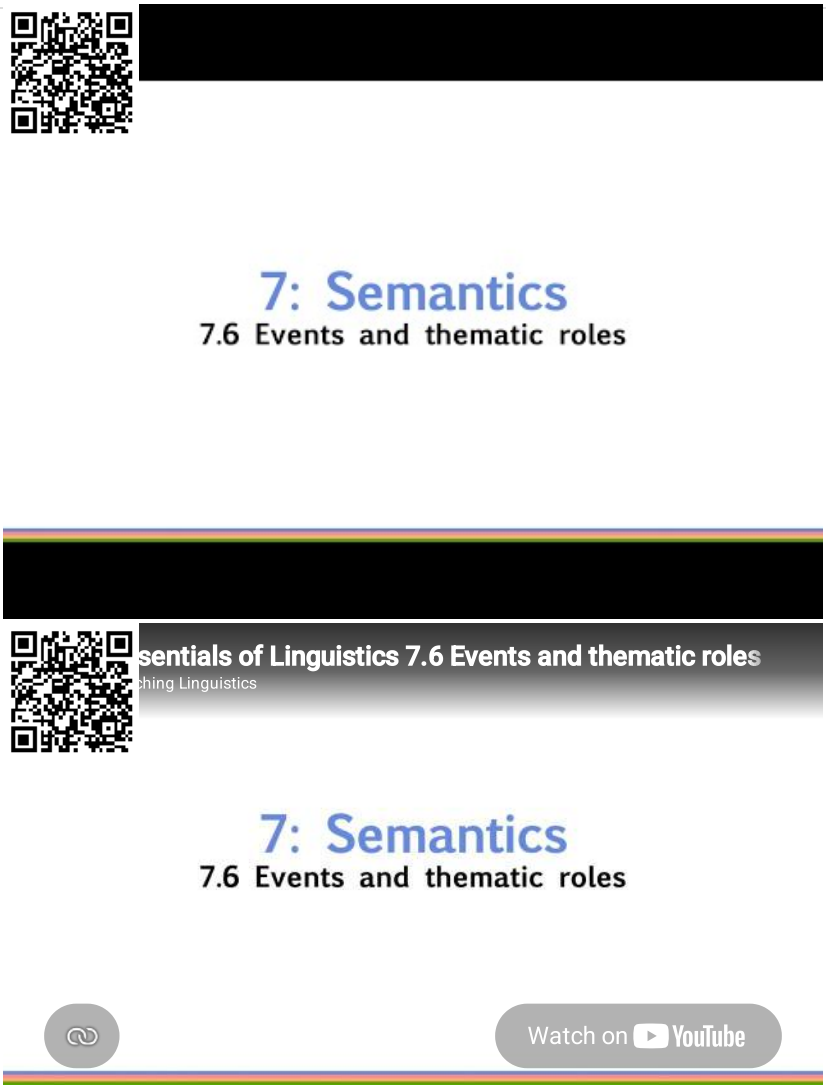
A **metonym** is a word substitute. Instead of talking about the *King of Spain* or the *Queen of England*, you talk about the *Spanish crown*, *the English crown*; that term crown is a metonym. Instead of talking about the action during the baseball game, you say the action on the *diamond*. That is a metonym because the diamond is the shape of the infield of a baseball field.

All six of these areas include some aspect of compositionality, but especially arbitrariness. Whether it's the actual origin or the usage in any given moment, when you're using these six lexical semantic categories, you're talking about arbitrariness, the arbitrary combination of the term, and the meaning.

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6.4: Events and thematic roles



So far in this chapter, we have discussed how there are different types of meaning, and how there are different theories about how lexical meaning works in our minds. In this section, we begin to explore various linguistic phenomena that highlight our semantic competence as language users. The way to think about meaning like a linguist is to look for semantic **patterns**. Here are some questions we will answer in analysing linguistic meaning:

1. Why is this combination of words well-formed, and why is that combination of words ill-formed? What does this tell me about the lexical semantics of this word? What other words behave this way? (e.g., *I drank the water* sounds OK, but *I drank the ice* does not; this tells us that *drink* requires its object argument to be liquid)
2. What semantic categories are there in language? What semantic classes of verbs are there? What semantic classes of nouns are there? What semantic classes of adjectives are there?
3. What types of information is linguistic meaning generally sensitive to?
4. In what ways do different languages vary in their semantic parameters?

To make Question 2 easier to keep track of, the upcoming sections are organised by syntactic categories. This section (7.6) will focus on verbs, 7.7 will focus on nouns, and 7.8 and 7.9 will focus on adjectives.

How to be a linguist: Meaning and unacceptability

We have seen already that the asterisk symbol * indicates that a linguistic expression is descriptively ill-formed (ungrammatical). For example, the following sentence is ungrammatical in English:

(1) *Karen made scarf the.

The ungrammaticality of (1) is clearly due to the order of the DP *the scarf*: since English is a head-initial language, the determiner must precede the noun phrase. This syntactic rule is violated in (1), therefore it is descriptively unacceptable.

When the descriptive badness has to do with the meaning (rather than the syntax like in (1)), linguists sometimes use the hashtag/pound symbol #, like in (2).

(2) (Context: Mako danced a tango (a kind of dance).)

#Mako recited a tango.

(Intended meaning: ‘Mako performed a tango’)

(3) (Context: Tamara put her hands together quietly to meditate.)

#Tamara clapped.

(Intended meaning: 'Tamara put her hands together')

(2) and (3) are both syntactically well-formed, but they are **infelicitous** in the given context (i.e., the sentence is syntactically OK, but it isn't something you would utter in that particular context). The # indicates this particular kind of linguistic anomaly. Note, however, that some linguists use * more generally for all types of descriptive violations, whether it be syntactic, semantic, pragmatic, or phonological ones. You may also encounter the question mark symbol ? when the acceptability judgment is not crisp (i.e., "not crashingly bad, but not perfectly good either").

Sentences like (2) and (3) are useful if you are trying to figure out what a word means. To figure out what a word means, you start by forming a hypothesis based on observations. Let's say that you observe in spoken English that you can say things like *Tamara clapped* if Tamara is applauding. From this, we hypothesize that *clap* means 'putting one's hands together.' Here is the thought process: *IF* this hypothesis is right, *THEN* in any context where your hands simply come together, like the one in (3), you should be able to use the verb *clap*. So we test this hypothesis: in a context like *clap*, can you say *Tamara clapped*? I think many English speakers would say no: this is infelicitous in this context (hence the pound sign). This little experiment suggests that our hypothesis was wrong, and that *clap* means something more than just putting your hands together. What do you think is an additional required condition for something to count as *clapping*? (See "Check your understanding" at the end of this section for a sample answer.)

Coming up with a hypothesis and testing it with data — now that's thinking like a linguist! Try formulating a hypothesis about what a word means, then see if there are any counterexamples to disprove your claim. Adjust your hypothesis to account for the counterexamples. The repetition of this procedure will lead to better insight about the lexical semantics of that word!

6.4.0.1: Syntax throwback: Arguments and thematic roles

In the Syntax chapter (Chapter 6), we learned that some verbs are **intransitive**, some are **transitive**, and some are **ditransitive**. This concerns how many **arguments** the verb takes. (4), (5), and (6) show an example of an intransitive verb, a transitive verb, and a ditransitive verb, respectively. The **predicate** is bolded, and the arguments are underlined.

(4)		Dan **blinked**.
(5)		Ida **imitated** Raj.
(6)		Cristina **gave** Alan a lab report.

Syntax review!

Predicate: the state, event, or activity that the sentence attributes to its subject. Can be used in two ways: (i) to refer to everything in the sentence minus the subject, or (ii) to refer to just the head verb, adjective, or noun in the "predicate" described in (i).

Argument: the participants in the event or state described by the predicate.

We tend to think of verbs when we think about predicates, but recall from 7.2 that nouns and adjectives can be used predicatively, too. In English, nouns and adjectives that are used predicatively follow the copula *be*.

(7)		The artist is **happy**.
(8)		Abhi is a **student**

Many predicates refer to some sort of **event**. Events are **dynamic**: something is happening. The sentences in (9)-(11) describe events.

(9)		Kat built a table.
(10)		Nana ran.
(11)		Ivan put the paper in the envelope.

Some predicates do not point to anything "happening": what's going on is much more **stative** (non-dynamic). (12)-(14) describe states.

(12)		Leila knew the student.
(13)		The poster hung on the wall.
(14)		The interviewer had purple hair.

You can tell events apart from states because an event can be an answer to the question "What happened?" while states generally cannot. This is exemplified in (15)-(16).

(15)		A: What happened? B: { Kat built a table. / Nana ran. / Ivan put the paper in the envelope. }
(16)		A: What happened? B: { #Leila knew the student / #The poster hung on the wall. / #The interviewer had purple hair. }

The umbrella term that includes both events and states is **eventuality**. Verbs seem to encode what kind of eventualities are involved in its meaning.

Recall also that participants in eventualities take on various roles, depending on what the predicate is. So this means that the lexical information of verbs don't just specify the number of arguments that it takes; it also specifies what role these arguments have. These roles are called **thematic roles**. Here is a list of thematic roles that were introduced in the Syntax chapter.

- **Agent:** Agents are animate actors who do things on purpose.
- **Causer:** Usually inanimate (not alive), cause things to happen but without acting on purpose.
- **Theme:** The participant affected by the event, may be changed by the event.
- **Instrument:** The thing an agent uses to accomplish an action. (Often, but not necessarily, in a with PP)
- **Location:** The place where the event takes place.
- **Experiencer:** An animate participant that experiences a mental state, including perceptions (see, hear, etc.)
- **Goal:** The location or place that receives the theme.

Language myth!

You might have been taught that "the subject is the doer of the action, and the object is the undergoer of the action" before taking linguistics classes. This is not true! Recall from the Syntax chapter that **subject** and **object** are structural notions: subject is the TP specifier position, and the object of the verb is the verb's complement. Remember that in **passive** constructions like *The document was written by Hong-Yan*, the subject is *the document*, and it's not the "doer" at all!

6.4.1: Eventualities, entailments, and conjunction

What do thematic roles tell us about the meaning of verbs? Consider the following sentence.

(17)	The chef lifted the egg with the spatula.

There are several things that this sentence **entails**:

1. There was a **lifting event**;
2. **The building** was the **theme** of this event;
3. **The spatula** was the **instrument** of this event;
4. **The chef** was the **agent** of this event.

This entailment pattern is similar to entailments of sentences that are coordinated with the conjunction *and:*

(18)		The big cat stole a treat **and** the small cat meowed

(18) entails:

1. The big cat stole a treat;
2. The small cat meowed.

Based on this similarity, we can also analyse the lexical semantics of *lift* to also involve "and" (conjunction). Putting all of the observations together, we can propose that the lexical semantics of *lift* specifies what participants it needs in the event, and that this is expressed conjunctively. Using **variables** (recall Section 7.3), we can express the meaning of *lift* like this (this kind of semantic representation that makes reference to events can be called **event semantics**):

(19)		There is an event *e*		&
			e is a LIFTING event	&
			x is the THEME of e	&
			y is the INSTRUMENT of e	&
			z is the AGENT of e.	

Semantics and logic

"&" is a logical symbol that expresses conjunction: it means 'and'. You may be familiar with this symbol, since it is often used outside of mathematics, logic, and linguistics in our everyday lives. You may also encounter the symbols ∧ or • for logical conjunction; they mean the same thing as &.

Remember that variables are place holders. The idea is that each argument in the sentence in (13) fills in, or **saturates**, these argument positions represented by the variables. Let's assume that the argument positions get saturated in the order we see them in (15): so x gets filled in first, then y, and then z. As a reminder, the syntactic structure of this sentence looks like the structure in Figure 6.4.1. Let's see what happens when the meaning of *lift* combines with the meaning of the arguments in this sentence. Let's assume that **the egg** means whatever specific egg we are referring to in the discourse, that **the spatula** is also a specific spatula, and that **the chef** is also a specific chef that has been mentioned in the discourse already.

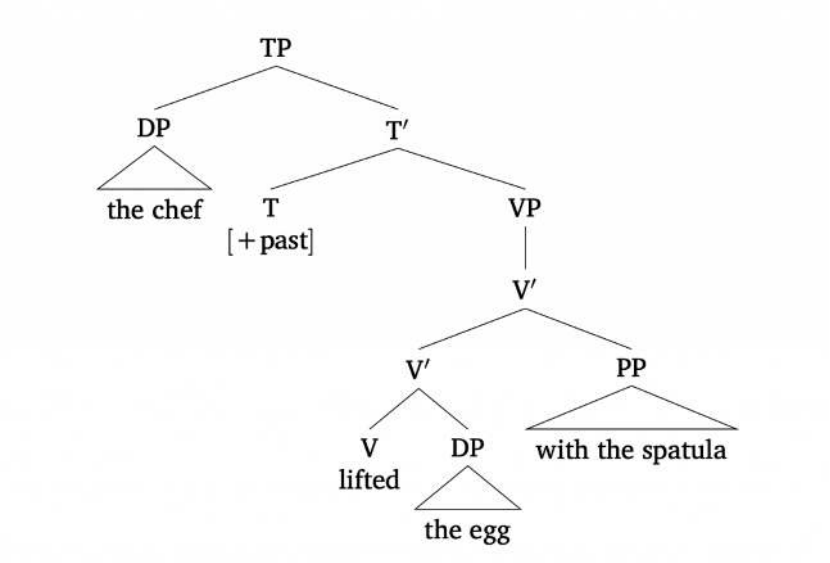


Figure 6.4.1. The structure for the sentence *The chef lifted the egg with the spatula.*

As a first step, the verb combines with its object. When the verb merges with its object *the egg*, the meaning of *the egg* would go into the x. That produces the verb phrase *lifted the egg*, which would have a meaning like this:

(20)		There is an event *e*		&
			e is a LIFTING event	&
			the egg is the THEME of e	&
			y is the INSTRUMENT of e	&
			z is the AGENT of e.	

This verb phrase then merges with the prepositional phrase *with the spatula*, and the meaning of *the spatula* will go into y:

(21)		There is an event *e*		&
			e is a LIFTING event	&
			the egg is the THEME of e	&

			the spatula is the INSTRUMENT of e	&
			z is the AGENT of e.	

Finally, the verb phrase *lift the egg with the spatula* merges with the subject DP *the chef* (we will ignore tense for simplicity). The meaning of *the chef* goes into z:

(22)		There is an event *e*		&
			e is a LIFTING event	&
			the egg is the THEME of e	&
			the spatula is the INSTRUMENT of e	&
			the chef is the AGENT of e.	

This gives us the full meaning of *The chef lifted the egg with the spatula*, and it gives us the entailment pattern we saw in (17), due to the conjunction that is a part of the lexical meaning of *lift*.

To summarise, one way to analyse what is happening with the thematic roles of arguments in sentences is to posit that the thematic roles are specified in the basic meaning of verbs.

6.4.2: Check your understanding

6.4.3: References

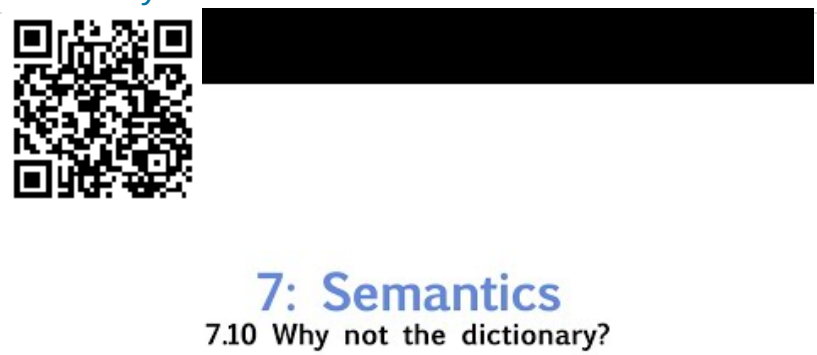
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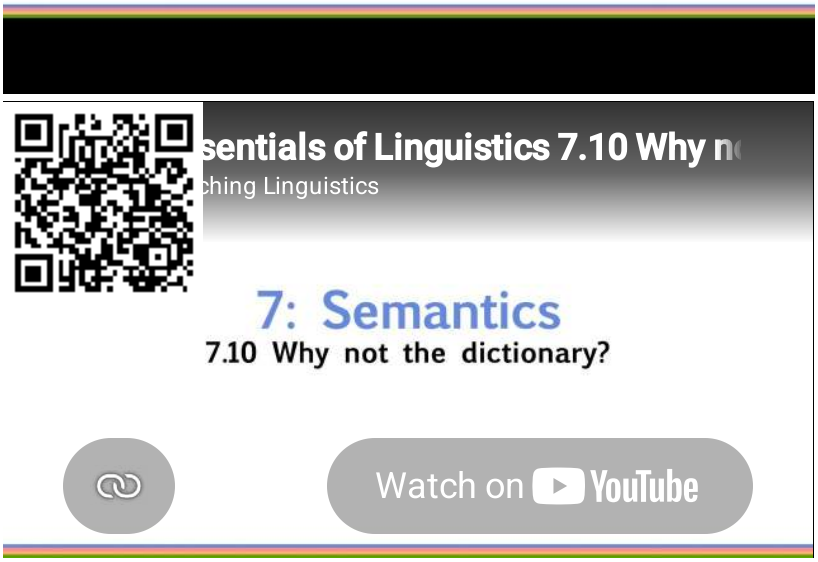
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6.5: Why not the dictionary?





Lexical meaning is complex. In this chapter, we are only scratching the surface of what goes into lexical meaning. If lexical meaning is so complicated, then you might be wondering, "Why not just look in a dictionary, then?" There are several things that are problematic with relying on dictionaries to figure out what you know when you know the meaning of a listeme.

Generally, there is a common myth that dictionaries are the ultimate authority of language. In arguments, perhaps you have heard people say things like "The dictionary defines X as…" or "That's not a word because it's not in the dictionary." Let's think about why this type of argumentation is flawed.

Much of the discussion in this part draws from the discussion of dictionaries in Rochelle Lieber's textbook, *Introducing Morphology* (2016). Chapter 2 of *Introducing Morphology* is an accessible resource if you would like to learn more about words, dictionaries, and the mental lexicon.

6.5.1: Dords and mountweazels

People who write dictionaries are called **lexicographers**. Lexicographers, of course, are human! A human being cannot possibly know every single thing about every single word in a language, and human beings are prone to errors, too. In the early 1930s, a consultant to the lexicographers of the Merriam-Webster dictionary made the note "D or d" next to the entry for *density* (Gove 1954). What they meant was that you can use either an uppercase *D* or a lowercase *d* can be used as the abbreviation for *density* in

physics. However, the lexicographer who saw this mistakenly included *Dord* in the dictionary as a word that meant 'density'. Furthermore, this error was not corrected in print until 1947! While modern dictionaries (especially online ones) likely correct any errors very quickly and catch most of them before they get printed, this is still a good reminder that humans make mistakes.

There are other "fake" words that make it into the dictionary for different reasons. Sometimes, lexicographers include made-up words in their dictionary to prevent other publishers from plagiarizing their dictionary. This kind of fictious entry in a dictionary or other reference work is called a **mountweazel** (Lieber 2016). The term comes from when the 1975 New Columbia Encyclopedia included a fake entry on *Lillian Virginia Mountweazel*, an imaginary photographer.

Dords and mountweazels show us quite literally that just because something is in a dictionary doesn't mean that it's a word that is actually used in a language.

6.5.2: Not all words are in the dictionary

Another issue with putting dictionaries on the pedestal as the ultimate authority of language is that not all words are in the dictionary. Recall derivational morphemes from Chapter 5 (Morphology), particularly, highly productive suffixes like *-ist*. For example, this affix is often attaches to musical instrument nouns to mean 'person who plays this instrument': guitarist, violinist, oboist, flutist/flautist, percussionist, harpist, and so on. However, *tubist* (or *tubaist*) — a person who plays the tuba — does not have an entry in the Oxford English Dictionary. This doesn't mean that *tubist* isn't a word: among the many attested uses of this word includes the National Academy Orchestra of Canada's website, which described Brandon Figueroa as their "principal tubist" in 2021. Other morphemes like -ness are also capable or producing a lot of nouns out of adjectives, but not all -ness words make it into dictionaries. For example, *unenthusiastic* is in the Oxford English Dictionary, but not *unenthusiasticness*. *Purpleness* is, but not *beigeness* (Lieber 2016). It is not efficient to include all derived forms of all words in a dictionary, so lexicographers must make a decision about which ones to include. The non-inclusion of some words in the dictionary is often a matter of efficiency, and not a judgment of some non-validity of those words. Additionally, there are many different kinds of dictionaries: monolingual dictionaries, bilingual dictionaries, signed language dictionaries, online dictionaries, pocket dictionaries — just to name a few. Necessarily, different dictionaries will have different entries; each dictionary has its own purpose. It is important to remember that what makes something a "real word" is *not* its presence in a dictionary. What does make it "real" is that language users in the relevant language community actually use it with a meaning attached to it. So is *cheugy*, which is not in the Oxford English Dictionary, a "real word"? Sure it is. People use it!

6.5.3: Language users create meaning, not dictionaries

Even if a word *is* included in a dictionary, the definition provided by the lexicographer(s) is *not* perfect, and it is *not* the complete picture of the meaning of the word. Consider the following uses of the word *museum* in English.

(1)		I visited a **museum** in Toronto today.
(2)		The **museum** said they were closing indefinitely.

The use of *museum* in (1) is straight-forward: roughly, it means 'place where art, etc. is exhibited'. *Museum* in (2) does not literally mean that, since it is not the place or the building that said something. (2) roughly means 'person who works at the museum said they were closing indefinitely'. If you look up *museum* in the Oxford English Dictionary (or any dictionary), this meaning — 'person who works at a museum' — is not listed. But does this mean that the word *museum* cannot be used under this interpretation in English? Not at all: it *is* a descriptively valid use of the word because there are people who *do* use it this way.

We have to remember again that human beings are writing dictionaries. It is quite unrealistic to expect a lexicographer, or even a group of lexicographers, to include every single meaning of every single word in a dictionary. It is unrealistic because one word can have many different meanings, varying in use depending on context. We cannot expect lexicographers to observe, track, and record all possible uses of a word — especially when new uses of existing words emerge all the time. What we need to remember is the purpose of dictionaries. Dictionaries are meant to be a *reference*: something that gives you the general picture of a word, with enough information to give you an idea as to how it might be used. One way of thinking about this is that a dictionary is a *partial* record of how language users use their language. Language users in a language community create new words and attach meaning to them, and lexicographers record some of their use in dictionaries. They can't include every single meaning of every single word, so they give *enough* information so that people can get an idea of how the word is used.

6.5.3.1: Language and power: Dictionaries

Dictionaries are actually cultural artefacts that were originally made for specific purposes. In the 18th century, scholars were interested in creating an "English academy", which had as its purpose "ascertaining, purifying, refining, and fixing the English language" (Long 1909). Lexicographer Samuel Johnson created the *Dictionary of the English Language* to embody this kind of prescriptive (and classist) attempt.

It is important to remember that lexicographers themselves never meant and will never mean for dictionaries to be a *complete* record of language use. This is what James Murray, one of the people to work on the first edition of the Oxford English Dictionary (1933), said:

"The Vocabulary of a widely-diffused and highly-cultivated living language is not a fixed quantity circumscribed by definite limits." (quotation retrieved via Lieber 2016)

By "living language," he means that language is always changing and evolving. Because language is always changing, there literally is no finite number of "real words" in a language. He is acknowledging here that a dictionary will never be a complete record of the vocabulary of a language. And that is OK, because dictionaries don't create meaning; people do.

How to be a linguist: Minimal pairs and testing hypotheses

OK, so dictionaries might be a good *starting point* if you're trying to figure out what a word means, but it's certainly not the whole picture! So how *do* we figure out what a word means? Well, if *people* create meaning, then we have to observe what people do with language! We've been doing this already in this chapter when discussing lexical meaning: we look at what you descriptively can and cannot do with a word (recall the previous "How to be a linguist" boxes from Section 7.6 and Section 7.7). If you are interested in the meaning of a word, one tactic that may be useful is coming up with a **minimal pair** of sentences. Recall from Sections 3.8 and 4.3 that a minimal pair is a pair of things that are the same except for one parameter. (3) and (4) are sentential minimal pairs in Japanese, differing by exactly one word:

(3) (Context: Beth broke a tree branch into two pieces.)

eda-o	otta
branch-ACC	broke
'She broke a branch'	

(4) (Context: Beth dropped a ceramic plate and broke it.)

#sara-o	otta
plate-ACC	broke
'She broke a plate'	

You might find in a Japanese-English dictionary or translator that *otta* means 'broke', but there's more to it than that! (3) and (4) show that the Japanese verb translated in English as 'broke' is sensitive to the kind of object it takes. You might hypothesize from this that *otta* is a specific way of breaking something. Of course, this minimal pair alone doesn't quite tell you what *otta* means, exactly (especially if you have zero knowledge about Japanese!): You have to come up with more sentences to test your hypothesis. Let me give you a hint if you don't speak Japanese: think about how Beth is breaking the object in each context. What shape are the objects? What do they look like once broken? Come up with a hypothesis about what kind of action *otta* is. What additional data might you ask a Japanese speaker about to test your hypothesis? Perhaps another sentence that is the same as (3)/(4) except the object! Do you predict that your sentence will be acceptable or unacceptable, based on your hypothesis? (See "Check your understanding" at the end of this section for a sample answer.)

6.5.4: Check your understanding

6.5.5: References

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6.6: Pragmatics Definitions

First, watch this video, which is an animation of part of a talk that the psycho-linguist Steven Pinker gave on what language tells us. (This video is captioned.)



6.6.1: Pragmatics Definitions, from Sarah Harmon



6.6.1.1: Video Script

Now we're going to switch gears we're going to go from talking about semantics to talking about pragmatics. We're still talking about meaning; meaning is still crucially important with respect to this. However, some of our definitions are going to change.

That video that you just saw with respect to Steven Pinker, he was really discussing about these nuances, these little hints that we don't actually say but we imply. They're contextual clues that inform how we might phrase something a little differently. This is all having to do with **pragmatics**. Pragmatics is really talking about meaning but within a specific context. Let's start with some basic definition changes little tweaks.

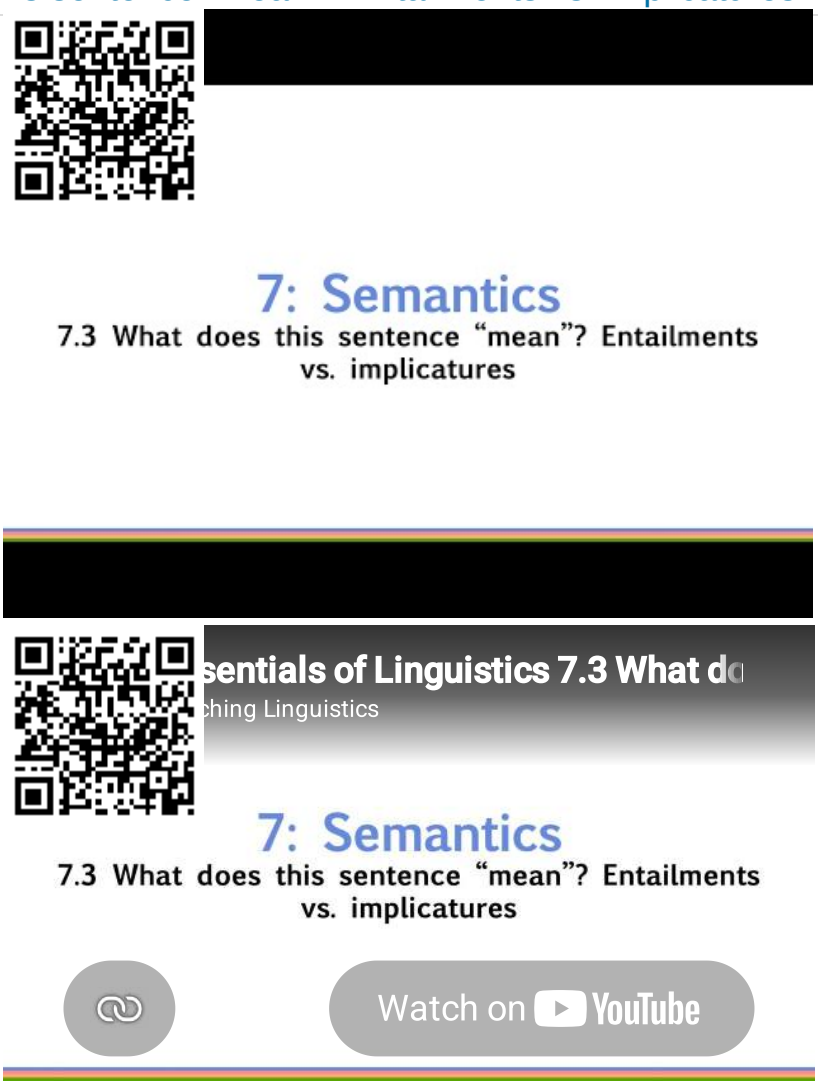
To start off, we're no longer going to talk about sentences and paragraphs; we're going to talk about **utterances** and **discourse**. This is important because when we talk about pragmatics, we're talking about dialogues between at least two people, maybe more and how people interact. You'll notice, if you ever stop and really listen observe two people having a conversation, that there are plenty of times when the speakers use full and complete sentences—perfectly beautiful full complete sentences—in what a given person says. However, just as often, if not more so, you will have interruptions where one person starts and the other person finishes a given sentence or thought, or stops the person in their tracks to change the subject. You also hear many non-lexical elements: ‘mm’ or ‘um’ or ‘hmm’. Those are all non-lexical. they're not actual morphemes, but I am conveying information. These are all types of utterances, and they are crucially important to look at the context, the entire dialogue, of what is being said. Instead of talking about truth values, we talk about **felicity conditions**, when we are talking about whether something is true for that given context.

The last thing, and at first it may not seem relevant, but it deals with **pronouns**, or in linguistic terms we call it **anaphor**. If you think about when you use pronouns, it's always within a given context. If I start saying, 'she' and 'her' without setting up who it is I'm talking about, you don't know who I'm referring to. In this way, the context clues come in. Felicity conditions also become involved; it depends on which pronoun gets used for a given structure. For example, if I say *Lana saw herself*, in that case 'herself' is the pronoun we're going to use if we want to say that is a reflexive action. That really just means that the anaphor, the referent, is in the earlier part of the same TP (tense phrase) or sentence. If we want to say that the person that was seen in the mirror was somebody other than the subject—not Lana, but somebody else—then we use a different pronoun.

The more we stack their sentences, the more complex it gets. For now, just understand that pronouns/anaphor (or anaphora) are always tied to a context; they're also tied to deixis, which we'll talk about soon enough.

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6.7: What does this sentence "mean"? Entailments vs. implicatures



6.7.1: Entailments

In this chapter, we are interested in how word meanings combine to arrive at sentence meaning. To analyze the meaning of a word in a language, it's not useful to just look at that word in isolation. For example, if you wanted to know what the meaning of the verb *sigh* was, looking at just the word *sigh* is not insightful. What we want to consider is the interaction of this word with other words in that language: we need to look at how that word is (or isn't) used in sentences in that language. Because sentences inform us about the meaning of words, we will first think about what we can and cannot conclude from the meaning of sentences.

Consider the sentences in (1) and (2).

(1)	The customer sighed.
(2)	The customer emitted a breath.

If the sentence in (1) is true, then the sentence in (2) is necessarily true, too. We say that the sentence in (1) **entails** the sentence in (2), or that (2) is an **entailment** of (1). Using variables *p* and *q* as placeholders for sentences, we can define entailment in the following way: *p* entails *q* if and only if *p* being true makes *q* necessarily true, too.

Semantics and math: variables

In mathematics, a **variable** is a symbol that is used as a placeholder for a value that may change. For example, the mathematical formula for calculating the area of a circle is πr^2, where r is a variable that represents the radius of the circle. The value of r will be different depending on which circle you are analyzing. If the circle has a radius of 3cm, we can plug in 3cm for r, which yields approximately 28.26cm^2. If we put 10m in for r, we get approximately 314m^2. In semantics, we often use variables as place holders too, as we have done in the definition of entailments.

You can see if something is necessarily true from a sentence by negating the piece of meaning in question with "it is not the case that…" as in (3) and conjoining it with the original sentence with "but…" as in (4). For example, if we want to show that (2) is an entailment of (1), we want to see what happens when we negate (2) and conjoin it with (1).

(3)		**It is not the case that** the customer emitted a breath.
(4)	⊥	The customer sighed, but it is not the case that the customer emitted a breath.

The ⊥ symbol indicates a **contradiction**. A contradiction is a sentence that is never true. When you negate an entailment of a sentence, you get a contradiction. So we say that the sentence in (4) is a contradiction. We can also say that the sentence in (3) **contradicts** the sentence in (1). (4) is a contradiction because if you sigh, it is necessarily the case that you emit a breath; it would be impossible to sigh without doing so. This contradiction informs us what it means for someone to *sigh:* what's required of this event.

6.7.2: Implicatures

Consider other things we might conclude from the sentence in (1), reproduced below as (5). (6) is something we might conclude from hearing (5).

(5)		The customer sighed.
(6)		The customer is angry.

Is (6) an entailment of (5), though? Let's try the contradiction test.

(7)		**It is not the case that** the customer is angry.
(8)		The customer sighed, **but** it is not the case that the customer is angry.

(8) is *not* a contradiction, which means that (6) is NOT an entailment of (5). (6) is called an **implicature** of (5). Once again using the variables p and q as place holders for sentences, p implies q if, based on the context, p has the suggestion that q is true, but q is NOT necessarily true. In other words, an implicature is a possible, but not a guaranteed, conclusion from a sentence. You can show that something is *not* necessarily true by **cancelling** it (negating it without a contradiction) as we did in (8). Implicatures are cancellable because they don't always have to be true. For example, it's possible in this case that the customer sighed for other reasons: relief, for example.

Implicatures will be covered in more detail in Chapter 8, but for right now, it is important for us to be aware of what we mean when we say a sentence "means" something: is it an entailment or an implicature?

6.7.3: Presuppositions

Now consider the following sentence.

(9)	The restaurant stopped charging extra for guacamole.

The sentence in (9) expresses that the restaurant no longer charges extra for guacamole. That's likely a good thing for customers who are hoping to cut down on lunch costs. However, guacamole enthusiasts may still feel mild annoyance towards what is expressed in this sentence because the sentence also "means" (10).

(10)	The restaurant used to charge extra for guacamole.

(10) is an entailment of (9), as shown below:

(11)	⊥ The restaurant stopped charging extra for guacamole, **but it is not the case that** they used to charge extra for guacamole.

(10) is a special kind of entailment, called a **presupposition**. A presupposition is an entailment that a sentence takes for granted. (9) presupposes (10), meaning that (9) assumes that (10) is true already. To illustrate this, imagine this discourse:

(12)	Hanna: The restaurant stopped charging extra for guacamole.
	Ken: That's not true!

In (12), the only thing that Ken is able to contest is whether or not the restaurant *stopped* charging extra for guac or not. Even when Ken says "that's not true", it is still assumed by Ken and Hanna in this conversation that the restaurant has charged extra for guacamole in the past. This is what we mean when we say that the content of the presupposition is taken for granted.

Because a presupposition is what must be true *before* a sentence is uttered, it cannot be the target of negation or questioning in the main sentence. Consider (13) and (14).

(13)	It is not the case that the restaurant stopped charging extra for guacamole.	**(negation test)**
	(Still entails: 'The restaurant used to charge extra for guacamole')	
(14)	Did the restaurant stop charging extra for guacamole?	**(question test)**
	(Still entails: 'The restaurant used to charge extra for guacamole')	

(13) and (14) still presuppose (10): 'The restaurant used to charge extra for guacamole'. Whether a piece of meaning "survives" negation and questions is a good diagnostic to see if it is a presupposition or not. Contrast (13)/(14) with a regular (non-presupposition) entailment in (15). What happens to the entailment that the customer emitted a breath in (16) and (17)?

(15)	The customer sighed.	
	(Entails: 'The customer emitted a breath')	
(16)	It is not the case that the customer sighed.	**(negation test)**
	(Does not entail: 'The customer emitted a breath')	

(17)	Did the customer sigh?	**(question)**
	(Does not entail: ‘The customer emitted a breath’)	

The entailment that was there with (15) is no longer there in (16) and (17). If it is not the case that the customer sighed, we cannot necessarily conclude that they emitted a breath. If we are *asking* if the customer sighed, we also cannot necessarily conclude that they emitted a breath.

In summary, there are two main kinds of sentential meaning relations we discussed in this section: **entailments** and **implicatures.** Entailments can further be split into “regular” entailments and presuppositions.

6.7.4: Check your understanding

6.7.5: References

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6.8: Cross-community differences in discourse

[redacted]

8: Pragmatics

8.2 Cross-community differences in discourse

[redacted]

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Figure 8.1. A comic about a Japanese child learning about sarcasm in American English.

Imagine a time where you were in a conversation with someone with a cultural background different from yours. Have there been times where miscommunication happened? As someone who immigrated to the United States from Japan at the age of 6, I certainly had experiences where American conversational rules felt really different from Japanese conversational rules. One of things I remember learning "how to do" in English is sarcasm (see Figure 8.1). Something I noticed was that Americans (in my 9-year old perspective) said blatantly false things, often to be funny, sassy, or mean. I distinctly recall one summer — I must've been 9 or 10 — where we visited a friend in Japan, and in a conversation with this friend, I used this new discourse tactic that I was so proud to have acquired. *waa, kore cho: okaidoku-da-ne* 'Wow, that is such a good deal!' I said in Japanese, pointing at super expensive

jewellery in a magazine. I will never forget the confused look on my Japanese friend's face. Studies support my anecdotal experience: Ziv (1988) found that American students are more sarcastic than Japanese students (see also Adachi 1996).

There are different conversational rules for different language communities. What counts as a 'friendly' interaction? What counts as 'polite'? Linguists who have done anthropological work have found imperatives (commands like "cut down that branch!") can vary in terms of their perceived politeness from culture to culture: they may be more commonly perceived as rude in Australia than in China, for example (Wierzbicka 2003). In Canadian English, *Why don't you close the window?* could be a perfectly polite request, but according to Wierzbicka, the literal equivalent of this in Polish — *Dlaczego nie zamkniesz okna* — would imply stubbornness on the part of the addressee (e.g., 'why haven't you closed the window yet like you should?! it's the right thing to do!'). In ordinary conversational contexts, being honest is usually assumed to be one of the most important principles of conversation (Grice 1975), but what counts as "being honest" may vary from community to community. In some communities, any falsehood — including fiction — is considered a "lie" (Danziger 2010).

When we study pragmatics, we need to be aware that there are cultures and conversational norms beyond your own. Encountering unfamiliar discourse rules in a language that you may not have encountered before may give rise to feelings of surprise, and that's OK — but we hope that you will use your linguist mind to prevent this surprise from turning into negative judgments about other cultures and languages. Remember, all forms of language are valid!

6.8.0.1: Check your understanding

This is a reflection question with no right answer. Have you ever had an experience like the one described in the comic in Figure 8.1, where you had to learn new conversational rules in another language? Informally describe what the unfamiliar rule was, and compare it to conversational rules in your first language.

6.8.0.1: References

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6.9: Conversational implicatures



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Let's start with a review of entailments vs. implicatures. Recall from Chapter 7 (Semantics) that implicatures are cancellable. They are not entailments, so they are not necessarily true from a certain sentence being true. (1) shows that you cannot cancel an entailment, while (2) shows that an implicature can be.

(1)	a.		This is a book about the history of China.
			(**Entailment**: 'This is a book.')
	b.	⊥	This is a book about the history of China, but it is not the case that this is a book.

(2)	a.		This is a book about the history of China.
			(**Possible implicature**: 'This book is long.')
	b.		This is a book about the history of China, but it is not the case that this book is long. (e.g., It's actually a short concise summary.)

Since an implicature is a non-entailment, an implicature of a sentence can change depending on the context. For example, in (3), Danny's utterance *This is a book about the history of China* carries the implicature 'I think you will like this book', but with the context in (4), this implicature is harder to get (in fact, the more natural implicature is the opposite: 'I do not think you will like this book').

(3)			(Context: Danny knows that Josh is a history enthusiast.)

	Josh:		Do you think I will like this book?
	Danny:		This is a book about the history of China.
			(Implicature: ‘I think you will like this book.’)

(4)			(Context: Danny knows that world history has never been Josh’s forte.)
	Josh:		Do you think I will like this book?
	Danny:		This is a book about the history of China.
			(Implicature: ‘I do not think you will like this book.’)

Importantly, the entailment ‘This is a book’ is *always* there for the sentence*This is a book about the history of China*, no matter what the context is. It entails this in (3), and it still entails this in (4), too. And in fact, no matter what the context is, it will always entail that. This is a crucial difference between implicatures and entailments: implicatures are context-dependent, entailments are not.

Sometimes, implicatures are called **conversational implicatures** because the implicatures arise out of conversational rules, to be discussed in the next section.

6.9.0.1: Check your understanding

6.9.0.1: References

Grice, H. P. (1975). Logic and conversation. In *Speech Acts* (pp. 41-58). Brill.

6.9.1: Language and Identity

Language can change the world. For real!

Imagine you’re at the wedding of two friends. They’ve walked down the aisle, they’ve said lovely things about each other, they’ve exchanged rings, some people are shedding happy tears, and things are approaching the big moment: “I do.” “I do.” “I now pronounce you married”. They kiss, you cheer, and the world is a little bit different now. Just a few moments ago your friends were unmarried and now they are married! This has real-world, material consequences for them. Perhaps your friends filed separate taxes last year, now they must file together. Maybe they had distinct medical insurance policies, now one can be a dependent on the other’s plan. If they live in a common law country, they now have spousal privilege. All of these changes to the world can be traced to those three utterances: “I do” “I do” “I now pronounce you married”! By uttering these words, your friends and the officiant have changed the world, ever so slightly.

There are other words and phrases, like *pronounce* and *I do*, that affect the world. For example, if you’re playing a game of chess and realize that your chance of winning is exceedingly low, you may tell your opponent “I concede”. The game is now over and you lost (sorry). After a successful job interview, if your hopefully-soon-to-be boss says “you’re hired!”, well congrats, you’ve got a new job now! These are examples of how we can “do things with words”, as the philosopher of language, J. L. Austin put it. They are examples of the **performativity** of language. Words and phrases like *I concede* are called **performative speech acts**. These are utterances that not only convey some kind of information but also perform a function or an action that affects reality. We will revisit performative speech acts in Section 8.9 when we discuss theories of meaning.

As much as performative speech acts are powerful in the sense that they change the world, they also require the right context to do this. When a group of kids on recess put on a ‘wedding’ and two of them ‘get married’, it doesn’t matter how many times or how

loud another kid says “I now pronounce you married”, the world hasn’t changed in the same way that the same words changed your friends’ lives. If you simply shout “I DECLARE BANKRUPTCY”, that’s not enough to actually change your financial situation! The ability for certain words and phrases to perform real-world actions depends on a combination of the authority and sincerity of the utterer and the uptake of the audience and general population. In other words, does the audience recognize the authority and sincerity behind the words and, therefore, accept their power to perform the intended action? The child officiant at a fake wedding doesn’t have the authority to pronounce anyone married and filing for bankruptcy requires more than one’s simple declaration! For words to do things, society must agree that certain words can do certain things in certain contexts; they have the power they do because we recognize that they have this power. That said, not 100% of people will agree on which words have power in which contexts, and disagreements over these questions can be contentious.

The philosopher Judith Butler extended the idea of performativity from certain speech acts, like *I pronounce*, *I concede*, *you’re fired*, *I promise*, *I hereby declare* etc., to suggest that aspects of our identities are forged into reality by way of our language use and other social practice. From this perspective, all language is performative, not just particular speech acts. Butler’s focus was on gender as a ‘performative accomplishment’: certain social practices (including language) come to be associated with men or women (or not) and these social practices then come to be seen as masculine or feminine (or not), and as people who express themselves as masculine or feminine (or not) repeat these patterns over and over again, a link between certain social practice and gender is reinforced. Social practices that reinforce gender include things like wearing a tie or wearing a pink skirt, picking flowers or cutting the lawn, walking into certain bathrooms, and, most importantly for us, using language in certain ways. As we’ll discuss in Chapter 10, language features are used, both directly and indirectly, in the performance of different ways of being a man, or being a woman, or not.

We can extend Butler’s idea beyond gender and understand *all* aspects of our identity as being performative accomplishments. Our identity is something socially constructed, and through sustained social practice that we mutually agree has certain meaning, we are active in its construction. Every time I say the Canadian English linguistic stereotype *eh*, I am both carving out my identity as a Canadian and reinforcing the link between *eh* and Canadian-ness. If, at the beginning of a lecture, I ‘drop my *g*s’ (e.g., I might say *good mornin’* and *how is everybody doin’* today instead of *morning* or *doing*), I signal that I am a laid-back person who isn’t interested in abiding by the general expectation that a university lecture is a formal context. If I take a sip of a beer and, using the jargon of craft beer connoisseurship, ask “am I detecting a hint of *Cascade hops* on the *finish*?” I am staking a claim as a member of the craft beer drinking community; I am expressing that I not only enjoy and am knowledgeable about the drink but that I ***am*** the kind of person who enjoys and is knowledgeable about the drink and all the social associations that might entail (perhaps masculine, millennial, a hipster, and not *too* serious like those *wine* people!) (see Konnelly 2020).

When we talk about *performativity* it’s important to make a distinction with another common understanding of performance. When we say that aspects of our identity are *performative*, we aren’t saying that, for example, our gender is like a role we play in stage performance. It’s not about acting and definitely not about acting like someone who isn’t you. When we talk about performativity and language, we mean that language *performs* certain functions for us. It’s the idea that we make ourselves through our behaviours and language performs that function for us.

If language can be used to perform actions, then language has power to do both good and harm.

6.9.2: References

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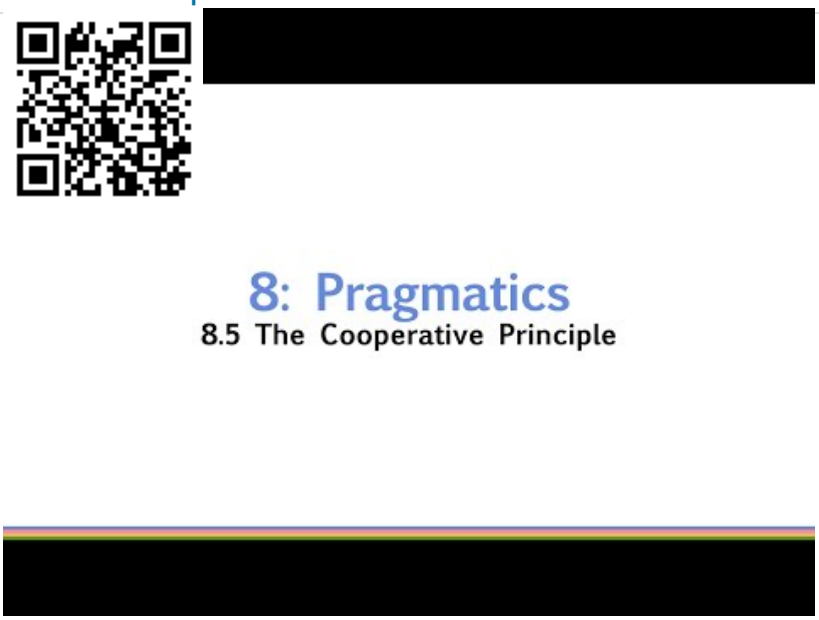
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6.10: The Cooperative Principle



Part 1 video (the Cooperative Principle):

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6.10.0.1: The Cooperative Principle

In this section, we will discuss the conversational logic behind why certain implicatures arise in discourse. Let's start with the following example in (1).

(1)	Aya:		Did Raj feed the cat and clean the litterbox?
	Bo:		He fed the cat.
	Aya:		(Infers: 'He didn't clean the litterbox.')

Terminologically, the ***speaker/signer*** creates an **implicature** or they **imply** that content. The ***addressee*** makes an **inference** or they **infer** that content.

We use ***speaker/signer*** and ***addressee*** in this chapter to discuss the dichotomy of "producer of utterance" vs. "person at whom the utterance was directed". Where we are referring to the producer of an utterance in a *spoken* language in particular, we will use ***speaker***. Where we are referring to the producer of an utterance in a *signed* language in particular, we will use ***signer***. When we are referring to 'producer of utterance' in a more general way not specific to modality, we will use ***speaker/signer***. Outside of this textbook, you may encounter just "*speaker*" being used to mean 'producer of utterance (not specific to modality)'. Some signed language users do not have a problem with this use of "*speaker*", but many signed language users think a more modality-inclusive term should be used. Some other alternatives for this include: *utterer/addressee*, *addressor/addressee*, *author/addressee*, *sender/perceiver*, *producer/perceiver, sender/receiver, sender/recipient*, and *communicator/audience*.

The basic idea of why we get this implicature in this context is that *if* Raj had fed the cat *and* cleaned the litterbox, Bo would've said so. He didn't in this case, so Aya can infer that only *Raj fed the cat* is true, and that *Raj cleaned the litterbox* is false. Here is how this implicature would be calculated by Aya:

1. I asked Bo if Raj fed the cat and cleaned the litterbox.
2. I assume that Bo would only tell me things that are true.
3. I assume that Bo would give me the maximally informative answer to my question.

4. Bo could've answered "Raj fed the cat and cleaned the litterbox", "Raj fed the cat", "Raj cleaned the litterbox," or "Raj didn't feed the cat or clean the litterbox".
5. If the actual facts were that Raj fed the cat AND cleaned the litterbox, then the following answers would be logically true statements: "Raj fed the cat and cleaned the litterbox," "Raj fed the cat," and "Raj cleaned the litterbox".
6. However, if Raj actually fed the cat AND cleaned the litterbox, "Raj fed the cat and cleaned the litterbox" would be the more informative thing to say than "Raj fed the cat" or "Raj cleaned the litterbox".
7. In actuality, Bo only said "Raj fed the cat." This must be because if he said "Raj fed the cat and cleaned the litterbox," it would be a false statement.
8. Therefore, it must be the case that only *Raj fed the cat* is true, and that *Raj cleaned the litterbox* is false.

This way of analysing how implicatures arise in discourse is called the **Cooperative Principle**, proposed by philosopher Paul Grice. He proposed that one way of explaining how we get implicatures in a conversation is to think that there are implicit conversational principles that discourse participants follow. According to the Cooperative Principle, the major underlying assumption that we make in a conversation is that all discourse participants are acting in a way to accomplish conversational goals. For example, let's say that the topic of discussion was "How much money should we spend on our cat's birthday party?". *If* everyone in the conversation agrees that the goal is to figure out a reasonable cost for the party, then all discourse participants assume that everyone in the conversation is acting in a reasonable way and uttering things in order to accomplish this goal. This is what is meant by "cooperation" in the Cooperative Principle. Specifically, Grice described four **maxims** (or general rules of conduct) that might be the basis of many conversations: the Maxim of Quality, Maxim of Quantity, Maxim of Relation, and Maxim of Manner. The idea is that if these are the conversational rules that people follow (and if people assume that other people follow these rules too), then there is an explanation of why certain implicatures arise in discourse.

You will notice that the maxims are stated as imperatives (e.g., "do this!", "don't do that!"). These are *not* meant to be prescriptive "do's" and "don't's". They should be taken as a way to describe someone's pragmatic knowledge in a language. It's similar to how phonological rules can be stated like "turn voiceless consonants into voiced consonants!" or "don't voice the consonant if you already have a voiced obstruent in the morpheme!". Grice at one point describes the Cooperative Principle as something that is "REASONABLE for us to follow" and something that "we SHOULD NOT abandon" (Grice 1975, p.48; emphasis his). Sometimes this is misinterpreted to mean that the Cooperative Principle is a set of prescriptive rules, something along the lines of "if you don't follow these rules, you are not a good language user". However, that is not what he meant. A better interpretation of the Cooperative Principle goes something like this: *I*F discourse participants have a common immediate goal in the conversation, THEN it is in their best interest to follow something like the Cooperative Principle (Grice 1975, p.49). Grice pondered that this type of assumption may be an extension of cooperative transactions in general, not limited to language: if you and I agreed to get a car fixed together, it would be in our best interest to act in a cooperative way to accomplish this goal (Grice 1975, p.48).

Of course, what counts as "cooperative" in a conversation might be different depending on what kind of conversation it is (Grice 1975, p.48): what if you are fighting? Or writing a letter? Or making a witness statement in court? For the sake of exemplifying how the Cooperative Principle works, our examples in this chapter will be "ordinary" conversations (e.g., casual conversations between friends, family, or roommates). But after you are done reading or listening to this chapter, you are encouraged to think further about how the Cooperative Principle might work differently in other types of discourse!

Speaking of variation, we have seen already that conversational rules can vary from community to community, meaning that what counts as "cooperative" might vary depending on who the interlocutors are (not just the discourse genre). We will study the Cooperative Principle as applied to various linguistic communities, and you are also encouraged to think about how conversational rules might differ in your own culture(s)! The linguist way of thinking about the Cooperative Principle is that it is subject to variation within and across language communities.

Keeping all of this in mind, let's take a look at the four maxims that Grice described.

Part 2 video (Maxim of Quality):

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6.10.0.1: The Maxim of Quality

Grice observed that discourse participants seem to follow a conversational rule about being honest. He stated this rule as the **Maxim of Quality**: in a conversation, you say what you believe to be true, and only say what you have sufficient evidence for. For

your convenience, our previous example is reproduced below as (2).

(2)	Aya:		Did Raj feed the cat and clean the litterbox?
	Bo:		He fed the cat.
	Aya:		(Infers: 'He didn't clean the litterbox.')

This maxim says that the fundamental assumption that you make in discourse is that no one is lying in the conversation. Aya gets the the inference from Bo's statement in (2) partially because she assumes he would only say true things. Their logic is that Bo must have not said *Raj cleaned the litterbox* because it would be false to say so.

If the Maxim of Quality is violated, someone would be overtly lying in the discourse. Imagine for example that the conversation in (2) took place, except that Raj never fed the cat (or clean the litterbox for that matter). Bo is being blatantly uncooperative in this conversation in this case. When a maxim is **violated** in a conversation, it gives rise to the intuition that something has gone wrong in the discourse. In this case, the objective in the conversation was to figure out if Raj fed the cat and if Raj cleaned the litterbox, but now Aya incorrectly thinks Raj did feed the cat. This does not help with the objective of the conversation, hence, something has gone wrong. Note that if Bo is a good liar, Aya might not realise that something has gone awry in the discourse during the conversation. But if it was revealed later that Raj didn't feed the cat, Aya would certainly feel that the conversation she previously had with Bo was not a cooperative one: a maxim was violated.

In English and many languages, failure to *try* is what is considered a maxim violation. That is, if you were not *trying* to follow Quality at all, knew the statement was false but uttered it anyway, that is what is considered a violation. Let's assume for a moment again that Raj actually didn't feed the cat. If Bo *truly* thought that Raj fed the cat, saying "He fed the cat" would technically not be a violation under the Cooperative Principle. English users likely wouldn't wouldn't accuse Bo of "lying" because Bo truly had the belief that he was telling the truth (Carson 2006). Bo said something false but didn't lie.

What is considered a maxim violation can vary from language to language. In Mopan / Mopan Maya (an indigenous language of the Mayan family in Eastern Central America, spoken by Mopan people), falsehoods are characterised as *tus* 'lying' regardless of whether the speaker was aware of the falsehood at the time of utterance or not (Danziger 2010). So in Mopan, if Raj didn't feed the cat but Bo said he did with the sincere belief that he did so, Bo's utterance would still be considered a *tus*. It should be noted that *tus* has a negative connotation, much like the word *lie* in English: in Mopan, there is moral disapproval of falsehoods (Danziger 2010). This parameter for the Maxim of Quality in Mopan has interesting implications for how fiction is treated in the language/culture. Consider the following anecdote from a linguist who studied this phenomenon (Danziger 2010):

"One or two prosperous Mopan families have since the 1980s owned electrical generators and VCRs. But it has always been difficult in remote Mopan communities to find tapes to play on them. When I left the village after my first long stay (and before I had begun researching issues of truth and lies in Mopan), I was asked to bring back videotapes for entertainment when I returned. I did so. The first commercial tape which I supplied was Walt Disney's The Jungle Book. It was received with enthusiasm, as I had hoped it would be—it is colorful and amusing and because of the rainforest setting proved very interpretable even to older and monolingual Mopan people. But it does show some troubling scenes. In this film, a baby is abandoned in the forest and taken by wild beasts— and they don't eat him. Later, the boy develops the disturbing habit of playing happily with jungle cats and other wild animals. Perhaps most alarming of all, in one choreographed scene Mowgli not only touches but actually dances with Kaa the snake. In Southern Belize constrictors are unknown, but the region is home to snakes which harbor some of the world's fastest-acting and deadliest poisons. At last one day a good friend asked me doubtfully if all of this were really true. When I answered that of course it was not, I was surprised at her shocked reaction. She seemed to think that if this story was not true, it could only be considered tus ''lies''. I discovered that this conclusion holds true for all areas in which narrative output must be assessed or evaluated in Mopan. While narratives in various media offer fascinating plots and themes, no classificatory distinction is made in Mopan between stories involving supernatural creatures and those involving actual accounts of events in the speaker's own life. If stories are discovered not to be true, they are not excused as fictions, they are condemned as tus." (Danziger 2010, p.213)

In summary, the Maxim of Quality is paraphrasable as "don't lie" and "make sure you have enough evidence for what you're saying", which is a maxim common to a lot of languages — but what counts as a lie (= a violation of the maxim) may vary from community to community. Later, in Section 8.6 , we will see that what counts as "enough evidence" can vary from person to person as well.

Part 3 video (Maxim of Quantity):

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=869#oembed-3

6.10.0.1: The Maxim of Quantity

Grice also observed that discourse participants seem to follow a conversational rule about how much information they should give when trying to meet conversational goals. He stated this as the **Maxim of Quantity**: in a conversation, don't be more informative than is needed by the purpose of the conversation, and don't be less informative than is needed by the purpose of the conversation, either. You need to be as informative as is required. **Informativity** is generally measured based on entailment relations. This definition of informativity is given below. Take *p* and *q* to be variables for sentences.

(3)			If *p entails q* (and *p* and *q* are not the same sentence), then *p* is more informative than *q*.

By this definition, *Panks is a Siberian Forest Cat* (=*p*) is more informative than *Panks is a cat* (=*q*), because *p* entails *q* and they are not the same sentence. Let's go back to our original example, reproduced below as (4).

(4)	Aya:		Did Raj feed the cat and clean the litterbox?
	Bo:		He fed the cat.
	Aya:		(Infers: 'He didn't clean the litterbox.')

The relevant entailment relation is between *Raj fed the cat* and *Raj fed the cat and cleaned the litterbox*. The latter sentence entails the former; so, *Raj fed the cat and cleaned the litterbox* is more informative than *Raj fed the cat.*

To understand how this maxim works, imagine in (4) that Bo knew that Raj actually fed the cat AND cleaned the litterbox, and still said what he said ("He fed the cat."). This would be a violation of the Maxim of Quantity, because the statement *He fed the cat* is underinformative: the more informative thing to say in this situation would be *Raj fed the cat and cleaned the litterbox*. If Aya found out after the conversation in (4) that Raj actually cleaned the litterbox too, Aya would likely feel that Bo was being uncooperative in the conversation they had ("Why didn't you tell me he cleaned the litterbox too, if you knew?!"). Bo didn't make a false statement, but the true statement that he did make wasn't the most informative one. This also is the case in Bronston v. United States (1973) from Section 8.3: Bronston was not being maximally informative in the courtroom, which is why he was accused of being deceptive.

The flip side of this is being OVERinformative. For this, imagine this version of the previous discourse:

(5)	Aya:		Did Raj feed the cat and clean the litterbox?
	Bo:	??	Yes, he fed the cat, he cleaned the litterbox, he brushed the cat, he trimmed the cat's claws, he told the cat what a good boy he was, he pet the cat, he napped with the cat…

Assume that Raj actually did all of the things that Bo said he did. This means that Quality is not being violated. What IS being violated is Quantity. This time, he gave more information than what was requested by Aya's question. A simple "Yes (he fed the cat and cleaned the litterbox)" would've sufficed to meet the objective of the conversation.

Note that depending on what other linguistic and extra-linguistic factors there are, withholding information is not necessarily seen as "uncooperative". Consider the translation of the following conversation in Malagasy, an Austronesian language spoken in Madagascar (Keenan (1976) does not provide the original utterances in Malagasy, just the English translations):

(6)	A:		Where is your mother?
	B:		She is either in the house or at the market.

If you are an English user, because of the disjunction *or*, you may have drawn the inference that speaker B does not have the specific information pertaining to their mother's whereabouts: if speaker B knew exactly where she was, they would've said so. In Malagasy, that type of inference is unlikely. For Malagasy users, information that isn't already publicly known to everyone is highly valued, meaning that having exclusive knowledge about something is highly regarded (Keenan 1976). Because this cultural value, speaker A is more likely to infer something like 'B is superior to me at this moment' in this kind of conversation (Prince 1982). Even if speaker B knew that speaker A actually knew the whereabouts of their mother, the conversation in (6) would *still* not be considered uncooperative because speaker A would have the understanding that speaker B is saying what they are saying to accrue social currency.

Part 4 video (Maxim of Relation):

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=869#oembed-4

6.10.0.1: The Maxim of Relation

Another one of Grice's observation was that discourse participants seem to expect each other to stay on topic during a conversation. He described this as the **Maxim of Relation**: make your contributions to the conversation relevant to what is being discussed. Consider the following conversation in (7).

(7)	Aya:		I used to take piano lessons when I was little. What sorts of extracurricular activities did you do as a kid?
	Bo:		Nice. When I was little, I used to go to weekly swimming classes.

This is a perfectly normal and cooperative conversation, because Aya brought up the topic of what things they did in their childhood. Bo responds with something that is related to this topic: what he did as a child, which in this case is *take swimming classes*. The Maxim of Relation is being followed.

Contrast this with Bo's reply in (8), which for some people is a slightly more surprising turn in the conversation.

(8)	Aya:		I used to take piano lessons when I was little. What sorts of extracurricular activities did you do as a kid?
	Bo:	??	When I was little, my favourite food was chicken nuggets.

Assuming that Bo is not lying, Bo has said something truthful, thus Bo is following the Maxim of Quality. We don't get the sense that he is oversharing or undersharing, and he has at least said something about his childhood, which is to some extent informative — so Quantity doesn't seem like the main maxim being violated either. The main reason that (7) might feel odd to some adult English users is because Bo is off topic. The topic under discussion is "what extracurricular activities did you do as a child", so to stay on topic you would minimally name events, not stative properties like what your favourite food was. This in this context would be a violation of the Maxim of Relation.

If you find yourself thinking things like 'Well, maybe Bo means that he took cooking classes, or that he didn't do any extracurriculars at all?', that is a valid inference you are trying to draw. Section 8.5 will clarify why you feel the impulse to make sense of Bo's utterance.

Part 5 video (Maxim of Manner, and other possible maxims):

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=869#oembed-5

6.10.0.1: The Maxim of Manner

Grice's fourth and final observation was that discourse participants seem to have an expectation about *how* they say things in a conversation too, not just *what* they say. He described this as the **Maxim of Manner**: be as clear, brief, and as orderly as possible when you make your contributions in a conversation. Consider the following conversation (Note: the hand-washing instructions are adapted from this CDC guideline).

(9)	Aya:		How do I properly wash my hands?
	Bo:	??	Dry your hands using a clean towel or air dry them. Scrub your hands for at least 20 seconds. Lather the backs of your hands, between your fingers, and under your nails. Rinse your hands well under clean, running water. Lather your hands by rubbing them together with the soap. Wet your hands with clean, running water. Turn off the tap, and apply soap.

Bo's instructions are truthful, in that each step he listed indeed are things you do when you wash your hands. His contribution is also appropriately informative, and relevant to the question that was asked by Aya. However, Bo said the instructions in a funny way: he didn't list the steps in order. So the oddness of Bo's utterance mainly comes from a violation of the Maxim of Manner. For Bo to conform to the Maxim of Manner, we would of course have to change the order in which he presented each step:

(10)	Aya:		How do I properly wash my hands?
	Bo:		Wet your hands with clean, running water. Turn off the tap, and apply soap. Lather your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your nails. Scrub your hands for at least 20 seconds. Rinse your hands well under clean, running water. Dry your hands using a clean towel or air dry them.

The Maxim of Manner essentially says that the way that you present the information should not get in the way of transmitting the information. So under the scope of this maxim are things like the order in which you present information, whether your statement is ambiguous, which words you choose, how quickly you speak or sign, and how loud you speak (for spoken languages). The Maxim of Manner sees quite a bit of cultural variation. For example, what is considered to be an appropriate "manner" of speaking may depend on things like cultural expectations about expressions of emotion (Wierzbicka 2009), and different values attached to veiled speech (Ameka & Terkourafi 2019). For example, in some African cultures it is not necessarily considered "uncooperative" to make one's utterance obscure, long-winded, and vague (Ameka & Terkourafi 2019).

6.10.0.1: Other possible maxims

Note that the above four maxims are not meant to be an exhaustive list of maxims. Grice himself speculated that there are probably more than just these four maxims in language (Grice 1975, p.47).

One of the maxims that Grice mentioned, but did not elaborate on, is the **Maxim of Politeness**. Some researchers think this maxim is needed (Kallia 2007, Pfister 2009), while others think it is not necessarily a maxim (Brown & Levinson 1987) — but there is a general consensus that politeness is something that has relevance in discourse. Some languages, like Japanese, Korean, and Thai, have specific affixes you must use for expressing politeness! Pfister (2009) has proposed the following as the Maxim of Politeness: Do not impose on the addressee (avoid unnecessary imposition), and show approval of the desires and actions of the addressee. To not "impose" means to not force the other person to do what they don't necessarily want to do (e.g., not asking them to take you to the airport on their day off). To "show approval of the desires and actions" means to show that what the other person wants is desirable (e.g., complimenting their haircut).

6.10.0.1: Check your understanding

6.10.0.1: References

Ameka, F. K., & Terkourafi, M. (2019). What if…? Imagining non-Western perspectives on pragmatic theory and practice. *Journal of Pragmatics*, *145*, 72-82.

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8.6: How inferences arise, and neurodiversity in inference making

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=847#oembed-1

One of the underlying assumptions in the Cooperative Principle is that in all conversations, people have good faith in their conversation partners: everyone assumes that everyone is being rational and cooperative, except in special circumstances. This assumption is the foundation of how implicatures are created in discourse. Let's revisit the discourse from earlier.

(1)	Aya:		Did Raj feed the cat and clean the litterbox?
	Bo:		He fed the cat.
	Aya:		(Infers: 'He didn't clean the litterbox.')

The inference that Aya would naturally make from Bo's response is that Raj did NOT clean the litterbox. Aya arrives at this inference because she assumes Bo is following all four maxims in the conversation. Particularly, Aya's faith in the Maxim of Quantity leads to the conclusion that this must've been the most informative thing Bo could've said.

Here are more examples with the other three maxims.

(2)	Aya:		I wonder how the game today went.
	Bo:		The Blue Jays won.
	Aya:		(Infers: 'Bo saw the results of the game.')

According to the Cooperative Principle, the default assumption that Aya would make after Bo's utterance in (2) is that Bo has some way of knowing *The Blue Jays won* is true, whether it be direct evidence (e.g., he was at the game) or indirect evidence (e.g., he saw it on the news), and that the evidence is reliable. This is based on the Maxim of Quality, which states that discourse participants should not utter things that they don't have sufficient evidence for. Depending on the context, you may get various implicatures about how they know what they have said to be true. For example, if Aya knows that Bo was in class during the game, she might infer that Bo saw the results of the game online.

In (3), the Maxim of Relation plays a significant role in the creation of the implicature.

(3)	Aya:		Did you vacuum?
	Bo:		The cat is sleeping.
	Aya:		(Infers: 'No, Bo did not vacuum.')

Here, Bo's utterance at first glance may seem unrelated to the question that A posed. To reiterate how the Cooperative Principle works, the idea is that Aya does *not* automatically assume that Bo is being uncooperative when something like this happens. The default assumption that Aya would make is that Bo *is* being cooperative and following all four maxims. Based on this, Aya would make the calculation that Bo's utterance is somehow related to the question she posed. For example, the relation she might infer may be that vacuuming creates a lot of noise, the noise would wake the cat up, and he didn't want to do that. Hence, 'No, Bo didn't vacuum' results as the inference. Remember the chicken nuggets example in Section 8.5 (Aya: What extracurriculars did you do? / Bo: ??My favorite food was chicken nuggets.)? There, if you found yourself trying to make a connection between Bo's utterance and Aya's question, the Gricean explanation is that this is because you want to believe that Bo is following the Maxim of Relation. This kind of faith is what the Cooperative Principle is all about.

Here is a question for you (the reader/listener/viewer): in an example like (3), did you actually draw the same inference as Aya? Were any of you uncertain about whether that kind of inference could be drawn from the given utterances? If you did not draw the

same inference as Aya or if you were not super confident about making the inference Aya made, that's totally OK! We mentioned already that conversational rules can vary from language to language and from culture to culture — in addition to that, there is also quite a bit of individual variation when it comes to drawing inferences in a conversation. The inference in (3), for example, depends on things like how much and what kind of experience you have with vacuums and cats. Another factor in pragmatic variation involves **autism**. For example, studies have shown that **autistic** adults and **non-autistic** adults sometimes have different strategies for drawing inferences in a conversation.

What is autism?

Autism is a neurocognitive condition that affects how you experience the world around you. This means that autism can affect how you think, how you learn stuff, how you communicate, and how you adjust to a new environment. Like everyone, each autistic person has their own strengths and weaknesses. Some autistic people have difficulties with social communication. Autism is a **spectrum condition** (sometimes called Autism Spectrum Disorder), meaning that there isn't "one way to be autistic". There is a range of conditions associated with autism, and the severity of difficulties that an autistic person might have can vary. To learn more, go to an online search engine and try searching "Autistic Self Advocacy Network" and "National Autistic Society": you will be able to read about the lived experiences of actual autistic people.

In one study, researchers analysed how 66 autistic adults and 118 non-autistic adults interpreted conversations like the following (Wilson & Bishop 2020):

(4)	Character 1:		Could you hear what the police said?
	Character 2:		There were lots of trains going past.

Participants in this study were asked whether they thought Character 2 heard what the police said or not. Participants were given three answer options: "Yes", "No," and "Don't know". Non-autistic adults typically answered "No" in this kind of context. In (4) in particular, this is an inference from Character 2's utterance: lots of trains imply lots of noise, which implies "No, couldn't hear what they said". Autistic adults were about 2.5 times more likely than non-autistic adults to answer "Yes" in a context like this. Autistic adults were also about 6 times more likely than non-autistic adults to answer "Don't know" in a context like this. Importantly, autistic adults and non-autistic adults performed about the same in other linguistic tasks (e.g., vocabulary tests, syntactic acceptability judgment tasks, and comprehension of literal meanings in a conversation). This suggests that non-autistic adults and autistic adults' pragmatic abilities in inferencing in particular were different.

In a follow-up study, the researchers repeated the same inferencing task with just the autistic participants. This time, they eliminated the "Don't know" option to see what the autistic participants would do when forced to choose "Yes" or "No" in a context like (4). Results showed that if an autistic participant chose "Don't Know" in the first task in a context like (4), they had about a 91% probability of choosing "No" in this second task. This suggests that when constrained to do so, autistic participants generally gave the same response as non-autistic participants in this study. Applied to everyday situations, this might mean that autistic adults *can* get the implicatures intended by non-autistic adults' — but their tendency to do so is different.

Another interesting insight from this study is the comments that the autistic participants gave after the experiment: several autistic participants expressed frustration that there wasn't enough information to answer the implicature questions. We might wonder if autistic adults and non-autistic adults have a difference in their Maxim of Quality ("Only say what you believe to be true, and only say what you have adequate evidence for"): could it be that what counts as "adequate evidence" is stricter for autistic individuals? Some autistic participants also made comments like this:

"I can make a really good guess at what people mean but the anxiety surrounding all the possible meanings is so exhausting that like if they say something I'm 99% sure it means this but that 1% of but what about all the other things it could possibly mean… It's just really, really exhausting and second guessing yourself all the time of 'was that thing the right thing?' … And people aren't brilliant at giving feedback, so you don't know if you've said the right thing … I think it's much more the anxiety of not being sure

if you're understanding someone correctly than just outright getting it wrong … because there were so many times as a kid when I misunderstood and got it wrong and then if you get it wrong people react to you badly or they ostracize you … I think it's an anxiety that's built up over a lifetime of not quite getting it right enough of the time." (Wilson & Bishop 2020, quoting one of their participants)

Based on this kind of comment, autistic adults' tendency to select "Don't know" in the first task might also be driven by their history of being criticised for not getting non-autistic adults' intended implicatures.

Neuro- means 'relating to the nerves or nervous system (including the brain)'. **Neurodiversity** refers to the different ways in which people's brains function, and the different ways in which people behave as a result of these neurocognitive differences. **Neurotypical** is a term that is sometimes used to describe people who have neurological development and functioning that is "typical" by some cultures' socio-political standards. **Neurodivergent** is sometimes used as a descriptor for people who diverge from this standardized profile, including (but not limited to) autistic individuals and individuals with attention deficit hyperactivity disorder (ADHD).

What do we learn from all of this? What inferences can be made from an utterance depends on the context, and "context" includes who is participating in the discourse, too. The quote above points to yet another power dynamic in language (recall Chapter 2): conversational expectations are often very **neurotypical**-centric, which is unfair to **neurodivergent** individuals. Some people may not get the implied meaning immediately, and even when they think they understand the implicature, they might not feel confident about it. Following the Autistic Self-Advocacy Network's advice, we urge you to be patient if miscommunication arises in everyday situations. If you are organizing an event, you may want to avoid relying on implicatures to communicate important information to participants, because some people might not get it. Everyone has a different mind, so let's support these differences rather than suppress them.

6.10.0.1: Check your understanding

6.10.0.1: References

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[redacted]

8: Pragmatics

8.7 Violating vs. flouting a maxim

[redacted]

8.7: Violating vs. flouting a maxim

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=851#oembed-1

In the previous sections, we saw that when a maxim is violated in a conversation, it causes the conversation to be anomalous in some way. We saw that when it is revealed that a maxim has been violated, discourse participants have the intuition that the person who violated the maxim was being uncooperative, and that something has gone wrong in the discourse itself. For example, Bo is violating Quality in the following discourse in (1).

(1)			(Context: Aya and Bo met online. Aya lives in Vancouver. Bo lives in Ottawa.)
	Aya:		Where did you say you live again?
	Bo:		I live in Ottawa.
	Aya:		So how is Ottawa? Do you like it?
	Bo:		I live in Toronto.
	Aya:		(Wait, what? You told me you lived in Ottawa just a few seconds ago!)

In (1), it seems that the conversation has broken down in some way because of the violation: facts must be straightened out before the discourse continues. The discourse must be repaired. Let's compare this to the conversation in (2).

(2)			(Context: Aya and Bo are discussing what they did over the weekend. They both know there is no city named Toronto in Saskatchewan.)
	Aya:		I visited Toronto over the weekend.
	Bo:		Oh, Toronto, Ontario?
	Aya:		**No, Toronto, Saskatchewan.**
			(Implicature: 'Yes, of course it's Toronto, Ontario')

As mentioned in Section 8.6, communication by implicature may not be a part of some people's native discourse strategies. So for some people, it is possible that the conversation in (2) is as confusing as (1). In that case, the discourse may have to be clarified by uttering the implicature part out loud (e.g., "Oh, I was being sarcastic; of course it's Toronto, Ontario!").

For other people, (2) might not feel as odd as (1). One way of interpreting the conversation in (2) is that Aya is acting like she is violating the Maxim of Quality in a way that is very noticeable to the addressee, and she is doing so deliberately in order to create a certain implicature. This is called **flouting** a maxim: appearing as if you are violating a maxim in a very obvious way, in order to create an implicature. In (3), Aya is saying something that is obviously false (and something that she thinks Bo would find to be obviously false too) in order to create an implicature. Aya is flouting the Maxim of Quality. Intonation (for spoken language) and facial expressions (for both spoken and signed language) that accompany the sentence can often help indicate that the speaker/signer is flouting a maxim.

6.10.0.1: Check your understanding

6.10.0.1: References

Grice, H. P. (1975). Logic and conversation. In *Speech Acts* (pp. 41-58). Brill.



8.8: More about the Cooperative Principle

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=2037#oembed-1

Paul Grice was a philosopher of language. He developed the Cooperative Principle in the 1960s partially in response to philosophers at the time who claimed that natural, ordinary language is too ambiguous and too illogical to rigorously analyse. He developed a system that allowed for researchers to analyse everyday human discourse logically. He called this system **conversational logic**, and the Cooperative Principle is a basic part of it. His work has been foundational in the subfield of pragmatics.

One misconception about the Cooperative Principle is that a conversation in which discourse participants follow Quantity, Quality, Relation, and Manner perfectly are somehow "ideal" conversations. This is not necessarily true! Strict adherence to the maxims might produce a conversation that is logical and maybe even efficient, but whether that is "ideal" or even natural or comprehendible, is a different matter. In fact, many linguists (including Grice himself) have observed that in natural conversations, there are other factors that go into the interpretations of utterances, including linguistic and non-linguistic contexts of utterances (Grice 1975, p.50). This may include things like the genre of discourse, mutual trust between the interlocutors, psychological distance between the interlocutors, and much more (Lakoff 2009). Depending on the context, some maxims may get prioritised while others may be deprioritised.

As a language philosopher, Grice's objective in developing the Cooperative Principle was not to give extensive empirical observations about human discourse. Rather, his goal was to give a more general sketch of how conversational logic *might* work. There are places in his writing where things are intentionally vague, as many of his thoughts were meant to be introspections rather than a fully developed system. His musings were based largely on English, and unsurprisingly, he was never really clear about whether his maxims were meant to apply to non-English conversations. In this textbook we have taken the interpretation that there is cross-linguistic and cross-cultural variability in the Cooperative Principle. However, we also do not deny the fact that Gricean theories of pragmatics have contributed to the perception that (educated, white) English is somehow the "norm" and somehow culturally "neutral" (Ameka & Terkourafi 2019). We echo Ameka & Terkourafi (2019)'s call for more inclusive research practices in pragmatics.

As with any theory, it is important to ***not*** look at Grice's original work (which is roughly the version that was presented in this chapter) as something that is flawless. In fact, many newer theories of pragmatics reduce Grice's maxims to just one or two principles (e.g., "Relevance" and "Informativeness")! If you'd like to learn more, Kearns (2011) has a short summary of post-Gricean approaches to pragmatics in her Chapter 1. For the more comprehensive learner, Huang (2007) is a more advanced but accessible overview of the history of pragmatics, from past to present.

6.10.0.1: Check your understanding

This is a reflection question with no right answer. In what kind of conversations might Grice's maxims (as described in the chapter) operate vastly differently? What about that type of discourse makes it different from an everyday conversation?

6.10.0.1: References

Ameka, F. K., & Terkourafi, M. (2019). What if…? Imagining non-Western perspectives on pragmatic theory and practice. *Journal of Pragmatics*, *145*, 72-82.

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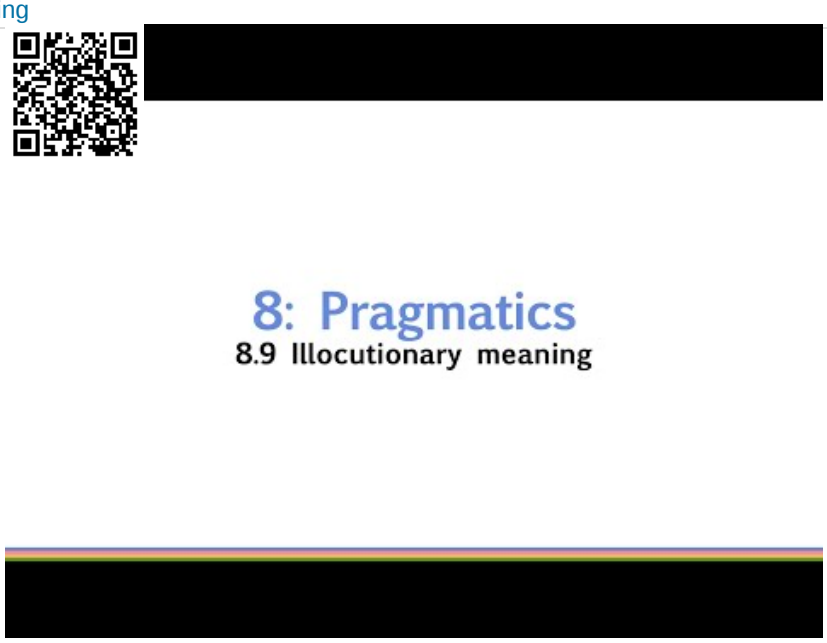
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6.11: Illocutionary meaning



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6.11.0.1: Illocutionary meaning

In Chapter 7, Section 7.11, we talked about the meaning of sentences in terms of their truth condition. This tells us what the sentence entails: it tells us what the sentence means on its own, regardless of context. So far in this chapter, we have also seen that when we combine the literal truth-conditional meaning of the sentence with the discourse context, other layers of linguistic meaning emerge, like implicatures. Implicatures rely on the fact that sentences don't occur in isolation in natural language use: they're a part of a larger discourse context.

In this section, we will explore **illocutionary meaning**: sentential meaning in terms of what the speaker/signer means *in* making an utterance. The idea is that after we compositionally build up the literal meaning of a sentence, we *do* something with this sentence in a conversation. In other words, what's the point of saying something in a conversation? Let's take a look at what exactly you do with a sentence in discourse.

6.11.0.1: What is illocutionary meaning?

Illocutionary meaning again is the meaning of a sentence in terms of what the speaker/signer means in making an utterance. To understand what this means, let's take a look at the conversation in (1).

(1) (Context: Aya and Bo are roommates, and are trying to decide what to make for dinner.)

Aya: Should we have spaghetti for dinner?

Bo: We have tomato sauce and ground beef in the fridge.

Aya: Yeah. Can we make pasta bolognese with those ingredients?

Bo: Yeah, I think so.

Aya: OK, cool. We'll do spaghetti then.

Let's focus on Bo's utterance, *We have tomato sauce and ground beef in the fridge*. The sense of this sentence is the lexical meaning of all the words it contains combined. But Bo is not saying this sentence in this conversation for the sake of expressing the sense of the sentence. He is saying this because he believes this sentence to be true, and he would like for the addressee, Aya, to agree with it. This layer of meaning is what we are referring to as **illocutionary meaning**, and what we mean by "what we mean in making an utterance." In this case, Bo has made an **assertion**. In contrast, if you look at Aya's first utterance in (1), she has posed a **question**: *Should we have spaghetti for dinner?*. Assertion vs. question is a way of classifying sentences based on their illocutionary meaning. There's more that you can do in a conversation than just assert things and ask questions. For example, you might exclaim things in an **exclamative** (e.g., *What a beautiful raccoon!*) or you might give orders with an **imperative** (e.g., Look at the raccoon!). In this textbook, we will focus on just assertions and questions. In the rest of this chapter, we will ask the following question: what does it mean for someone to make an assertion vs. pose a question in discourse?

6.11.0.1: Re: Language is performative

In Chapter 2, we introduced the idea that language is **performative**, meaning that things happen and the world changes when you say or sign things. When someone says *I name this ship the S.S. Anne*, they christen the ship. Writing *I bequeath my card collection to my child* in a will gives rise to certain contractual rights about the future ownership of the card collection. As philosopher John Langshaw Austin wrote, "to *say* something is to *do* something" (emphasis his) (Austin 1975). Austin originally used the term "performatives" to refer to certain types of sentences, like ship christening, bequeathing in wills, and marriage vows. Under the original definition, performatives are utterances that are made for the purpose of doing something and giving rise to a conventional consequence (e.g., transfer of rights, legal union, etc.). The term usually refers to something that uses **performative verbs** like "I hereby **name**", "I hereby **bequeath**", "I now **pronounce** you", etc.

Anything that you linguistically express that serves the purpose of "doing something" is called a **speech/sign act.** Note that some linguists use the term **speech act** to refer to acts in all modalities of language. So when you say a performative like "I now pronounce you married," that's a speech act. You don't always have to use performative verbs to do a speech/sign act, though. For example, if you simply ask the question *"Did you break my bike?"* in spoken English (instead of expressing it as a performative like "I hereby ask if you broke my bike"), it's still a speech act: it's an act of inviting the addressee to supply information. So performatives are just a special kind of speech/sign act.

By making a **speech/sign act**, there are different actions that you make simultaneously: you make a **locutionary act**, an **illocutionary act**, and a **perlocutionary act**. Let's take the sentence *You're manspreading*, uttered by a woman to a man on a bus.

The **locutionary act** of a speech/sign act is an expression of the **locutionary meaning** of the sentence, which is the literal meaning of the sentence. The locutionary meaning of *You're manspreading* is something like 'the addressee, presupposed to be male, is sitting with their legs wide apart.'

The **illocutionary act** of a speech/sign act is an expression of the **illocutionary meaning** of the sentence, which is what you "do" in making an utterance. Typically, in making an assertion, what the speaker "does" is commit herself to the truth of the utterance (the performative version would be something like 'I hereby publicly declare that I believe that you are manspreading'). In this particular case, she's also likely "doing" something else too: making a request (for him to move his legs). Those are both illocutionary acts. Other than asserting and requesting, illocutionary acts can include: asking, resigning, promising, congratulating, and more.

Finally, the **perlocutionary act** (or **perlocutionary effect**) of a speech/sign act is an expression of the **perlocutionary meaning** of the sentence, which is the actual effect of the utterance on the addressee. In this case, the perlocutionary effect of *You're manspreading* might be that the addressee moves his legs to make more room for the speaker.

In the rest of this chapter, we will focus on the **illocutionary meaning** of sentences, particularly that of assertions and questions. Note that there isn't a one-to-one correspondence between the form of a sentence and its illocutionary meaning. In one context, *You got first place!* might be an act of congratulating (e.g., adults are playing a video game), but in another context, it might be an act of scolding (e.g., an adult immaturely beat a bunch of children in a video game). In fact, even if you utter a performative like *I hereby promise that I will buy you the game*, it doesn't really have the illocutionary meaning of a promise unless the utterer sincerely means it. Some types of illocutionary meaning are closely connected to certain word order, intonation, or performative verbs, though: for example, T-to-C movement in spoken English typically indicates that a question is being asked.

6.11.0.1: Check your understanding

6.11.0.1: References

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8: Pragmatics

8.10 Thinking about illocutionary meaning compositionally

8.10: Thinking about illocutionary meaning compositionally

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What we learned in Chapter 7 is that the meaning of a sentence is compositional. Let's take the sentence *Panks is a cat.* If we think denotationally, this means that we combine the meaning of *cat* (the set of all cats) with the meaning of *Panks* (the individual Panks), which results in the meaning of the sentence (TRUE if and only if Panks is in the set of all cats). This kind of analysis might suffice if you are interested in the meaning of the sentence in isolation — that is, uttered on its own. A more realistic view of how language works, however, is that sentences don't get produced in isolation; they are a part of a larger conversation. In fact, you typically don't get to decide on your own if a sentence is true or not. This is why you have conversations: to consult others to see what is true about the world we are in, and what is false. We want to analyse sentential meaning as something more collaborative and discourse-based like this in this chapter. As introduced in the previous section, this largely concerns the **illocutionary meaning** of a sentence.

Before we discuss the details of various types of illocutionary meaning, let's make sure that we understand some terminology that might potentially be confusing. Consider the pair of sentences in (1)-(2).

(1) Panks is a cat (**assertion**)

(2) Is Panks a cat? (**question**)

You likely have the intuition that (1) and (2) are two "versions" of the same thing: (1) is the **declarative** version of Panks being a cat, and (2) is the **interrogative** version of it. We can say that (1) and (2) are based on the same **proposition**: that an individual called Panks is among the set of cats (or, **p**∈C in set theory terms). A proposition is something that *can* be assigned a truth value. When a proposition is given a truth value (or truth condition), it is called a **statement**.

To understand this better, let's think about the meaning of (2), *Is Panks a cat?*. This is not a statement, because questions do not have truth values (You can't say **It is true that is Panks a cat*). However, the meaning of the question still involves the proposition that was introduced earlier: **p**∈C. In the meaning of a question, you are not saying that the proposition has a certain truth value. Instead, you are *asking* about the truth value of the proposition: is **p**∈C true, or is **p**∈C false?

In order to understand how illocutionary meaning works, we will assume in this chapter that a TP is simply a proposition, like **p**∈C (we might also just write a proposition in bold, like **Panks is a cat**). This means that it doesn't actually have a truth value yet.

A proposition on its own has no illocutionary meaning; we have to add illocutionary meaning to it. To do this compositionally, we can posit a silent **illocutionary force** morpheme that carries illocutionary meaning. For example in English, we can assume that there is a silent **ASSERT** morpheme that resides in C (the head of the CP). The idea would be that this ASSERT morpheme adds illocutionary meaning to the proposition represented by its sister TP. This structure is shown in Figure 8.3 below.

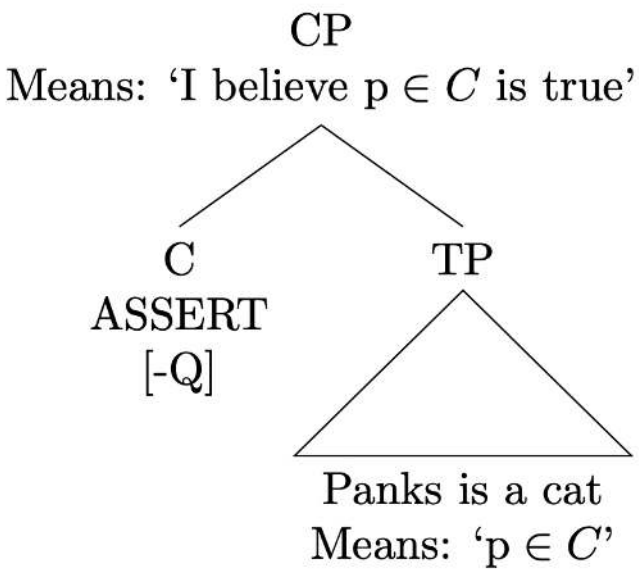


Figure 8.3. A tree with an ASSERT morpheme in C (irrelevant nodes have been omitted).

The role of the ASSERT morpheme would be to take a proposition and "do" something with it in the discourse context. For example, if you assert *Panks is a cat*, this means that ASSERT takes **p**∈C and says something along the lines of 'I (the speaker/signer) believe that **p**∈C is true; do you (the addressee) believe this, too?'. The underlined part is what we call the illocutionary meaning of a sentence (or illocutionary **force**): what is being "done" with the proposition in the discourse.

Illocutionary force

Sometimes, the term **illocutionary force** is used to refer to the utterer's *intended* illocutionary meaning of a sentence. Sometimes this specification is necessary, because illocutionary acts are successful only if the addressee understands the illocutionary meaning properly. For example, for "You're manspreading" to be a successful illocutionary act of requesting, then the addressee needs to understand it as so. If the addressee fails to see it as an act of requesting, then it's not clear that this utterance actually has the "illocutionary meaning" of a request. We can say that it does have the illocutionary *force* of a request though, since that's what the speaker's *intended* illocutionary meaning was. The distinction between "illocutionary meaning" and "illocutionary force" is not super important in this textbook.

Let's look at questions now. A question would work in a similar way, just with a different illocutionary force morpheme. Let's call this silent question force morpheme **INTERR**. Figure 8.4 is the structure we will assume for a question.

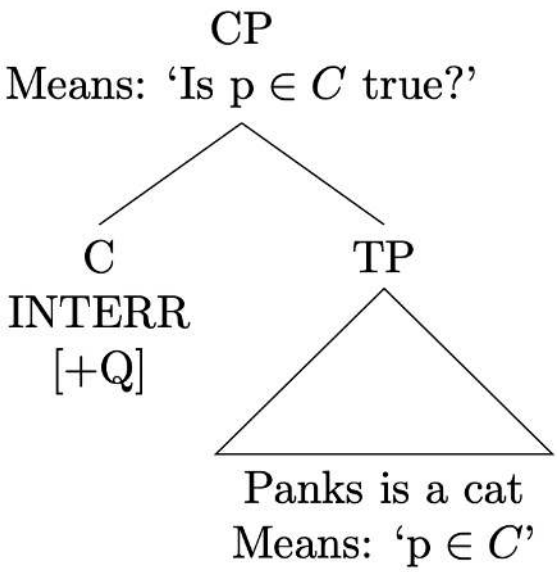


Figure 8.4. A tree with an INTERR morpheme in C (irrelevant nodes have been omitted).

As you can see, the question actually has the same TP as the assertion tree we saw before, and thus the same proposition it starts out with: **p**∈C. This time, the illocutionary morpheme INTERR (for interrogative) would combine with this proposition and give it interrogative illocutionary force. INTERR **p**∈C roughly means 'Either **p**∈C is true or **p**∈C is false; which one do you think it is?'. The underlined part is the illocutionary meaning contributed by INTERR.

Some languages like Korean actually have overt (= unsilent) morphemes for ASSERT and INTERR. Consider (3) and (4).

(3)		Korean (Brandner, 2004)				
		ku-ka	seoul-e	ka	-ass	**-ta**
		he-NOM	Seoul-to	go	-PAST	**-INTERR**
		'He went to Seoul'				

(4)		Korean (Brandner, 2004)				
		ku-ka	seoul-e	ka	-ass	**-nunya**?
		he-NOM	Seoul-to	go	-PAST	**-INTERR**
		'Did he go to Seoul?'				

In (3), *-ta* is the morpheme that marks the sentence as an assertion; a non-silent ASSERT. In (4), *-nunya* is the morpheme that marks it as a question; a non-silent INTERR. These illocutionary force morphemes appear in C in Korean as well. Linearly, it shows up at the end of the sentence because Korean is a **head-final language** — just like Japanese (recall Chapter 6, Section 6.3).

With this kind of compositionality of illocutionary meaning in mind, we will begin to address the question of what exactly these ASSERT and INTERR morphemes mean.

6.11.0.1: Check your understanding

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6.12: Deixis

Deixis: Meaning that Depends on Context, in Anderson's *Essentials of Linguistics*



Video Script

We saw in a previous unit that many words have extensions that can change over time while their intensions stay fairly constant. For example, the extension of the phrase *the Prime Minister* changes every few years, after elections. But there are some words whose extensions change all the time, depending on who says the words and what context they're in.

Think about two kids who are fighting over a ball. One kid says, "It's mine!" and the other says, "It's mine!" Both of them are uttering the same words, but they each have a different extension for the meaning of the word mine. When the tall kid says *mine*, they mean that the ball belongs to the tall kid. And when the kid with pigtails says *mine*, they mean that the ball belongs to the kid with pigtails.

This phenomenon, where a word's referent changes depending on who says the word, is called **deixis**, and words or phrases that allow deixis are called **deictic expressions**.

In every language, first-person and second-person pronouns are deictic. Whoever says the word *I* or *me* or *myself*, they're using the word to refer to themself. And when we utter the word *you*, we mean the person or people we're talking to, whoever those people may be. And the first- and second-person possessives are deictic too.

What about third-person pronouns? Is the pronoun *she* deictic? Let's look at an example. Suppose Sam says, "The prof said she would give us all A's." The pronoun *she* is ambiguous — it could refer to any feminine person, so it's possible that Sam means that the prof said that the TA or some other prof would give all A's, but the likeliest interpretation is that *she* refers to the prof. Now what happens if Tai says, "The prof said she would give us all A's"? The word *she* is still ambiguous, but in exactly the same ways — it could still refer to the prof, or it could refer to some other feminine person. The potential referent for the word she does not depend on who is uttering the sentence, so it's not a deictic expression.

So first- and second-person pronouns and possessives are deictic in every language. But that's not the only place that deixis happens in language. Lots of languages also have **spatial deixis**, whose referent depends on the location of the person who utters them.

Imagine this conversation between Sam and Tai, who live in different cities: Sam lives in Hamilton and Tai lives in Toronto. They've been talking about getting together on the weekend. Sam says, "Are you coming here this weekend?" and Tai replies, "No, I thought you were coming here!" Both of them utter the word *here*, but each one is referring to a different place — for Sam, the word *here* refers to Hamilton, but for Tai, *here* means Toronto. The referent for the word *here* depends on the location of the person who says it.

English has some pairs of deictic expressions that depend on location. *Here* indicates some relative proximity to the speaker, while *there* means something that is farther away from the speaker. The linguistics labels for this near/far distinction are **proximal** and **distal**. The English demonstrative determiners also make a distinction between proximal and distal: *this* and *these* refer to things that are closer to the speaker, and *that* and *those* refer to things that are farther away. English even has verbs that express this distinction: *come* and *bring* refer to moving towards the speaker, while *go* and *take* mean moving away from the speaker.

Many languages make a three-way distinction in spatial deixis. In Spanish, for example, *este* corresponds roughly to English *this*, while *ese* and *aquel* both get translated as *that*. But *aquel* is definitely far away, while *ese* is farther away than *este* but not as far as *aquel*. This intermediate spatial distinction is labelled **medial**. Plenty of other languages, like Arabic and Korean, also have a three-way distinction. In fact, English used to have a proximal-medial-distal distinction as well, with the word *yon* expressing the distal, but *yon* has pretty much vanished from modern English.

Languages also have ways of expressing **temporal deixis**. Suppose you go to your prof's office to ask some questions and you find a note on the door that says, "Working from home today. I'll be in the office tomorrow." You have no way of knowing what day they're working from home and what day they'll be in the office unless you know what day the note was written, because *today* means whatever day they posted the note and *tomorrow* means whatever day comes after that day. *Yesterday* obviously works the same way: its referent is relative to when it gets uttered, and the same is true for *now* and *then*, *soon* and *later*. English also has expressions like *three weeks ago* and *next year* that are deictic too.

In fact, even the tense morphology on verbs is deictic. Suppose you get a letter from your aunt in the mail and it hasn't got a date on it. It's a little beat up and it looks like maybe it got lost in the system for a while. The letter has some news about the family and includes the sentence, "Alex will spend the summer planting trees." Now, because this sentence has a future tense verb in it, you know that the tree-planting was set to happen some time after the letter was written, but without knowing when the letter was written, you can't know whether Alex has already planted trees or is still planning to do it in the future or is planting trees right this minute. The time that the future tense refers to depends on when the verb was spoken, or in this case, written.

To sum up, every language has deictic words, phrases or expressions that refer to something different depending on who speaks or writes them, and in what context. The most common kinds of deictic expressions are personal, depending on the identity of the speaker, spatial, which depend on where the speaker is when they say the phrase, and temporal, which depend on the time the speaker says the phrase.

Check Yourself

? Exercise 6.12.1

What kind of deixis is illustrated by the bolded part of this sentence?

*"I heard **this course** was supposed to be easy."*

- personal deixis
- spatial deixis
- temporal deixis
- not a deictic expression

Answer

"Spatial deixis" and "temporal deixis"

The reason: *This* usually implies a difference in space related to whoever is speaking, and/or differences in time related to whoever is speaking.

? Exercise 6.12.2

What kind of deixis is illustrated by the bolded part of this sentence?

*"Stan told Bill **his brother** had phoned."*

- personal deixis
- spatial deixis
- temporal deixis

- not a deictic expression

Answer

"Personal deixis"

The reason: *His* implies a difference in personal relationship related to whoever is speaking.

? Exercise 6.12.3

Which part of this sentence is deictic?

"Sam and Tai met five years ago."

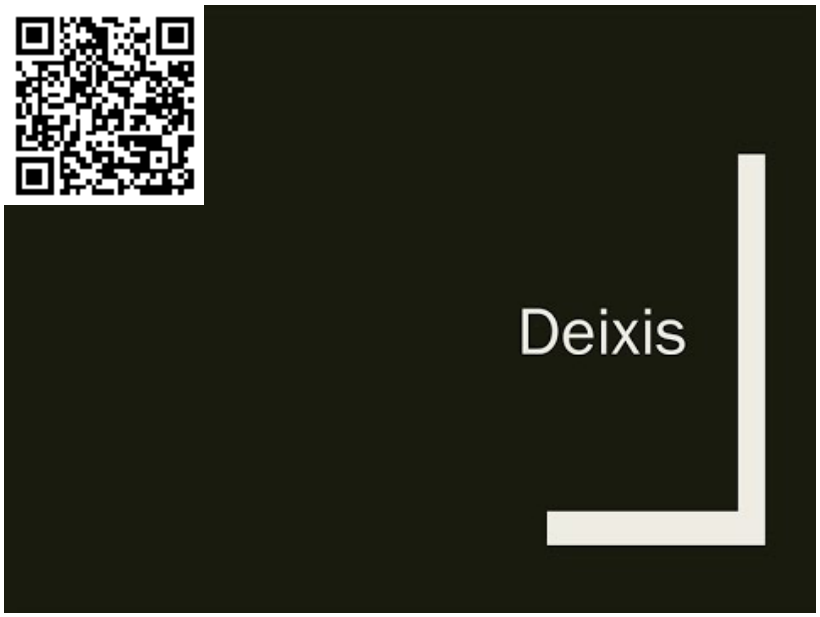
- Sam and Tai
- met
- five years
- five years ago

Answer

"Five years ago"

The reason: Both the amount of time and the term *ago* create a difference in temporal deixis.

Deixis, from Sarah Harmon



Video Script

What Catherine explains above is what you need to know about deixis. There's a little bit more I want to say, because this is an area that has fascinated me for a very long time. I've done a little research on it, published a couple papers on it, but mostly, this is just an area of complete fascination. Maybe it's because English doesn't do as much with deixis as other languages, with respect to verbal inflection. That's really where we're going to talk about this.

As far as what deixis is, Catherine has already explained this above. she does a really great job of it. Remember that **personal deixis** is having to do with first and second person pronouns and the demonstrative. **Place deixis** is directions, this concept of *here* versus *there* versus *yonder*. **Time deixis** usually is focused on two things: one is the adverbs that we use, like *now*, *then*, or *later*. It also involves more importantly, for the rest of this video, verbal inflection, or specifically what we call in linguistics TAM (tense, aspect, mood).

If you've ever taken a foreign language class—especially if it was an Indo-European language or Japanese or Korean or anything that has a lot of verbal inflection—then you've heard these terms before at least a couple of them, if not all three of them. When I teach Spanish, I do subject my students to this, because I think it's an important aspect to remember, that those little bits that we put on to a verb, all those inflectional affixes, they're doing something. Let's get into it a little bit, let's unpack what this mean.

Tense is the easy one, because tense only has three options at most: past, present, future. That's it, there is no other tense beyond past, present or future. This is one of my pet peeves when I read a grammar book that talks about 'the progressive tense' or 'the preterite tense'. Those are not tenses at all. We only have three possibilities. That does not mean that all languages have three tenses; in fact, that's not the case. Most Indo-European languages have all three, but many languages around the world, only have two: past and non-past is the typical definition. Some languages do not have any actual tense markers—think the Sino-Tibetan languages, where there are no markers of any kind for anything. They use adverbs of some kind, to tell you when something happened.

A lot of languages that have inflection—not the East and Southeast Asian languages that we've talked about but other languages—may not have tense markers they do have aspect markers. I'm thinking especially the languages throughout Central America and in parts of the islands in and around Australia. We're talking about languages that may not have a past tense, present tense, or future tense, as far as their inflections. Yet, they do have stuff like 'ongoing' or 'at a specific moment' or 'kind of in the past, but not really'. Those are all aspects**. Aspect** is really just a manipulation of time; you're describing how the time transgressed.

Some of these terms that I'm going to show you, you may have seen, especially if you learned a grammar of a foreign language. Many of them might be new to you, so I'll explain.

- **Iterative** or **Durative**: this is a really common one, especially in the Indo-European languages, but even outside. This is when we're talking about time that goes over a stretch, a period. During…duration. Iterative and durative, technically speaking, are slightly different but for your purposes they're the same.
- **Punctual** or **Aorist**: technically speaking, those are slightly different, but for your purposes we'll keep them together. Punctual, at a specific moment in time. For example, if you learned a Romance language or if you learned a Germanic language, you probably heard of the perfect or preterite, maybe the compositional past tense. You've heard of the imperfect, also. Well, the imperfect is durative and the perfect/preterite is punctual. If you think about that difference about how you would say in any of these languages, 'I went to the store at three o'clock yesterday' versus 'I was going to the market when and then there's something else happened.' Those two versions of 'go' in any Germanic or Romance language (and most Indo-European languages) are going to be two totally different forms and that has to do with aspect.
- **Habitual** or **Imperfective**: frequently they can get mixed into this iterative/durative. But it often also gets split out, especially in many languages in Africa and Niger Congo languages. Habitual is just what you think it is: something that used to happen or happens repetitively recursively. Imperfective is along those same lines.

All three of these aspects, English doesn't really do, at least not anymore. We used to, but that's for another time. What we do have are the next two.

- **Perfective**: At that time and before. 'I have eaten today' or 'I will have read that book for next week'.
- **Progressive** or **Continuous**: 'I am talking to my mother, right now', 'my brother is working right now'.

Those are both aspects that we do have an English; you can see them not just an English, but in other languages, as they're very common. The last one is a little less common.

- **Inchoative**: usually it talks about the start of something. Sometimes it gets folded into the punctual. In some languages, many indigenous languages in North America, have inchoative.

These are all different aspects. Some are pervasive; you frequently will see a progressive and a perfective, you frequently see either habitual or durative or both. You may not have all of them, and certainly English is a great example of this, because we don't have these as inflections anymore. We tend to have them as compound verb phrases; they use auxiliaries and that kind of thing. However, if you go back 800 years, we used to have quite a bit of this.

That's tense and that's aspect. The fun one, at least for me, is mood. Don't be scared off; you're going to see a lot of this information and think it's all on the semantics quiz or the meaning quiz. It's not I promise. I show you this to get you to understand all of these things. When you are in an environment where you having to learn a new language, and it has all these different things that you do to the verb, and you weren't sure what was going on, some of it is aspect and some of it is mood.

The way I like to think about **mood** is condition or context; it is the context under with something happens. We have three main moods and then of course they gets split out from there.

- The first one is **interrogative**, as in a question and, yes, in many languages it is an inflection on the verb. When you want to make a question, instead of a question word or changing intonation pattern, you put an inflection on the verb.

You also have realis and irrealis. Let's break this down.

- **Realis** = something real, so something that is observable in many cases. The one you are familiar with, is **indicative** or sometimes called **declarative**. I know you're aware of this, because that's pretty much what we use in English; we really don't have much else in the term of mood anymore. If you are studying another Indo-European language, certainly indicative or declarative is what we focus on.
- But there's one other realis mood and it's really common in the Semitic languages, and that is the **energetic**. Energetic is really cool; it is when you want to say that something is strongly believed by the speaker, or the speaker wishes to really emphasize it put energy to it. You see here that there is this energetic [la-], this affix that gets attached to a verb. Let's take the verb that means like 'a strong obligation', 'must' or 'should', something like that, and if you stick [la-] in front of it, it means that 'she must do something' so 'she must' right okay. There's that [ktb], by the way, that we saw earlier in morphology when we talked about infixation; I'm bringing up here again.

This is cool but where the fun really begins. This is a lot of information don't worry, you do not have to remember all of it, this is just to kind of give you some context to explain a little bit more.

- **Irrealis**: what funkiness happens in so many different languages, with respect to verbs, frequently involves irrealis
  - The one that probably most of you have heard of before is called the **subjunctive**. You've probably heard that before, especially if you learned an Indo-European language. Subjunctive is all over the place; everybody has a subjunctive. Technically, English still has a subjunctive, although it's dying very quickly. It went from about two generations ag, people regularly using a subjunctive, to almost no one does anymore unless you're speaking legal terms (that's a different story). Subjunctive is a hypothetical or unlikely events, along those lines.
  - You also can have in many languages an **optative**, if you ever go learn Ancient Greek or Sanskrit, you will learn about the optative. This is when you're talking about a hope or a wish.
  - A **desiderative** is also a wish, although there's not too many examples of those
  - A **dubitative** implies doubt.

In the Indo-European languages, pretty much all of those have been combined into what we now call this subjunctive; there are a couple of Indo-European languages that do have a dubitative, but not as often. To give you a couple of examples:

- Optative: I usually see this involved with a deity. You are praying to a deity that something happens so 'may you have a good trip', 'May God make it that you have a good trip' or whichever deity you want. For those that know Spanish and you ever wondered what ojalá [oxalá] is, ojalá is a borrowed piece from Arabic from when the Moors were in Spain and Portugal, and it is borrowed off of their optative. It just got co-opted into old Spanish and Portuguese, although it's died out now in Portuguese, but it did use to exist. Ojalá, Allah, as in God.
- Desiderative: This really only exists currently in Japanese; it used to exist in Sanskrit and then Proto-Indo-European and maybe a few other ancient languages. The desiderative is this concept of 'I really wish' or 'I really want something to happen'. To say, 'I desire to go there', 'I want to go there'. Watashi-wa asoko-ni ikitai; that -tai is the desiderative.
- Dubitative: this does exist in a few more languages; the only Indo-European language that has it is Bulgarian. It is thought that it got it from Turkish because in the Altaic languages, this does exist. What is really cool is that there are a number of Native American languages, mostly in northern North America, like Ojibwe, is one of them. We see the dubitative as implying doubt; in Ojibwe here's an example: 'he is in Baawitigon today' (I probably butchered that I apologize), and then instead of ayaa, which is 'to be' it's ayaadog, meaning, 'I guess he is in Baawitigong today' or 'he might be in Baawitigong today'.

That's the subjunctive and its counterparts, but there are other irrealis; imperative, hypothetical and inferential are the three main categories, and then they have subcategories off of that.

- **Imperative**: it's a direct command. Even in English, there's something that's a little different about a direct command.
  - The **jussive**, think justice, and frequently, this is a judge or some kind of ranking official imparting a sentence or something along those lines. When we talked about performative verbs, the jussive can come into play in certain languages. This

concept of you're imploring, like 'let him live', 'let her go', something along those lines. It does exist in quite a few languages.

- Within the **hypotheticals**, we're talking about things that are contrary to fact: 'if I had a million dollars, I would buy a house', that kind of hypothetical.
  - There's also the **potential**, which is the **conditional** in most Indo-European languages. Those are heavily tied together, and in fact most languages, if you have a conditional, you also have something hypothetical as well. The potential is also related to this.
- **Inferential**: this is a really interesting one, you see this in the Balkans and you see this in Turkish, but you don't see it too much beyond that. It's this concept of you did not witness something directly—that would be declarative—but you heard about it, you inferred information, you got it third party. That's a really interesting way to say that something happened from what you hear, not what you observed directly.

The big takeaway with respect to deixis is that it is highly contextual; that's why it's part of pragmatics. It is highly inflectional, that we use this to inflect all sorts of meaning in our verbs. Equally important, deixis is one of those things that as we learn a new language, it is incredibly difficult to learn. It is a nuance that is not something that is easy to pick up, especially if it is a type of deixis that we are not used to. Native English speakers, when you go to learn a language that has all sorts of inflection, that inflection is deixis. It explains why sometimes it's really difficult to learn what those little pieces mean. But more on that later.

How Many Verb Tense Are There in English?

Watch this TedEd video in which Anna Ananichuk explains a bit more about time deixis with respect to English verb forms. (The video is captioned.)



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6.13: Exercise your linguistics skills

6.13.1: Semantics

Exercise 1. *Basic; 7.5.* Consider the category *vehicle*. List ten words that denote members of the *vehicle* category. Which ones are more prototypical, and which ones are less prototypical members of the category? Discuss what properties make something a more prototypical vehicle or a less prototypical vehicle.

Exercise 2. *Intermediate; 7.10.* Imagine that someone said to you during a debate that *drip* to mean 'style' isn't a "real word" because that kind of use isn't found in the Oxford English Dictionary. How might you respond to them?

Exercise 3. *Advanced; 7.4-7.9, 7.11*. Discuss the pros and cons of each way of thinking about linguistic meaning.

1. Sense vs. denotation
2. "Lexical meaning as definitions in the lexicon" vs. "lexical meaning as concepts"

6.13.2: Pragmatics

Exercise 1. *Basic; 8.5-8.7.* What's the difference between violating a maxim and flouting a maxim? Use the Maxim of Politeness (a fifth maxim that has been proposed by some linguists; see Section 8.7) to give an example of each. You can use your first language in formulating this answer. Just imagine that the Maxim of Politeness was actually a maxim in your language community; what would violating and flouting this maxim look like in that case?

Exercise 2. *Intermediate; 8.3-8.7.* Recall the "lawyer dog" case (State of La. v. Demesme) from 8.3. Why do you think it feels unreasonable for many people that the police thought Demesme meant "Give me a canine lawyer"? Relate your answer to the Cooperative Principle.

Exercise 3. *Advanced; 8.5-8.8.* Grice mentions in his paper *Logic and Conversation* that it's possible that the conversational maxims have different rankings in terms of importance. This would mean that following one of the maxims may be considered "more critical" than following some of the other maxims. Grice himself suggested that Quality could be the most important maxim in a conversation, suggesting that "other maxims come into operation only on the assumption that this maxim of Quality is satisfied" (Grice 1975, p.46). What are some reasons why Quality might be a privileged maxim like this? Imagine a discourse with a well-known liar; if Quality is not observed, what problems does this pose for the other maxims?

Exercise 4. *Advanced; 8.9-8.14.* Recall from 8.13 that the illocutionary meaning of a yes-no question can be thought of as putting a question at the top of the Question Under Discussion (QUD) stack, and that this question is represented as a disjunction (= connected with "or") of possible answers to the question. So if you ask *Is that a bean casserole*? The question at the top of the QUD stack is represented as "Is **That is a bean casserole** true, OR is **That is not a bean casserole** true?", because a yes/no question only has two options for the answer. Now, consider a WH-question like *Who brought the bean casserole?* . For the purposes of this question, let's assume that this question was asked in the context of a potluck party, which was attended by Aya, Bo, Cai, and Deo. Similar to yes/no questions, linguists have analyzed the illocutionary meaning of WH-questions like *Who brought the bean casserole?* as putting a question at the top of the QUD stack, where the question is represented in terms of the possible answers to the question. With this in mind, what might this question at the top of the QUD stack look like, if represented as a disjunction of possible answers?

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CHAPTER OVERVIEW

7: Sociolinguistics- Language Variation and Change

Learning Objectives

When you've completed this chapter, you'll be able to

- Explain the difference between cross-linguistic and sociolinguistic variation.
- Define important concepts in sociolinguistics.
- Recognize linguistic variables in language data.
- Discuss some of the major findings of variationist sociolinguistics.
- Interpret basic patterns of quantitative sociolinguistic data from graphs.

This chapter explores sociolinguistic variation and how it has been analyzed. We'll be introduced to the concept of the linguistic variation, we'll see how to analyze data from a variationist sociolinguistic perspective, and we'll survey some of the major social factors that correlate with sociolinguistic variation.

7.1: What is variationist sociolinguistics?
7.2: Language varies
7.3: Language changes
7.4: Sociolinguistic correlations - Place
7.5: Appalachian American English (AE)
7.6: African American English (AAE)
7.7: Sociolinguistic correlations - Social status
7.8: Gender and Class Dialects
7.9: Prestige and Politics
7.10: Social Norms
7.11: Languages in Contact
7.12: Exercise Your Linguistics Skills

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7.1: What is variationist sociolinguistics?

Why do some Canadian English speakers say *eh* at the end of their sentences while others opt for right? In what contexts is one person more likely to say *eh* or more likely to say *right*? What kinds of information about someone can we glean if we hear them say *eh*? Or *right*? Or even *innit*? Have these patterns changed over time? These are variationist sociolinguistic questions. **Variationist sociolinguistics** is a methodological and analytical approach to understanding the relationship between language and its context of use. We call it sociolinguistics because both social and linguistic (e.g., grammatical, structural, articulatory) factors, are equally important; sociolinguistics, unlike many formal approaches to language, does not focus on an idealized grammar (sometimes called 'competence') but rather analyzes language in use (sometimes called 'performance'). We call it *variationist* sociolinguistics because it's concerned with the *variable* nature of language in use. In this chapter we will see how variationist sociolinguistics has analyzed the interplay between language variation, the development of linguistic systems, and the social meaning of language. In Chapter 2, sociolinguistic issues are explored more broadly.

To start things off, watch this video, a clip from Trevor Noah's "African American" comedy special. He is talking about his experiences in learning about life in America.





7.1.0.1: Video Script

You have learned about phonetics, phonology, morphology, syntax, semantics, and pragmatics; those are the core areas with respect to linguistics. From here on in the textbook and in the course, we will take those tools and apply them to a variety of situations. For the remainder of the course and the remainder of the book, we're going to look at how language varies across social dimensions, across historical dimensions, and across psychological dimensions. First up is sociolinguistics, and then we'll talk historical linguistics, and then we'll talk, psychological or cognitive linguistics or neuro-linguistics. Those will have three separate sections; actually, the psychological aspect is split into two because we have to talk about how we acquire language and how we process language, and those are separate issues. To start off, let's talk sociolinguistics and let's set the stage a bit.

Up to now you've heard me use a couple of terms. Let's dig into that a little bit more. One has to do with a **dialect**, and the other way we think it as a **speech community**. When we talk about a speech community, it's exactly what you think it is: a community of people who speak the same way. They have the same dialect, if you will. It may be a mainstream dialect, or it could be something totally different; it depends. Later on, we're also going to talk about diglossia, which is what happens when you have two or more dialects that you use on a regular basis. That usually refers to somebody who is a part of more than one speech community, and that's what we're referring to here.

If you recall from the first chapter, we said that the difference between a language and a dialect was that intelligibility was the key. Not intelligence, but intelligibility, meaning if two people from different speech communities are able to generally understand one another, they're considered to be mutually intelligent dialects. However, if you have two people from two different speech communities, and there is a real difficulty for one to understand the other linguistically—not culturally, not politically, nothing else, just linguistically—then that means that they speak two languages.

In thinking about this, let's talk about some generalized and incorrect views about dialects. When I say incorrect or wrong, I mean from a linguistic standpoint.

- Many people think that an accent is a dialect and that's actually incorrect. Even though the next subsection for this page is from Catherine Anderson and she talks about an accent; watch what she says, I'll let you read it later.
- A lot of people think that some people speak a language and others speak a dialect of that language. That is quite incorrect.
- The third generalization that we wish to debunk is that some people think that dialects are impoverished variants of a language, that they're just nonstandard and perhaps not correct.
- The fourth big generalization that is incorrect is that people might think that languages are defined by political boundaries, as in geopolitical boundaries.

Every single one of those statements and generalizations is 1,000% incorrect, at least from a linguistic standpoint. They are all prescriptive in nature and remember in linguistics we do not want to be prescriptive. We want to describe; we want to describe what people actually do when they communicate with one another, both within their group and with others.

Let's take a modern linguistic twist on all of this:

- An accent is not the same thing as a dialect because ‘accent’ is really not a term that we use in linguistics. Frequently, when people talk about accents, they're really saying something like the sounds maybe a couple of words are different, which is absolutely not the case. When we talk about different dialects, of course there may be some differences in pronunciation and phonemes or allophones, and there frequently are different terms used for the same thing. But there's also frequently morphological and syntactic differences, pragmatic differences, and so many other things. Later on in this chapter, we will see examples of different dialects so you can understand what we're talking about.
- The fact that one person speaks a language but a different person might be a dialect is incorrect. Everyone speaks at least one dialect of a language and, in many cases, you might actually speak more than one dialect.
- We cannot determine whether certain dialects are superior to others because that's not what a linguist does. A linguist describes what they see; we observe and we document, but we never give a value of higher or lower to anyone style of speech. Sometimes we know that a certain dialect might be more prestigious than others, but that is an objective point of view.
- Languages are defined by cultural or linguistic boundaries, but not geopolitical boundaries. Sometimes they happen to coincide, but what we care about is what speech communities do and so those frequently line up with linguistic and frequently cultural boundaries. To give you an example, Norwegian and Swedish, and technically Danish, are three dialects of the same language. Even though those are three different nationalities, linguistically they're actually the same—although Swedish and Norwegian have a lot more in common and Danish is a little bit different, it's a definite distinct dialect. Another example is English; think

about the number of countries where English is the primary and official language—it is not just England, and it's not even just the United Kingdom. It is a slew of countries. Spanish would be another example, and Mandarin would be another example.

When we talk about languages, we're talking about speech communities who use the language; that is what we're talking about.

One more really important thing to bring up about dialects versus languages. **Prestige** is an issue; it is going to be a factor and we'll talk more about this in its own chapter in this in this larger topic. There are always going to be certain dialects that will carry more prestige. Think about if you're in England or the United Kingdom, it's Queen's English that is going to be going to be the most prestigious; Received Pronunciation is often what it's called or RP. Frequently, and certainly since the 20th century, we can talk about the media, and especially national media and international media when we talk about the style of speech. Then it would be considered a **mainstream dialect**. In the past that was often called the **standard dialect**; we have switched topics nomenclature, and we now call those mainstream dialects to reflect the fact that they are mainstream and used by a wide variety of speech groups, at least as a more prestigious dialect. It is also important to understand that prestige on a dialect is usually something that has carried over a number of generations, it can be modified.

It should be noted that just because you speak that mainstream or prestige dialect, it does not mean you necessarily hold more power than anyone else; it just means that you speak that dialect. It also means that if you speak a mainstream dialect, you are often perceived as having ‘no accent’ and that your manner of speech is the one that most everybody understands.

To repeat a point made earlier, dialects are mutually intelligent variance of a language. They can and do differentiate a person who's born and raised in California from somebody who's born and raised in Toronto, Canada; New York; London; Edinburgh, Scotland; Dublin, Ireland; Johannesburg, South Africa; Sydney Australia; Auckland New Zealand; you get the point. For each of these are all different dialects, there are systematic ways that they are similar, and yet systematic ways that they are also different. To repeat what we said in the first chapter, it is really crucial to understand that when we talk about these dialects, we take the geopolitical out of it. That means that there is no one ‘Chinese language’; there are about 210-ish Chinese languages, and not all of them are part of the Sino-Tibetan family; most of them, but not all of them. The fact that Serbian and Croatian are technically to dialects of the same language, Serbo-Croatian, but that their closeness or distinctness can vary between generations and that entirely depends on the relations between those two cultures. As we said, Norwegian and Swedish and, technically, Danish are all dialects of the same language; it is now considered Northern Germanic or Scandinavian. There are different dialects of it.

When you can't understand when somebody is talking to you—not because you choose not to, but because you actually cannot understand the words coming out of their mouths—that's when you have a different language scenario. If it's close, it's probably a dialect.

How exactly do dialects arise? The simple answer is there's some kind of **isolation** to speech communities. There was originally one, and there somehow became a break or situation that created isolation; that is how you get to dialects. It doesn’t happen instantaneously, rather it usually takes several generations. We can have a variety of ways to separate or isolate as a given speech community.

Certainly, geographical dialects are the first thing that most people think about with respect to dialectology. We're going to take a look at Appalachian English (AE) in a different section of this chapter, because I want to give proper respect to it. It's not just ‘hillbilly English’; it's not just some 'poor English', ‘mountain English’, whatever you want to call it. In linguistic terms, it's a very rich dialect and actually gives us a lot of insight as to how English came to be the way it is now.

We also have social dialects, gender dialects, and class-based dialects. We'll look at a few will look at African American English Vernacular (AAE). Certainly, the isolation there has to do with the institution of slavery and the segregation of anybody who was in part or in whole of African descent. We also will briefly look at a couple of different social dialects that have to do with gender and sexuality. We'll look a little bit into class-based dialects, and then finally we'll talk about scientific or jargon isolation. If you think about it, that makes sense. If you work in a particular industry, you tend to have a certain manner of speaking with your colleagues and with others in your industry—that's also a type of isolation and that can create a dialect.

As we go through this concept of sociolinguistics, remember what is a society is—what we're at the heart of and how they use language to differentiate themselves.

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7.2: Language varies

There is substantial variation in language: both within and across language varieties. We'll see some examples of both of these kinds of variation and I'll introduce one of the central concepts used in variationist sociolinguistics: the linguistic variable.

7.2.0.1: All languages exhibit variation

Many linguistic approaches to the study of language are concerned with language variation. As you've read about in other chapters, theories about how language works rest on evidence that comes about by contrasting the way something is said or signed in two or more different languages, dialects, or varieties.

Language, dialect, variety. Colloquially, the term **dialect** is used to refer to ways of speaking that people perceive to be substandard, low status, associated with working class, non-prestigious, geographically-isolated, or some derivation or aberration from a 'standard' version of the language. The linguistic fact though is that everyone has a dialect. Rather than think about languages and dialects in a hierarchical way, linguists think about dialects as subdivisions of a language. Sometimes, linguists might talk about the "standard dialect" but it's important to emphasize that no dialect, not even what we might call the "standard dialect" is objectively (linguistically) superior to any other dialect of the language. Another term, '**variety**' doesn't have the same negative connotations that 'dialect' has, and so we'll usually use that to refer to subdivisions of a language in this chapter.

For example, consider the Icelandic and Danish sentences in (1) and (2). Both sentence express the same meaning.

(1)	Ég	(*ekki)	spurði	ekki	[af hverju	Péter	(*ekki)	hafði	ekki	lesið	hana]
	I	(*NEG)	asked	NEG	[why	Peter	(*NEG)	had	NEG	read	it]
	'I didn't ask [why Peter hadn't read it]' (Icelandic)										

(2)	Jeg	(*ikke)	spurgte	ikke	[hvorfor	Peter	ikke	havde	(*ikke)	læst	den]
	I	(*NEG)	asked	NEG	[why	Peter	NEG	had	(*NEG)	read	it]
	'I didn't ask [why Peter hadn't read it]' (Danish)										

Obviously some of the lexical items and morphemes differ between (1) and (2) – as expected given that they come from two different languages. At the same time, you can see similarities between them – also as expected since these two languages are quite closely related (they are both North Germanic languages). One syntactic difference between the two examples is the order of the negative marker and the main verb in the embedded clause (*hafði ekki* 'have not' in Icelandic and *ikke havde* 'not have' in Danish). If we were looking at this data like a syntactician, we might look at (1) and (2) and use the two different word orders (i.e., VERB-NEG vs. NEG-VERB) as evidence in an analysis of verb raising. We'll call this **cross-linguistic variation**: different ways of doing the same thing in different languages or varieties.

But within a single language or variety – or even a single person – the specific realization of abstract structures (like word order) can vary. Consider the rhyming couplet in (3) from Shakespeare's *Romeo and Juliet* (386, 670).

(3)	Juliet:	Saints do not move, though grant for prayers sake.
	Romeo:	Then move not while my prayers effect I take.

Example (3) shows the same word order variation that we see in (1) and (2) but here, the two different ways of doing the same thing appear within the same language! And while technically spoken by two different characters, the two sentences were written by the same person! This isn't that surprising though because Early Modern English allowed for both options: an Icelandic-like/Romeo-like VERB-NEG order and a Danish-like/Juliet-like NEG-VERB order (together with 'do-support', see Chapter 6 and Chapter 14). Within this one rhyming couplet, we see **sociolinguistic variation**: two or more ways of doing the same thing within a language, variety, and individual.

7.2.0.1: What's a linguistic variable?

When we approach language from a variationist sociolingistic perspective, we call the choices between a set of options that mean the same thing a **linguistic variable**. The individual options that people choose between in the course of language use, we call **variants**. Linguistic variables exist in all languages and varieties, in all modalities, and at all domains of language from the phonetic to the pragmatic. A linguistic variable is an abstract set; there's nothing out there in the world that we can point to and be like "hey, that's a linguistic variable!". We only ever see or hear the abstract variable as one of its concrete variants. Let's have a look at some examples of linguistic variables from different languages and different domains of language.

In Auslan, NZSL, and ASL, some signs that are prescriptively located at the forehead, like KNOW, THINK, and NAME, have variable location: at the forehead or lowered to near the cheek (Bayley, Schembri, and Lucas 2015). You can see these two variants in Auslan/NZSL in Figure 12.1 and watch a video at this link in ASL.

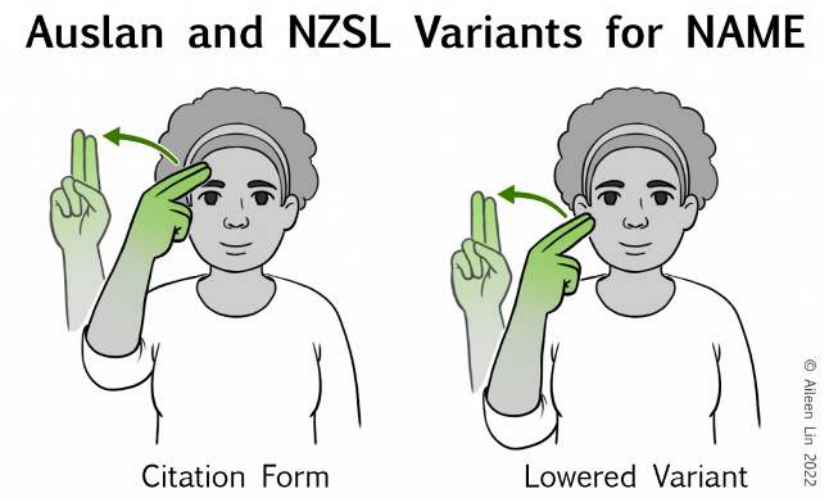


Figure 10.1. Two Variants of NAME in Auslan/NZSL (based on Bayley, Schembri, and Lucas 2015).

This is an example of phonetic-phonological variation with variants differing with respect to an articulatory parameter (in this case, location). Another kind of phonetic-phonological variable involves variation between the presence and absence of a sound segment. In Beijing Mandarin, open syllables (i.e., syllables without a coda) can variably be rhotacized (i.e., produced with a rhotic coda). For example the word meaning 'bag' can be said with the open syllable variant (包 *bao* [paw]) or the rhotic coda variant (包儿 *baor* [pawɾ]) (Zhang 2008). We also find linguistic variables in the morphophonological domain of languages. Standardized English contains a categorical alternation with the indefinite article between *an* and *a* with *an* occurring prior to a vowel and *a* occurring elsewhere (cf. *an apple* vs. *a pineapple*). However, in contemporary London English, especially among immigrant youth of colour, the pre-vocalic context exhibits variation between *an* and *a*; both *an apple* [ənæpl] and *a apple* [əʔæpl] are possible (Gabrielatos, Torgersen, Hoffmann, and Fox 2010).

We can also find morphosyntactic variables in languages. In North Baffin Inuktitut, transitive constructions can variably occur with ergative alignment or antipassive alignment. These alignment types differ in terms of the morphological case that arguments have and the kind of agreement that appears on verbs. With ergative alignment, as in (4a), the object is marked with absolutive case (which appears as a null morpheme *-ø*) and the verb agrees with both subject and object (which appears as the morpheme *-jara*). With antipassive alignment, as in (4b), the object is marked with an oblique case (it occurs with the morpheme *-mit*) and the verb agrees only with the subject (which appears as the morpheme *-vunga*) (Carrier 2020).

(4a)	surusiq-ø	taku-jara
	child-ABS	see-PART.Sub1SG.Obj3SG
	'I see a child' (North Baffin Inuktitut)	

(4b)	naarraajim-mit	taku-vunga
	frog-MOD.SG	see-IND.Sub1SG
	'I see a frog' (North Baffin Inuktitut)'	

Languages can also have linguistic variables with variants that differ in multiple ways, across different domains. For example, in Tagalog, the meaning of adjectives can be intensified with several variants that differ lexically, morphologically, and morphosyntactically from each other variant, as in (5) (Umbal 2019).

(5a)	**sobra**-ng	
	INT-LINKER	
	'My ears are **very** painful' (Tagalog)'	

(5b)	**bagay**	**na**	**bagay**	sa	iyo
	suitable	**NA**	**suitable**	DAT	2p.sg
	'It is **very** suitable for you' (Tagalog)				

(5c)	**napaka**-ganda	ng	*transit*	natin	dito
	INT-beautiful	GEN	transit	1p.pl.pos	here
	'Our transit here is **very** beautiful' (Tagalog)				

(5d)	ang	

	NOM	opportunity
	‘The opportunity is **very** small’ (lit. “how small of an opportunity”)	

One variant, in (5a), uses a free morpheme *sobra* (similar to English *very*, *really* etc.). Reduplication of the adjective in (5b) and affixation of the morpheme *napaka* (5c) are two morphosyntactic variants. Finally, the exclamative construction in (5d) is a fourth, syntactic, variant.

These are just a small handful of examples of linguistic variables in different languages and in different domains of language. All languages have variation like this in all the different parts of a language’s grammar.

7.2.0.1: What *isn’t* a linguistic variable?

Whatever domain of language a linguistic variable exists in, the variants ‘do the same thing’ in some way. This should give you a good idea about what a linguistic variable is, but before moving on, it’s important to point out a couple of linguistic concepts that are similar to but are not linguistic variables: 1) synonyms and 2) categorical alternations.

Synonyms are a concept that is often confused with linguistic variables – and for good reason: some synonyms can be linguistic variables, but not all of them! Synonyms are pairs or sets of words that share the same or similar meaning like *car, automobile*, *ride*, *horseless carriage*, *jalopy, hooptie* and *paddock basher*, which all denote those four-wheeled, motor-powered vehicles that many people drive. These options certainly seem like two or more ways of doing the same thing but critically, different synonyms are generally not interchangeable in the same way that variants of linguistic variables are. As we saw in Chapter 7, languages have only very few **absolute synonyms**. The different options may have different connotations or social meanings that make one option much more suitable than another option. For example, *jalopy*, *hooptie*, and *paddock basher* connote that the vehicle is old or run-down; ride might be used in informal contexts and automobile in formal contexts. Some options may also only appear in particular regional or social varieties. For example, *jalopy* is an older North American English term (you’ll find it used several times in Jack Kerouac’s *On The Road*, written in the late 1940s), *hooptie* is typically associated with Black English (having been the topic of the 1989 hip-hop song, ‘My Hooptie’ by Sir Mix-a-Lot), and *paddock basher* is a term mostly only found in Australia, referring to a car only suitable to drive around on a farmer’s field (which, non-coincidentally, is referred to as *paddock* there). Some of these options have become obsolete: you might only hear *horseless carriage* today if you’re watching something like *Downton Abbey*. Because of the differing connotations or limited regional and social usages, synonyms like these are not generally interchangeable in the same way as linguistic variables. However, sometimes they can be! Critically, if the choice between options systematically co-varies with social and/or linguistic constraints, synonyms can be analyzed as linguistic variables. For example, in English adjectives of positive evaluation like *cool*, *awesome*, *sick*, *neat*, and *great* have been found to correlate with linguistic and social constraints (Tagliamonte and Pabst 2020).

As you’ve already seen in previous chapters, languages are full of **categorical alternations** (e.g., the phonological rules discussed in Chapter 4). Categorical alternations are a second concept that can be easily confused with linguistic variables. Now it’s true: categorical alternations represent variation within a language and the options are indeed two or more ways of doing the same thing. However, they depend strictly on the linguistic context that they appear in. In other words, the choice between the options is **deterministic**. A linguistic rule like Canadian Raising (the nucleus of the /aɪ/ and /aʊ/ diphthongs is raised to [ʌ] before voiceless consonants) in Canadian English is an example of a categorical alternation: if we know what phoneme comes after the vowel then we know if the nucleus will be [a] or [ʌ]… it’s predictable! This differs from linguistic variables because a variable can be realized as its different variants *even within identical linguistic contexts*!

That said, even though linguistic variables are not deterministic they also aren’t random! Instead, linguistic variables are **probabilistic** in nature. To use the wording of one of the foundational studies in variationist sociolinguistics, there is *order* amid the heterogeneity (Weinreich, Labov, and Herzog 1968: 100). The choice between different variants of a linguistic variable is subject to probability given many different possible **conditioning factors** (also called **constraints**). Like with categorical alternations, these conditioning factors can include aspects of the linguistic context. So think about (6).

(6) I’m *fishin’* this *morning*.

You’ve probably noticed that the end words like *fishing* and *morning* that end with *-ing* sometimes get pronounced as [ɪn] instead of [ɪŋ]. That’s another linguistic variable! Like all linguistic variables though, the choice between [ɪn] and [ɪŋ] isn’t random. In most varieties of English, the [ɪn] variant is more likely to occur in verbs (like *fishin’*) than in nouns (like *morning*). That’s a conditioning factor for this variable! However, where the *socio-* comes into variationist sociolinguistics – and why the analysis of linguistic variables is so important to the field – is that these conditioning factors also include social factors as well. In other words, whether someone uses [ɪn] or [ɪŋ] in a particular moment depends on social facts about the speaker/signer, their **interlocutors** (the other people in the conversation), and other aspects of the sociocultural context of the interaction. By counting and quantifying variants of a linguistic variable, social facts, in addition to linguistic facts, can be uncovered.

Sources of linguistic constraint

You might be wondering… where do these linguistic constraints on variation come from? Why is [ɪn] more likely to occur in a verb than in a noun? These constraints have many different sources for different variables but some are rooted in historical structural patterns found in earlier versions of the language. Believe it or not, there’s good evidence that the reason English speakers are more likely to use [ɪn] in a verb than in a noun today goes all the way back to a pattern in Old English, spoken between the 5th and 11th centuries CE! The modern *-ing* morpheme came about through the coalescence (or merger) of two different grammatical morphemes found in Old English: *-ende*, which marked the present participle (*I am teaching today* > Old English *tǣċende*) and *-ung* the verbal-noun marker (*Teaching is fun* > Old English *tǣċung*). In the Middle English period, these two morphemes started to merge together as *-ing* but the alveolar nasal found in the Old English present participle marker stuck around as a variant! As the morphemes merged, people lost track of the older categorical ‘alveolar-in-verbs and velar-in-nouns’ pattern and both variants were used with verbs and nouns. However, traces of the old pattern are still apparent in the form of a conditioning factor!

There are many different types of linguistic variation. Some variation distinguishes varieties from each other (cross-linguistic variation), other variation exists within a single variety or person (sociolinguistic variation). Variation within a single variety between variants of what we call linguistic variables is subject to probability given social and linguistic conditioning factors that favour or disfavour certain options.

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7.3: Language changes

Language is constantly changing. Speakers of English today do not speak like the authors of *Beowulf* (c. 700 CE) or *The Canterbury Tales* (c. 1400 CE) or *Hamlet* (c. 1600 CE) just in the same way that speakers of Japanese today do not speak like the authors of the *Kojiki* (c. 700 CE) or the *Genji Monogatari* (c. 1000 CE). In some ways, English and Japanese speakers today do not even speak the same way that people spoke English or Japanese a century ago or even just a few decades ago. English, Japanese, and really all languages have changed and continue to evolve.

Language change is important for variationist sociolinguistics because language variation will always be present during language change. It's not like one day in the early sixteenth century all English speakers woke up and went "hey, you know what? I think I'll start putting my negative marker BEFORE my verbs like they do in Danish embedded clauses instead of after like they do in Icelandic embedded clauses!" Rather, the linguistic change from *move not* to *do not move* happened gradually. Over time people began using the new *do not VERB* option more and more and using the old *VERB not* option less and less. During this period both options were possible – the two options were variants of a linguistic variable. Sometimes we have **stable variation** where two or more variants are present but one isn't replacing the other. So while not all examples of linguistic variation involve language change in progress, all examples of language change in progress involve a period of sociolinguistic variation. Studying changes in progress is sociolinguistically informative because changes in progress guarantee the presence of linguistic variables. But linguistic change is interesting in its own right because language change is also intimately linked with social factors and with social change.

Analyzing language change. Perhaps the most obvious way to analyze a linguistic change is to consider language use at one period of time and compare it to language use at a different period of time. If we notice differences in the frequency of use of variants of a linguistic variable between the earlier data and the more recent data, this is a good indication that a change has taken place or is taking place. This approach, examining data that represent the same community at two different times, is called **real time** analysis. This approach is great when we have older data available to us. But what about when we don't? Good news: There's still a rigorous way to analyze change in data that comes from a single time period! We can compare older and younger people! This is called **apparent time** analysis and it rests on the observation that individuals' grammars stabilize in late adolescence. This means that (typically) we use language in basically the same way we did when we were about 18. We can certainly learn new words after this age, and we might adjust some aspects of our grammar in the direction of the community we live in, but by and large, the patterning of linguistic variables we had at 18 will stick with us through our lifespan. By considering the pattern of linguistic variables in the language use of people of different ages, we can make inferences about linguistic change.

In addition to the distinction between stable variation and language change, sociolinguists also distinguish two kinds of language change. **Changes from above** are linguistic changes that take place above the level of social awareness (i.e., language users are aware of them). A change from above typically takes the form of the adoption of a prestigious or standardized variant from outside of the community. A classic example of a change from above is the importation of '*r*-fulness' to New York City English (Becker 2014). From the 18th century into the early 20th century, NYC English was generally *r*-less. Words like *cart* and *star* would have standardly been pronounced something like [kʰɒət] and [stɒə]. However, by the middle of the 20th century, the norms of General American English, including its *r*-fullness, began to influence New Yorkers' speech. The new, prestigious *r*-full variant (like [kʰɒɹt] and [stɒɹ]) began to compete with the older (and increasingly stigmatized) *r*-less variant, slowly spreading and advancing through the community. On the other hand, **changes from below** are changes that represent the operation of articulatory or grammatical pressures within a linguistic system that people are generally not aware of. For example, in Canadian English the vowel in the word *goose*, which would be transcribed as the high, back, rounded vowel [u] in a dictionary, has been gradually moving toward the front of the vowel space to something more like [ʉ] or even [y]. Chances are, any given speaker of Canadian English would be unaware that their *goose* vowel is more front than older Canadians' *goose* vowel!

Just as all languages exhibit variation, all languages also change over time. Because change involves variation, variationist sociolinguists often examine changes in progress in addition to stable variation.

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10.4: Language conveys more than semantic meaning

All kinds of information about people are revealed through the ways they express themselves linguistically. Much of that information goes beyond the semantic and even pragmatic meaning of the sentences they sign/speak. All kinds of social meanings are revealed through language! Some of this social meaning relates to how language functions in relation to social structures and power. We've talked a bit about this in Chapter 2. For example, different **forms of address** – that is, labels we use to refer to our interlocutor – in many different languages reflect the social ranks of those involved in the interaction or the social circumstances of the interlocutor. For example, in Canadian English, referring to someone as *sir* or *buddy* reveals several sociological facts including how the speaker perceives the addressee's gender, how the speaker perceives the power dynamic between themself and the addressee, and how the speaker perceives the formality of the interaction. In fact, language doesn't just reflect these things but also works to enact this kind of sociocultural significance. Imagine you're at a café and you witness a dispute between a male-presenting customer and a barista. At first, the barista refers to the customer as *sir* and says "*sir*, I know you're upset but generally we don't add steamed milk to iced coffees." But, after a few minutes of being yelled at and insulted by the unruly customer, the barista exclaims "listen *buddy*, it's time for you to leave!". This change in form of address, from *sir* to *buddy*, signals a change to the interactional context. The barista signals that they will no longer tolerate being treated poorly and along with that they abandon the general expectation of politeness and formality that comes along with the 'customer is always right' mandate of most service work.

Beyond forms of address, many languages encode information about social structure into pronominal reference. Many Indo-European languages make a distinction between familial/informal/lower rank and formal/polite/higher rank second person, singular pronouns. This is often referred to as a T/V distinction on the model of French's distinction between familial *tu* and formal *vous*. Romance languages like French, Slavic languages like Russian, and Germanic languages like German (and even Old and Middle English!) mark this distinction. If you do not know a language that marks this kind of distinction, its social significance may not seem particularly… significant! But for people who do use languages with such distinctions, the real life consequences of language as it relates to social power is clear. Consider this quote from a French woman of Algerian immigrant roots, speaking about her experience growing up with racist policing in France:

> *"I encountered racism with the police every time I went out at night. They controlled our identity with tommy guns, speaking with lots of racial insults, and using tu instead of vous. I understand now why young people hate the police, because those controls are very degrading." (D. Tazdait, quoted in Olson 2002: 177)*

Ms. Tazdait places the use of *tu* rather than *vous* on the same level as the symbolic violence of racial insults and the physical violence of being threatened at gunpoint.

Language can also tell us something about the cultural values of its users. For example, both what we discuss and with who is culturally-determined. What counts as a **taboo subject** (i.e., an inappropriate topic of discussion) differs by culture and context. In Euro-American culture, it is often considered taboo to talk about sexuality and death around children for example. Connected with this is how we interact: conversational styles (including the amount of interactional overlap, tolerance for interruptions, eye-contact expectations, etc.) are also culturally variable. It's critical for linguists and language-pathologists to be aware of the culturally-specific nature of interactional norms because too often English and Euro-American norms are interpreted as universals and thus, differences from those norms can be misinterpreted as deficiencies. For example, in their exploratory study of First Nations English, language-pathologists Jessica Ball and B. May Bernhardt (2008) note that where silence from a child is often interpreted as an indication of a lack of knowledge, rudeness, or shyness in Euro-American interactional norms, for many First Nations children, their silence is a sign of respect to elders. As one of Ball and Bernhardt's participants says:

> *"I think in general, if I'm talking to someone who's older than I am, if they come to visit me or I go to visit them, I tend to listen a lot. I value what they have to share with me, I listen to their stories." (Ball and Bernhardt 2008: 581)*

A teacher or language-pathologist who trains a child in accordance with Euro-American norms might unwittingly be harming the child's connection with their family's culture.

Contextual information is another kind of social meaning that is revealed through language and linguistic variation. **Contextual style** is intimately connected with the formality of the interactional context. This formality relates to 1) the familiarity of two

interlocutors with one another, 2) the social similarity/difference and power relations between them, and 3) the context of the interaction. Conversations between friends who share common experiences and identities are more likely to have a casual style whereas conversations between strangers of unequal social rank and who share little common ground are more likely to be formal. This varies on a continuum. But what do we mean by formal and casual language? There are several aspects of conversation that are linked with formality including the frequency of use of different variants of linguistic variables. Variants that are standardized tend to be more frequent in formal contexts and variants that are not standardized tend to be more frequent in casual contexts.

A 1958 study by the anthropologist John Fischer was one of the first demonstrations of this correlation. His analysis, which was part of a larger study of child-rearing in semi-rural New England (co-investigated with Ann Fischer), examined the frequency of use of the two variants of the *-ing* variable in English (standardized [ɪŋ] and non-standardized [ɪn]) among 24 children under age 10. Fischer recorded some of these children speaking in three contexts: during a formal psychological test, during a semi-formal, structured interview, and during an informal, unstructured interview. Fischer reports on the use of the variants of *-ing* by one boy in these three contexts. In the most formal context, the psychological test, the boy used the standardized variant [ɪŋ] 97% of the time, in the formal interview, his use of [ɪŋ] dropped to 49%, and in the most casual context, the informal interview, he used [ɪŋ] only 37% of the time. Fischer even speculates that among his friends, the boy's rate of the standard variant would be even lower. This adjustment to the frequency of use of variants in different contexts is called **style shifting**.

Since Fischer's study, style shifting has been found across different social cohorts, different places, and different languages. Contextual style, as a sociolinguistic factor, was further refined and theorized by William Labov in his 1966 book *The social stratification of English in New York City*, a foundational text for variationist sociolinguistics. Labov's idea was that the formal-casual continuum correlates with the standardized-non-standardized continuum because both of these more directly correlate with the amount of self-monitoring that takes place while speaking/signing. In more formal situations, we pay more attention to the details of the language we use and when we are paying more attention to the language we use, we are more likely to avoid features of our language that are stigmatized. In other words, we're more likely to speak/sign the way we have been socialized to think we *should* be speaking/signing when we are paying attention to our language. In casual contexts, we pay less attention and are less likely to conform to the standard.

Different styles. The understanding of style described by Labov is called the **attention-paid-to-speech model** but there are other motivations for style shifting too. We might style shift in response to our interlocutor (more formal with a stranger and more casual with friend) or even in response to people who might be eavesdropping on our conversation. This is called the **audience design model**. We might also shift to a more or less casual style or we may use a higher or lower frequency of variants of a variable associated with different social factors to achieve certain interactional goals or to express and highlight different aspects of our identity. This is called the **speaker design model**.

Finally, sociodemographic information is also revealed in language use and linguistic variation. By sociodemographic information, we mean the traits that we share with the social cohorts that we belong to. The language we use, just like the clothes we wear, the activities to do, the places we go, and the things we own, marks our social identity. The use and frequency of use of linguistic variables correlates with a huge array of social factors including age, social class/status, race, ethnicity, gender, education, place, caste, sexuality, social network, and local communities of practice, among other aspects of our identities, both macrosociological and microsociological. Later in this chapter, we'll look at four of these factors in detail: place, social status, gender, and ethnicity.

Our language use and variation within our languages reveals aspects of the social structures and sociocultural norms that those languages are embedded within as well as sociodemographic information about the interlocutors and facts about the interactional context.

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7.4: Sociolinguistic correlations - Place

If you sit back and think about how different people speak or sign the same language in different ways, the first social distinction that comes to mind just might be region or place. As dialectologists have been aware of for a long time, people from different places tend to have different regional varieties. Egyptian Arabic and Syrian Arabic are distinct; Continental French, Quebec French and Moroccan French are distinct; Spanish in Mexico, in Puerto Rico, and in Spain are all distinct. Within one nation there are also dialect differences, Acadian French (a variety spoken in the Maritimes) differs from Laurentian French (a variety spoken in Quebec, Ontario, and Western Canada); New York City English differs from Chicago English; nêhiyawêwin (Plains Cree) differs from nîhithawîwin (Woods Cree). In some cases, a particular variety has been put on a pedestal as the 'standard' and most prestigious representation for the language. However, the standardization of one variety over another is never about the linguistic nature of the variety and is always rooted in power structures and politics. A stereotypical feature of standard British English is the deletion of non-prevocalic *r* (or '*r*-dropping') as in *dark* [dɑːk] and *car* [kɑː]. This "Queen's English" (note the explicitness of power and politics right there!) is perceived as the standard, prestigious, and most posh way of speaking for people in, for example, Brixton and Hammersmith. However, the same phonological feature, deletion of non-prevocalic *r*, which is also common in New York City English, is perceived as non-standard, low-status, and lacking prestige in Williamsburg and Greenwich Village. Same linguistic process, diametrically different perceptions!

Do you say 'soda' or 'pop'? 'Cottage' or 'cabin'? In 2013, the most read piece published by the *New York Times* was "How Y'all, Youse and You Guys Talk", an interactive 'dialect quiz' that asked readers a series of questions about the lexical items they used for various concepts (e.g., 'a large, wild cat, native to North America', 'a small road parallel to a highway', 'a small gray bug that curls up into a ball when touched'). Upon completion, readers were given a map pinpointing the quiz's best guess at their location (within the United States) based on their responses. The piece highlighted the diversity of regional varieties of American English. Of course, regional variation exists within languages other than English too. For example, the words BIRTHDAY, STRAWBERRY, and PIZZA (among many others) have several regional variants in ASL (Lucas, Bayley, and Valli, 2003). You can see four regional variants of BIRTHDAY in this YouTube video and six regional variants of HALLOWE'EN in Figure 12.3. based on an image originally shared by the Canadian Language Museum on social media.



Figure 10.3. Six examples of regional variation of the HALLOWE'EN sign in ASL found across Canada

Taking this example further, it's safe to say that r-dropping is strongly associated with London English and New York City English (regardless of its other local associations). This association comes about through **indexicality**, the semiotic concept that a sign (in our case, a linguistic feature) points to (think, *index* finger ☞) some meaning. Language makes extensive use of indexicality as discussed in Chapter 7. For example, some words, called 'deictics', can only have meaning within specific context: what *tomorrow* refers to is going to change in 24 hours! This is referential indexicality. But language also makes use of non-referential indexicality: linguistic features can index **social meanings** like place! Indexicality like this arises through the process of **enregisterment** or the linking of a particular feature of language with some cultural expectation. For example, according to the prevalent Euro-American gender ideology, there are two genders and those two genders behave differently. The result of mapping language to this "ideological schema" (Johnstone 2009) is that some linguistic features come to be gendered (i.e., they index masculinity or femininity). For instance, among Canadian English speaking adolescents, the intensifying adverb *pretty* as in *pretty cool* tends to index masculinity, whereas the intensifying adverb *so* as in *so cool* tends to index femininity (Tagliamonte 2016: 91). The same thing happens with place. The cultural expectation is that people in different places are different, and the result of mapping language to that expectation is that some linguistic features come to have regional associations.

Settler Colonialism and Canadian English. General Canadian English is perhaps the geographically most widespread homogeneous regional variety of any language. It is spoken by people from the Ontario-Quebec border in the east to Vancouver Island in the west (roughly 3800 kilometers!). The geographic size and shape of regional varieties depends on a wide-range of factors like physical geography, infrastructure, and political borders. In the case of Canada, we can point to historical migrations and colonialism.

Canadian English is typically traced back to early European settlers of southern Ontario who arrived from the United States as refugees of the American Revolutionary War. Over the decades, these "Loyalists" and their descendants migrated westward and took with them the same variety of English.

But that's not the whole story. Typically when two languages come into contact, borrowings happen and the languages change in convergent ways. But the fact that Toronto English and Vancouver English are extremely homogeneous only came about because this contact-induced change *didn't* happen despite the huge diversity of Indigenous languages spoken across this same area. For example, there's no trace of contact with Nishnaabemwin in Toronto English and no trace of contact with hən̓q̓əmin̓əm̓ or Sḵwx̱wú7mesh sníchim in Vancouver English (though a pidgin trade language called Chinook Jargon, which incorporated elements of Chinookan, Wakashan, Salishan, and, eventually, Indo-European languages, did exist on the west coast until the late 19th century).

Why? Settler colonialism. Settler colonialism is a type of colonialism. Its goal is the acquisition of land for the purpose of permanent repopulation of settlers from the parent state to the colony. In Canada (as well as the United States, Australia, New Zealand and elsewhere), settler colonial expansion required not just the displacement of Indigenous peoples but also their erasure. Through physical and cultural genocide, the settler colonial state of Canada has actively worked to erase Indigeneous peoples cultures, and languages from this land. The homogeneity of Canadian English is an insidious testament to settler colonialism (see Denis and D'Arcy 2018).

Within the Canadian context, probably the most well known enregistered feature of Canadian English is the pragmatic marker *eh*. Today, the Canadian indexicality of *eh* is ubiquitous. You can buy t-shirts, mugs, and magnets with *eh* on them, often accompanied with other national symbols like a red maple leaf. In fact, *eh* is so closely linked with Canada that when the Government of Canada created a Twitter account (@Canada), its very first tweet was ".@Canada's now on Twitter, eh!" But just because a linguistic feature is enregistered as a feature of a regional variety, that doesn't mean that that linguistic feature is actually used all that much! *Eh* has several different uses in Canadian English but in one of its most common uses, it is a variant of a linguistic variable, together with other pragmatic markers like *right*, *you know*, and *you see*. When analyzed through the Principle of Accountability, *eh*'s frequency of use is eclipsed by these other variants. That said, this

varies in different regions. In an analysis of oral history recordings of Canadian English speakers born between the 1860s and 1930s in Southern Ontario and Southern Vancouver Island, British Columbia, Denis (2020) finds that *eh* represents less than one percent of tokens of this variable on Vancouver Island but 12% in Southern Ontario.

Want to know more?

The Dictionary of Canadianisms on Historical Principles is a freely available dictionary of Canadianisms (words unique to Canadian English or used uniquely in Canadian English). You can learn more about the history of the dictionary in Stefan Dollinger's book *Creating Canadian English* published by Cambridge University Press.

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7.4.1: Various Accents of English, in Anderson's *Essentials of Linguistics*

Adapted from

www.oercommons.org/courses/ho...nguistics/view

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URL: www.indiana.edu/~hlw/PhonProcess/accents.html

Edition 3.0; 2006-12-31

In this section, we look at various English accents and how they differ from one another. Remember that an **accent** is the set of pronunciation conventions of some speech community. Where we draw the boundaries between accents is pretty arbitrary; if we call General American a single accent, for example, we'll have to deal with the range of variation that exists among speakers within that large community. And any boundaries we draw will be wrong in another sense because the group of people who have one pronunciation convention may not coincide neatly with the group of people who have the other set of conventions that belong to the accent we're considering. For example, the group of speakers who pronounce the words *pin* and *pen* the same includes speakers of Southern US accent but also some speakers of General American, which is a very different accent from Southern US English in many other ways. The point is that conventions of pronunciation tend to cluster together; this is what allows us to talk about "accents" at all.

Another point to keep in mind is that in most countries there is a standard, prestige accent alongside a number of accents associated with particular regions, social classes, or ethnic groups. Each of these non-standard accents can be described in its "broad" form, the form that is most different from the standard in the country where it is spoken, but what many people are speaking much of the time is something in between a particular non-standard accent and the relevant standard. In this section, we concentrate mostly on broad variants of non-standard accents because they illustrate the range of possible differences best.

When comparing two dialects or accents, one possibility is to see one of them as deviating from the other. A biased view of non-standard dialects often starts this way: the speakers of these dialects are seen as just making mistakes with the standard when what they say is non-standard. But of course, this is not what is actually happening. Speakers of non-standard dialects learned the conventions of these dialects by hearing other speakers speak them, just as the speakers of standard dialects learned the conventions of their dialects. They are no more speaking the standard wrong than the speakers of the standard dialect are speaking their dialect wrong.

7.4.1.1: Overview of English Accents

Before looking at examples of differences between accents, it might help to have a sense of what the major accents are and where they're spoken.

7.4.1.1.1: The British Isles

There is no "British" accent. England, Scotland, Ireland, and possibly Wales all have their own unofficial standard accents, and the standards of Scotland and Ireland, in particular, are as different from that of England as American accents are. The standard, or prestige, accent of England is usually referred to as Received Pronunciation (RP). This is what the royal family, all recent Prime Ministers, and most BBC announcers speak. It is probably what most Americans think of as an "English" accent, though it is spoken as a native accent by no more than about 10% of the English population. It differs most noticeably from General American in the pronunciation of a few vowels and in the way [ɹ] is treated following vowels. For example, in RP there would be no [ɹ] sounds at all in the phrase *the northern fourth of the park*.

Within England, there are many identifiable regional accents, probably more than in the United States in fact. Among these, London accent (sometimes called "Cockney") stands out because it is familiar to many Americans through film and drama characters such as Eliza Dolittle in *Pygmalion/My Fair Lady* and because it has a number of very characteristic features. Many of the vowels in this accent differ considerably from RP and General American. Other very striking features are the loss of initial [h] ("*'e 'as an 'ard 'eart*" = "*he has a hard heart*") and the frequent glottal stops in place of other stops in other accents ("*iʔ'll taʔe a loʔ o' time to seʔle*" = "*it'll take a lot of time to settle*"). Perhaps the other major accent boundary in England separates the accents of the north from those of the south. Americans may be familiar with the English of Northern England through the speech of the Beatles or the characters in films such *The Full Monty*. These accents can be identified fairly easily because they make no distinction between the vowels [ʌ] and [ʊ]; both are pronounced like [ʊ], so that the words *look* and *luck* are homophones.

Scottish and Irish English share one feature with northern England English; the tense vowels [i], [u], [e] and [o] are not pronounced as diphthongs, as they are in RP and General American. In addition, these accents are like General American, and unlike most accents of England, in how they treat [ɹ] after vowels.

7.4.1.1.2: The Western Hemisphere

The unofficial standard accent of the United States is usually called General American (GA) or Mainstream US English (MUSE). This is the accent of much of the Midwest and the West and the most frequent accent for US newscasters, though, interestingly, many of the more recent US Presidents have spoken regional varieties rather than GA. As the prestige accent, it has been encroaching on some regional accents, for example, in the northeast, but at the same time, changes within GA are creating what amount to new accents. One striking example of this is Northern Cities accent, spoken in cities such as Chicago, Detroit, Cleveland, and Rochester, and distinct from GA in the pronunciation of lax vowels. So for example, the word *socks* in the name of the Chicago White Sox is pronounced [saks] in the Northern Cities accent, as compared to [sɑks] in Canadian English.

The Southern US accent is spoken by people mainly in the southeastern part of the country. Like the London accent, this accent has strikingly different vowels from other English accents. African-American Vernacular English (AAVE) is a dialect associated with an ethnic group rather than a region, though of course, you don't have to be African-American to have learned it. The accent associated with this dialect is similar in many ways to Southern US accent, while the phonology, morphology and syntax of this variety have their own characteristic properties.

People from the northeastern US are often easy to identify by their accents; the accent of New York City stands out within this region, again mostly for its vowels. Some other US cities, especially Pittsburgh, are known for particular pronunciation conventions. In Pittsburgh, for example, [a] may be used where GA has [aʊ], so *downtown* may be [dantan].

Standard Canadian English (except in the province of Newfoundland) is very similar to General American, and it doesn't vary much from place to place. One characteristic of Canadian English is the pronunciation of [aɪ] and [aʊ] in certain contexts, which we'll learn about in Section 4.6.

English is the native language of much of the Caribbean, with some features common to the region and others specific to particular islands. As with other accents, there are characteristic vowels in these accents, and in addition, a tendency in the Caribbean, as there is in some US accents, to make no distinction between [t] and [θ] or between [d] and [ð]. Jamaican English in particular also has

quite striking intonation patterns.

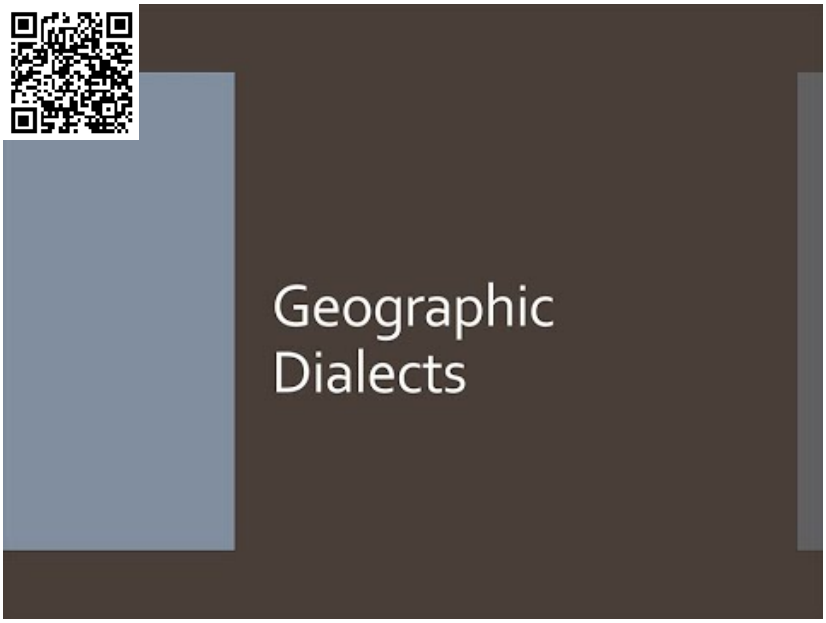
7.4.1.1.3: The Southern Hemisphere

English is the native language of most Australians and New Zealanders and a sizable minority of South Africans. While the standard English accents of these countries tend to approach RP, the broad accents of most English speakers in all three countries have tense vowels similar to those in the London accent. The lax front vowels of Australian and New Zealand English differ from those in other accents.

7.4.1.1.4: Non-native accents

English is spoken as a second language by millions of people, especially in regions that were once colonized by Britain in South Asia and Africa. In some of these regions, there are particular English pronunciation conventions that derive from the phonology of the local languages. For example, in the English of South Asians (Indians, Pakistanis, Bangladeshis, Sri Lankans, Nepalese, Bhutanese, and Maldivians), the alveolar consonants [t], [d], [n], and [l] tend to be replaced by retroflex consonants, which are common in the languages of this region. These non-native conventions are one of the ways that English is becoming even more of an international language.

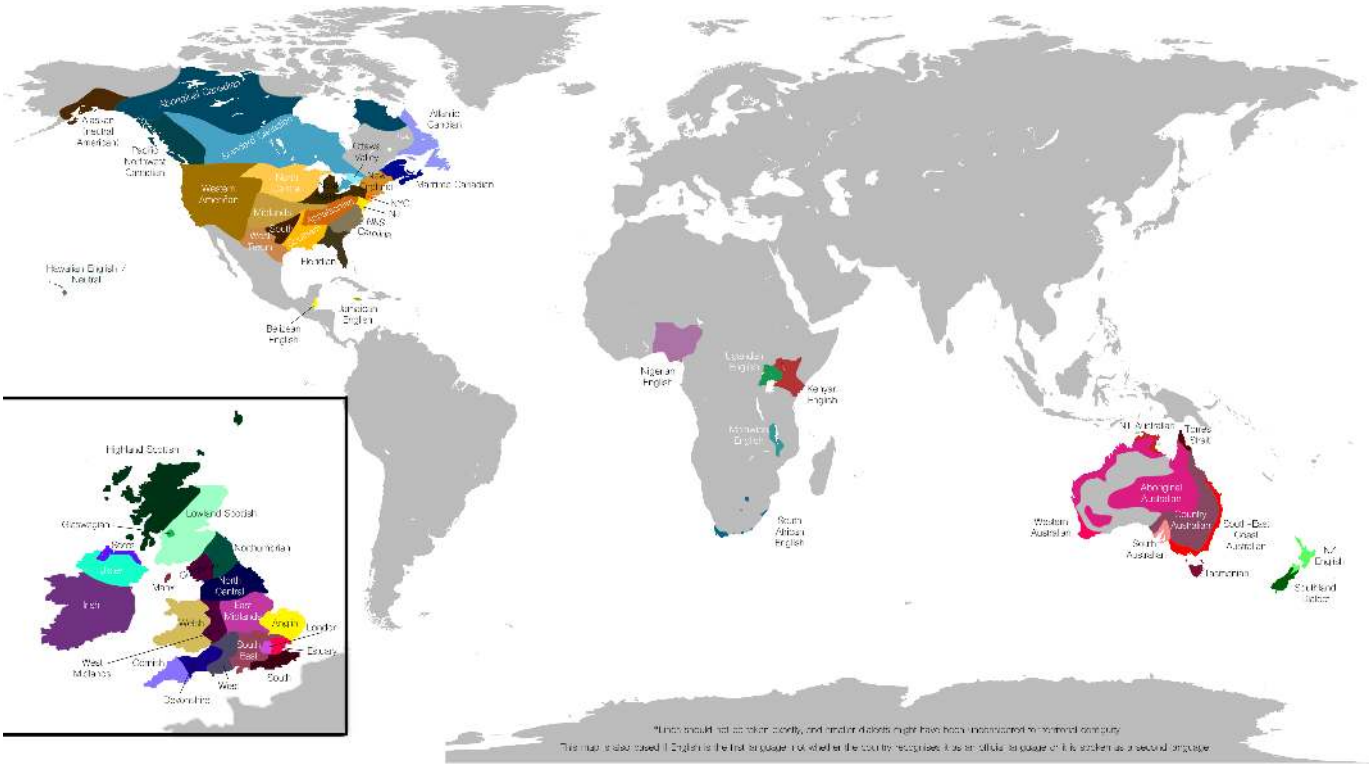
7.4.2: Geographic Dialects, from Sarah Harmon



7.4.2.1: Video Script

Catherine's explanation of a geographic dialect, I think, needs a little more fleshing out. Certainly, this is the case when we talk about English as a global language. I'm going to expand a little bit more than what she has in her section on geographic dialects, and instead focus a little bit more on our next few topics.

When we talk about geographic dialects, we're talking about the dialects that arise because of geographic isolation. Take a look at this map of global English.



Notice that you have two full continents where English was brought and dominated the entirety of the continent. When we talk about North America, and when we talk about Australia (including New Zealand), English has dominated those continents. We have to add Africa because, in certain parts, like over in eastern Africa where Kenya is, for the most part we have English is an official language. In the area around Nigeria, of course, English is an official language, and then, of course, South Africa, especially the cities on the coast, English is pretty much a mainstay.

Those are just the colonies, to say nothing of the United Kingdom and Ireland, where, of course, we have had English for close to 2,000 years. Notice that just this one little island—and realistically, you can talk about southeast England where London is—for the most part, it is from there, and the policies that come out of that city, that you get English spreading, not just through the British Isles, but throughout the world, as part of the original British Empire.

Now, lest you think that that is the only thing to say about that, just think about North America alone, the United States and Canada. Think about how many different dialects that we have, not to mention Mainstream American English (MAE) and Mainstream Canadian English (MCE). Just looking at that section of North America is pretty stunning. It tells us that we have a lot of different geographic dialects within North America. We're going to take a look at some of that in a little bit more detail.

As you have no doubt guessed, this is not just an English-centric course; it's important to think about, for example, a language like Spanish, with the same kind of colonization of history. As a result of very wide spread of different geographic dialects from that one country of Spain, we can count two main areas, the provinces of Extremadura and Andalucía, as where the majority of Spaniards left to colonize the western hemisphere. Everything from Mexico down to the very tip of South America, all of these areas colonized mostly by people from the southern half and the eastern half of Spain. We have the Spanish-speaking islands of the Caribbean as well. Notice the different dialects that we have.

When we talk about a global language, English is not the only one to keep in mind. Spanish is definitely in there and, certainly, you can count Mandarin. It is part of that equation when you factor in the number of places throughout Asia and beyond where Mandarin is a major player linguistically. When we think about the isolation that happens as a result of colonization, frequently it's not just because you have left the homeland, the old country. Rather, it’s because you're moving to a place that may be cut off geographically or, certainly for several generations, you might be cut off from the others in the region. Eventually there's more spreading of the dialect.

It is also important to understand that when we talk about a global language, there are still considered mainstream tendencies, and Spanish is a really good example of this.



There are differences within each one of these dialects, each one of these colors that you see. Latin American Spanish has certain characteristics that Spain (Castilian) Spanish, including the Canary Islands, do not share. The reverse is true, too. We aren't just talking about different sounds; we're talking about parts of the verb conjugation, and the structuring of syllables is entirely different depending on what dialect you speak.

One important note, if you didn't know this about the history of Spanish is that for about the last 150 years, the prestige Latin American dialect is not Mexican; it's Colombian. By Latin Americans themselves, they frequently state that Colombian Spanish—particularly up in the Andean region near Bogotá, Medellín, and that area—has the clearest Spanish that anyone has spoken. Linguistically, we don't hold that prestige; we can mark it, we can observe it, but we don't hold it. I find it interesting that even most Spanish speakers in the United States don't realize that Mexican

Spanish is not carry quite the amount of prestige just certain others. However, I will say in the last 25 to 30 years it has changed, due to the power of the Mexican government and the Mexican economy, that they have held a little bit more prestige in the last 25ish years. Where we'll go, who knows.

Let's focus on the United States because I find this to be also an interesting tale. This is a geographic map of the dialects of North American English with specific reference to the lower 48 states of the United States of America.



I phrase it that way because of a few things. If you think about Alaska, which is way well probably off screen, and if you think about Hawaii, which is way probably off screen as well, those are two very isolated places, so we don't count them when we talk about Mainstream American English. We're not usually going to count Alaskan or Hawaiian English; we're going to talk about the lower 48. If you remember your American history, and if you think about the original 13 colonies, you see that is where the most fractured area with respect to linguistic data we have. It makes some sense; the established colonies had some isolation and then, as we expanded west, we grew more general and more general.

Appalachian English is something that we will focus on in this class to bring just some understanding of it. It is a full, completely rich and historic dialect of American English; in fact, it really connects us to our English ancestors.

I will also tell you that here in the Bay Area, we have our own dialect. It's actually a subdialect. As somebody who's not only born and raised in San Mateo California—notice I said [sæm:ətejə]. I didn't say [sæn məteɪoʷ] I said [sæm:ətejə]. I live, not in [sæn hoʷzeɪ] I live in [sænəoʷzeɪ]. My dad, he was not born in Sacramento [sækɹəmɛntoʷ] he was born in [sækəmɛnə]. This is San Francisco Bay Area English; there's just so much that I can say about this. I'll leave it for another time; perhaps I should have said there's hella things that I can say about this dialect. It obviously has a bit of a piece of my heart. It is true that those of us were born and raised here, and especially if our parents were also born and raised here—in my case, it was my mother—we're going to have a distinct dialect of our own.

Every place where there is some kind of isolation, there will be a dialect that springs up. Whether it stays or whether it disappears, that's always the question. For now, let's leave it at this: we're going to start looking at different dialects about what they do. We look at these dialects, but we do not pass judgment; we do not say they are inferior. In fact, they are on a level playing field; everybody deserves the same amount of respect so first up is Appalachian English.

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7.5: Appalachian American English (AE)

7.5.1: 7.3.1 Appalachian English (AE), from Sarah Harmon

7.5.2:



7.5.2.1: Video Script

Let's start talking about one of these geographic dialects that, I have to say, holds a little bit piece of my heart. Appalachian English is the English that is spoken in and around the Appalachian Mountains; think Tennessee, Kentucky, bits of the Carolinas, the southern and eastern part of Pennsylvania, and that area. It holds a place of my heart from my family but indirectly; I have three aunts and all three of the married folks from that part of the world. I remember hearing them and realizing that the way they spoke was really beautiful and, even though they downplayed how they spoke—in fact they often said, “Don't sound like me; sound like you. You're a Californian and you sound better than I do”—that basically started me down this road of trying to understand a little bit more about Appalachian English.

Despite what you may think, it is a distinct dialect from what you speak if you go into the Delta or the Gulf area, think of Alabama, Mississippi and that area. It is different than in the Ozarks; think Southwest Missouri, Arkansas, northeast Texas, and that area. It is different than what you speak in the Plains region; think Kansas, Nebraska, Iowa, and that area. It is different also from Midwest English; think Indiana, Ohio, and even parts of Illinois and Michigan.

Appalachian English is truly unique, and it is also really well studied; in fact, it is one of the best studied dialects in the United States. I don't just mean recently; I mean historically. We have about 100 years of data and analysis on this dialect alone. That's why I want to focus on it, and hopefully either you are interested in it, or it makes you interested in a different dialect for the same reasons that I love it.

I love starting off with this little graphic.



There have been many versions of this in Pittsburgh; they're very proud of their cultural background, and of course it's very tied to the Appalachians. In many ways, Pittsburgh is the northern tip of where the Appalachian dialect starts, and it pretty much goes south and east from there. They are so proud of it; they have all sorts of souvenirs with Pittsburghese graphics. What it reminds me of mostly is how unique Appalachian English is, so let's take a closer look at it.

Let's start with the phonology and build up. When we talk about Appalachian English, the big difference with the phonetics is the vowels. This is a theme you're going to hear with respect to English: English vowels are very different across the different dialects. The consonants don't change too much, although we will see some changes, but most especially it's the vowels that suffer or change from one dialect to another. In the case of Appalachian English, we have a modification of all vowels—not just front vowels or back vowels, not just high vowels are low vowels, but all vowels. A lot of times it has to do with going from tense to lax—if you think about the [i] in *pinch* and *pinch* it's not an [i], but an [ɪ]. In Appalachian English, it's going to go high, it's going to tense up: [pʰiɲtʃ]. Instead of [tʰɛn], like the number *ten*, it's going to be [tʰin]. Think [θiŋk] becomes [θæŋk]; rather [ɹæðɻ] becomes [ɹʊðɻ], and push [pʊʃ] becomes [puʃ]. You modify the vows, you making them more tense, most of the time, but you're also moving them higher or lower more front or more back, and it just kind of gets jumbled up.

Before you think that this is just random, know this is actually historical. Appalachian English, in many ways, has **fossilized aspects** of the language that was brought over by the colonizers of that area of that time. Most of those colonizers came from a couple different spots within England, and so they neutralize those two dialects, and then it gets fossilized because they're isolated within the Appalachian region. In many ways, what we see here with the vowels represents a lot of the sounds that we heard; if we have that magic time machine and we could travel back to when English settlers first came to the Appalachian Mountains.

We also have **metathesis**. If you recall when we talked about that, I said that the verb *ask* actually started off life as [æks] or [æksian]. We see it here in Appalachian English; it's kept, but it is not the only area that we see metastasis we actually see it in a lot of cases when we have r's and l's. For linguists, that's not uncommon; r's and l's, or approximates if you will do funny things in all languages and even across dialects. In fact, whatever your native language is, whether it's English or something else, I guarantee you the approximates have changed over time and they change from one dialect to another. Here, instead of [æskt] it's [ækst]. Instead of [pɹivel], it's [pʌɹvel]. Instead of [ælbəm], it's [æbləm].

We also have **syllable initial stress** in Appalachian English. If you think about Standard or Mainstream American English, you realize that sometimes it's the first syllable that is stressed, and other times it's not. But with Appalachian English, there's a real pull to make sure that that the primary stress syllable. You say these terms as: *Détroit, cigar, directly, Nóvember*.

For some of you, that just might sound like 'Hillbilly talk', or like I'm making fun of them. However, this is truly Appalachian English as its core. All of these three phonological processes are not unique to Appalachian English, and we certainly hear them in other dialects in the region, African American English Vernacular as one example. But these are characteristics that have a long history of documentation, at least with respect to American dialectology.

Let's move from phonology to morphology. When we talk about morphology, it's not just the pieces coming together; it's actually the morphology and syntax coming together. We have an ***a-* prefix**; this is something that happens in a few dialects of English and it's actually a preservation of something we saw in old English. When I was living in Texas, I certainly heard it down there. *He came a-running. I knew he was a-telling the truth. I was a-washing one day*. These are way to mark that something is in progress and frequently has an emphatic element to it.

A number of the irregular past tenses that are frequently connected to **umlaut**—that change of vowel that signifies that there's an inflection—remain in Appalachian English. Many of these irregular past tense forms have been changed over in Mainstream American English and many other dialects of English, to have the common *-ed* inflection. However, in Appalachian English there are fewer that have; quite a few that have remained: *climbed* for them is still *clumb*, *heated* is still *hit*, *raked* is still *ruck*, and *dragged* is still *drug*.

We also have a series of **double modal verbs**, meaning you use two different models—a type of auxiliary verb like *must*, *do* or *did*, *can* or *could*, *will* or *would*—and they can have multiple roles. Frequently this is connected to something that we call aspect, what we talked about when we talked about deixis. We're connecting two different types of aspect and again there's some history. In this case, it is connected to some things that we used to do in Old English that in a number of the dialects in more remote areas of England, they were still doing into the early 20th century.

Multiple negation is also something that we frequently do in Appalachian English. Realistically, when we talk about multiple negation, we need to remind ourselves that Mainstream American English and higher, more prestigious dialects of English have poo-pooed the idea of multiple negation. The reality is that it exists in many dialects, not just of English, but throughout the world. Certainly, if you have ever learned a Romance language or a Celtic language or many other Indo-European languages, you know that multiple negation is a common thing; it's actually a very common thing in the world languages.

Overarchingly, when we talk about Appalachian English, there are these are the seven key areas that we need to focus on. Combined along with the lexical differences, they helped to create a different dialect. In an upcoming journal assignment, you will be listening to a little bit of Appalachian English. At first it will be difficult to understand, but realize that it is English, and when they slow down, you can understand them. There might be differences and certainly it does not sound like what we say here in California, or even in mainstream English. But it is English, it is an American dialect of English, and we can understand it pretty well.

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7.6: African American English (AAE)

7.6.1: 7.4.1 African American English Vernacular (AAE), from Sarah Harmon

7.6.2:



7.6.2.1: Video Script

The next dialect that we're going to work on is African American English Vernacular, or AAE. Again, I have a bit of a story to tell them this one.

I grew up in San Mateo, California, and I was in high school in the early 90s when the topic of Ebonics came to the main stage. It was a really interesting time to be fascinated with language. At the time, I was learning Spanish, and I was learning Italian. Specifically, I was trying to understand the Italian that my family spoke compared to what I was learning in the classroom. I was listening to all of my friends speak all of these different languages: Spanish, French, Samoan, Tongan, Tagalog, Ilokano, Mandarin, Cantonese, Shanghainese, Japanese, and the list goes on and on.

When the Ebonics debate started, it fascinated me. It came out of Berkeley, and it was a revolutionary way to address the kids who were living specifically in Oakland, Berkeley and Richmond, also the greater Bay Area and the country at large, with respect to inner city African American youth. The struggles, specifically, that they were having with writing and reading in English. This perspective, to say, “Look, they don't just speak poor crappy English. They speak a different dialect of English, and it is a radically different dialect.” You have to treat it as such; you have to address it, and say, “Okay, that is really great for certain times, but if you want to be a ‘proficient English speaker reader and writer’ (massive air quotes, right?), then you need to be using Mainstream American English, so we need to switch your dialect. Not put your home dialect down, rather to raise it up. But understand that there's this other dialect that you need to use within society in different situations.” To take a formerly prescriptive idea and make it more descriptive, that was the power of the Ebonics movement. It absolutely fascinated me.

Growing up in San Mateo—even when I grew up in San Mateo, which is well very different than what it is now—there were not too many folks there that were African American and spoke Ebonics, at least not regularly and out in the open. However, there were plenty of other languages that I was hearing on a daily basis, both within my family, in my community, and in my schools. What was really interesting was when I would go to East Palo Alto for something having to do with work, or I went to a Giants game in Candlestick Park—which is in Hunters Point—or if I visited my family out in Fairfield and other parts of Solano County—where there were (and still are) strong pockets of African American culture and African American English vernacular. It was really interesting to see to see this debate in the San Francisco Chronicle, in public forums, and to hear people using that dialect that was very different than mine.

With that let's talk about African American English Vernacular, about its historic ties to another dialect that we've talked about, and especially about what makes it rich and unique. It’s another dialect of English that has been studied well for over 100 years.

We’re going to start with the phonology; that probably shouldn't be surprising by now. One of the things that we can see is a distinct reduction in diphthongs. Remember that diphthongs are when we have two vowels or a vowel and a semi consonant or a glide combined into the same nucleus of a syllable. We regularly see **monothongization**—so only one vowel instead of two. What is also really interesting as you see a lot of the same patterns in the dialects of Appalachian region and of Gulf American English—think of the dialects that are spoken in Alabama, Mississippi, the panhandle of Florida, and that area. You have first how these terms are written in Mainstream American English, and then you have African American English pronunciation, and then you have Standard or Mainstream American English pronunciation. There's a consistent monothongization with respect to these terms; it is not just these five terms, rather it is throughout the dialect.

We also see **neutralization** and **deletion** of certain sounds. We have **mergers**. Remember, if you think back to phonology and phonetics, we talked about how rare English is seven to 14 different vowel sounds; that is really rare. What we see with African American English Vernacular is actually a reduction to something that's closer to what most languages have. Depending on the subvariant, AAE or AAVE has between five and seven vowels; that's a little more typical.

We also see regular deletion of liquids, so r- and l-sounds, and we see a **labialization** of interdental sounds. Sometimes they can be just dentalized, but frequently their labialized. If you think about how *Ruth* and *brother* are said, in African American Vernacular English they're really frequently as 'roof' or 'root' sometimes, and not 'brother', but 'brudder' or 'brover'. We also see a **shift of the stressed syllable** to the first initial syllable of the lexicon.

These are really common and it's been interesting to see the historical connections. As I said, there's some real strong connections with what we see here and with Appalachian English. It does seem like the Africans who were brought over here as enslaved folks and forced to learn English, that they mostly learned it from folks who had an Appalachian dialect. Therefore, it is not shocking to see that, phonologically, these two dialects have many similarities.

Let's talk about the morphological and morphosyntactic aspects of AAVE. When we have **simplification** of consonant clusters at the end of a lexicon in African American Vernacular. This is also not uncommon; this seems to be the case in many dialects outside of the United States. It is also interesting to note that most of you who speak Mainstream American English, if you really get going and talk at a fast pace, you do the same thing, so this is a very common change that we see.

We also see some really important changes with certain verbs, and the main verb to talk about here is the verb *to be*. The fact that we have not just *to be* as a concept, but that it may exist or may not be used. This is not random; it is directly related to its function. If we're talking about habitual *be*, as in ‘John is generally happy’, then in African American English, for the most part, you would say, *John be happy*. However, if you're talking about a non-habitual or even stative, as in you're talking about his condition right now, that is not going to be the case. Instead, *be* is completely left out: John happy. Why would that happen, because this is something that does not happen in most English dialects. There are a couple of reasons: one is connected to the various languages that were spoken by the slaves that were brought over from Africa, especially Western and Central Africa. Most of the languages there do not have a stative *be*; the verb *to be* is only used when you're talking about something that is generally happening. However, there's a secondary explanation, and this has to do with something we'll talk about towards the end of this chapter with respect to creolization. Frequently when we see creoles, if there's a version or a use of the verb *to be* that does not get continued on, it's going to be the stative, non-habitual version. That's pretty interesting.

More morpho-syntactic and morpho-semantic aspects of AAVE:

Iultiple or double negation: again, we saw this with Appalachian English, and this happens in a number of dialects.

requently, the determiner *there*, as part of the phrase *there is* or *there are*, is deleted in African American English and often replaced with either *it* or just left out entirely.

/e also have a **lack of subject verb agreement**, specifically with the third person singular. That is really interesting because if you think about the present tense conjugation of English, the only time we see inflection is third person singular. To have that completely be deleted is an interesting concept. It makes it more isolating in some ways.

here's a **completive or prospective *done***: it's not just *you have messed up*, rather, it's *you done messed up*. This is something that also connects that to Appalachian English.

/e have **two different types of been**, both stressed or unstressed; depending on what it is that you're doing.

dd to this the concept of ***fixing to***, meaning *I'm about to do something* or *I'm going to do something*. This is pervasive throughout the entirety of the South East of the United States—doesn't matter what dialect we're talking about-from about Oklahoma or Kansas, south through Texas, and all the way across to the Atlantic coast, *fixing to* is a phrase of is used and has been used for 200 years at least. In African American Vernacular English, that *fixing to* has changed to *finna*, and it is very common.

ou also have a **deletion of the –'s**, that possessive or genitive marker.

gain, there is a **higher reliance upon word order**, although English was pretty strict with respect to word order.

Just as with Appalachian English, we're not going to go into the lexical differences; that's too long of a discussion, but this is an interesting little tidbit with respect to African American Vernacular English: It is not a poor version of English. Quite the opposite, it is highly rich highly complex. In one of your journal assignments, you have the option of watching a little bit about Gullah English. what makes Gullah English so important is that it is a documentation of how the slaves used to speak their version of English, which has been crystallized. In many ways, Gullah English is the precursor to African American Vernacular English; it still has aspects of various Central and Western African languages that got mixed into the English as the slaves were forced to learn their new language. It's interesting to see how over generations and generations of use, and more contact with Mainstream American English, how this has been a dynamic dialect. It continues to change; it used to be said that there was really only one, maybe two sub-dialects of African American Vernacular English. Current investigation says otherwise, that there are at least 20 different sub-dialects. So, the next time you listen to an African American musician, rapper, artist of some kind, and they're trying to encapsulate so much of their culture in history, listen to how they talk listen, to that dialect. You will hear a lot of what we have been talking about in that. And that's just the tip of the iceberg.

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7.7: Sociolinguistic correlations - Social status

You probably have an intuition about social class and a hierarchy of status in society that is linked with the unequal distribution of wealth and power. You probably also recognize that this inequity is not arbitrary and intersects with other social factors. At the same time, social class is less tangible than other social facts about people like their age, their gender, and their ethnicity. In Euro-American society since the Industrial Revolution, people have been categorized into three groups: 'upper class', 'middle class', and 'lower class'. The implied hierarchy of these traditional categorizes reflects the distribution of wealth and power: the 'upper' or ruling class holds the most and the 'lower' or working class holds the least. Sociological definitions of social class look to objective measures like property ownership, wealth, income, and occupation and subjective measures like life chances, prestige, and reputation in categorizing class membership. In the Canadian context, social class seems that much more intangible because, while we are largely a middle class society, when we consider those at the bottom of the social class hierarchy, there are important interactions and intersections with both geography and other social factors, especially race and ethnicity. Geographically speaking, there tend to be specific areas both within cities and in remote areas that are socioeconomically less advantaged. With respect to race and ethnicity, Black, Indigenous, and other people of colour (especially those who have immigrated recently), are also, on aggregate, in a more socioeconomically precarious situation.

While social class can be a fuzzy concept, it's still an intuitive reality. To investigate the role of social class as a conditioning factor of linguistic variation, we need to come up with ways of 'diagnosing' or measuring it. Often times, someone's occupation (or sometimes their parents' occupations), their education, their income, or their residence can be used as an indication of their social class. In William Labov's (1966) study of variation in the English spoken in the Lower East Side of Manhattan, he made use of three parameters to categorize people into different social classes: occupation, education, and income. Labov examined many different linguistic variables in his data and found extensive correlations between the frequency of use of different variants and an individual's social class, according to his measure.

In Figure 10.4. below, based on one of Labov's results, we can see that the frequency of use of the [ɪn] variant of *-ing* exhibits **social stratification**. Participants in the working class speakers have the highest rate of this variant, upper class speakers use [ɪn] the least, and people in the middle of the social class spectrum are somewhere in-between with respect to *-ing*.

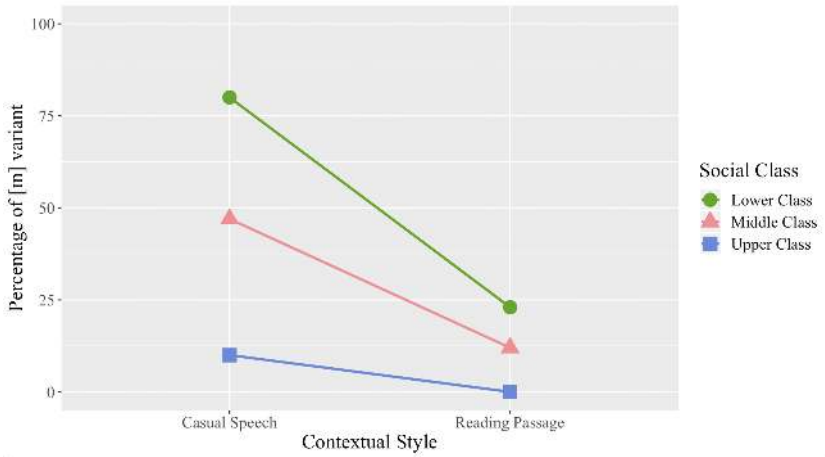


Figure 12.4. Frequency of [ɪn] variant of variable -ing in NYC English by contextual style and social class, based on Labov (1966, 259).

Importantly, Figure 10.4. also demonstrates systematic style shifting as discussed in section 10.4. Where Fischer observed one young man shifting his frequency of use of [ɪn] as the formality of the context shifted, here we can see that this happens across the board: in all social classes, the casual speech context contains more [ɪn] tokens than the reading passage context.

How to be a linguist: Tips for interpreting patterns of data in graphs

Variationist sociolinguistics is a quantitative field and numbers and graphs can be really intimidating for some people! Here are four tips for helping you to discern the most out of the kinds of graphs you see in this chapter.

- **Tip 1: Carefully read the caption**
  - Good captions should clearly identify what data is visualized in the graph. The caption should tell you what was measured (the dependent variable) and what the researcher manipulated or controlled (the independent variables). This is usually expressed in the form of a 'by-statement': dependent variable by independent variables. A good caption should also identify the source of the data.
- **Tip 2: Carefully read the legend (if there is one) and the labels of the axes**
  - This will tell you what exactly the graph is showing. Usually the dependent variable is plotted on the y-axis (the vertical one) and the independent variables are plotted on the x-axis (the horizontal one) or, if there is more than one independent variable, with distinctions demonstrated in the legend (like colour, shape, or line type). In variationist sociolinguistics, the y-axis is usually the proportion or percentage of one variant of a linguistic variable (relative to the other variant or variants).
- **Tip 3: Try to determine the patterns in the graph before reading the author's description**
  - A good graph will be accompanied by a description of the patterns in the graph. The best way to become more comfortable with reading graphs is to try to understand the pattern before reading the author's description. If your interpretation differs, look at the graph again and see if you went wrong somewhere.

7.7.0.1: References

Labov, W. (1966). *The social stratification of English in New York city*. Cambridge University Press.

5: Other Social Dialects

7.7.1: Other Social Dialects, from Sarah Harmon



7.7.1.1: Video Script

When we talk about social dialects, African American Vernacular English is definitely the big talking point. I honestly could go on for some time about it, but it would be better to leave that for a different discussion. It's important to bring in two other very big areas with respect to social isolation. Here in California, it's impossible not to talk about Latino English. It is a real thing, and it's not just some crude mish-mash version of Spanish and English; there's actually something going on. I also want to bring up something that probably most Americans don't even know ever existed, a dialect for the LGBT+ society.

7.7.1.1.1: Latino English

First up, let's talk about Latino English. Sometimes it's called Hispanic English, and there is a clear bilingual element to this dialect. (We'll talk more about bilingualism in a different section of this chapter.) It is important to bring up Latino English as a dialect in and of itself. Clearly, is going to have a mix of influences from Mezo-America, South America, and all of the different dialects that exist in those areas. There is some code switching—of course you would expect that—but what is important to remember is that it is a systematic combination, and we'll get to that in a minute.

If you ever learn about the history of Latino people in the US, you may have come across a term before called *Chicano*. The difference between *Chicano* and *Latino* and *Hispanic* is a topic for a different discussion. Frequently, Chicano is referring to a Mexican American from somewhere west of the Rockies: typically California, but it can include Arizona, New Mexico, Colorado, and Nevada. When we talk about these movements remember the root of that term is *move*, and this is an area that is moving. In the last 10 years, the term *Latinx* is gaining more and more attention. The use of that term, what it references and who accepts it (and who doesn't) is an ongoing discussion; I won't get into it here, although, if you wish to talk about it in Colloquy, I'm happy to bring it up. Do know that this is an ever-evolving dialect; it's a live dialect, and so things are changing all the time. Another reason to revisit this topic frequently.

When we're talking about Latino English—which is the term I'm going to use— let's talk about the phonology. Of course, it's going to take the English phonology and bring it a little closer to Spanish. As an example, in Latino English there is a reduction of the number of vowels—we've seen and heard that before—and there's also going to be fewer fricatives. English is a Germanic language—we love our fricatives—while Spanish doesn't. Spanish is a very Romance language and doesn't tend to have quite the number of consonant sounds that English does.

Speaking of consonants and reductions, there is a **reduction in consonant clusters**, especially at the end of the lexicon. Again, this is a very common phenomenon in a number of dialects in a number of languages. If you recall in phonology, we talked about the **epenthesis** rule for Spanish—the fact that you cannot start a lexicon with the combination of [s] and another continent, meaning that [sk] is not going to happen in Spanish. We see that in Latino English, there's frequent epenthesis before that combination of an another consonant: *school* becomes [eskuL], *stripe* becomes [estɾaɨp], *Starbucks* becomes [estaɾbaks]. If you have native Spanish speakers around you or those who speak Latino English, you know that you have heard these tendencies many times.

When we talk about the morph-syntactic and morph-semantic features again we're going to see some really common themes. **Multiple negation**, which is common in a number of dialects we've seen it in the previous two chapters. We also have to remember that Mainstream Spanish allows for multiple negation—in fact, doesn't just allow for it, it encourages it—so we see it here in Latino English as well. There's a number of borrowings from Spanish.

What is interesting to point out is that this is Latino English, and as we talked about earlier, Spanish is a global language. Even if we just focus on the western hemisphere, from Mexico all the way down to the tip of South America, realistically we're talking about anywhere from 20 to 35 different dialects. What has happened with Latino English, there is a substantial amount of **neutralization** of dialects, and this is especially true with the lexicon. Whichever dialect is the dominant dialect for the area that will determine what gets used for Latino English. Here in the San Francisco Bay Area, Mexican English is very, very dominant and, depending on where you are in the Bay Area, it could be from Michoacán, it could be from Sonora, it could be from Morelia, it could be DF or Mexico City, it could be from a number of places. The Latino English variety of the local area depends on which dialect of Mexican Spanish you're going to encounter. By no means are Mexicans the only Hispanic population; here we have a thriving Peruvian community, as well as numerous cultures from all over Central America represented here., and we have quite a few Cubans here. Yet Mexican Spanish tends to win out in the local Latino English dialect. However, if you were to go to Florida, Cuban Spanish is going to be the dominant Spanish dialect; as a result, that's going to also be the dominant input for Latino English there. If you go to Spanish Harlem in New York, Puerto Rican Spanish is the dominant form. As a result, you're going to get predominantly Puerto Rican Spanish as the mainstay of the terminology in Latino English there.

7.7.1.1.2: Polari

Let's switch gears to talk about a specific dialect for part of the LGBT+ community: Polari.

Polari is something you very probably have never heard of before; in fact, when I started looking at Polari a little bit, I asked a number of my friends in the LGBT+ community if they'd ever heard of it. The only person out of a very large group that ever heard of Polari happened to be from Manchester, England, so he knew of it because, well, it was something that was talked about up there.

What is pillory? Well, it has a really interesting history, and one that I think should be studied, especially if you are into gender studies or anything having to do with the LGBT+ community. The term Polari seems to have come about in the 19th century, although the roots of this dialect start in the 16th century. We're talking about England, and we're talking specifically about folks who are male, although there may have been some transgender folks in that time as well, and all homosexual. There could have been bisexual male users of this dialect, but the documentation

seems to indicate that Polari speakers were more homosexual males than bisexual or trans. We don't seem to hear Polari much with respect to the lesbian community, although it may just not have been documented.

Polari borrows heavily from certain languages, in particular Italian. In fact, the term Polari is a corruption of *parlare*, which is ‘to speak’ in Italian. There might be some other Romance languages sprinkled in, along with the language of the Romani. This is interesting because it is not a Romance language; it is in fact more closely related to Hindi than anything else. There's quite a bit of London slang, because it started up in London, and specifically Cockney slang, because it was mostly spoken in the east end of London. (More on Cockney soon enough.) Later into the early- to mid-20th century, you get even a bit of Yiddish in there.

Polari was a coded dialect; this was not something that people spoke in their everyday lives, necessarily. What they were doing was coding, to see if there were others out there like them. Specifically, it was a way to talk without giving away your sexuality, as it's important to remember that, until the 1960s or even the early 1970s, it was actually illegal to be homosexual in the United Kingdom. Punishments ranged from jail to forced castration, to many other types of ostracization, and isolation in the most grotesque forms. Therefore, if you know it is actually illegal to practice your sexuality or your sexual identity, you're going to find ways to express yourself that most mainstream Londoners or Brits would not understand—that's what Polari is.

What is really interesting is that once Polari outdid itself or became more known in mainstream, it started dying off. This coincides with the laws that had to do with banning homosexuality; they were repealed in the late 1960s. The movement started in the early 60s, but didn't actually get done till about 1969, and this is when realistically we see the end of Polari. It publicly outted itself in a radio program called *Round the Horne*, a really popular radio program that was listened to throughout the United Kingdom. In some people's eyes, it led to the Sexual Offences Act of 1969 being repealed. Whether that was actually the case, we might just have a discussion about that later, but what is interesting to note is from that point onwards, Polari started to become part of the mainstream.

Let me show you some examples. Many of the numbers come directly from Italian.

Polari	**English**	**Italian**
medza	half	mezza
una, oney	one	uno
dooey	two	due
tray	three	tre
quarter	four	quattro
chinker	five	cinque
say	six	sei
say oney, setter	seven	sette
say dooey, otter	eight	otto
say tray, nobber	nine	nove
daiture	ten	dieci
long dedger, lepta	eleven	
kenza	twelve	

The numbers 11 and 12 have an unclear history; I would hazard a guess that that might be based a little bit more on Polari having connections with Romani, but I’m not quite sure.

Here are some examples; this is the original outing, as it were, of Polari in *Round the Horne*, written in a sketch by Barry Took and Marty Feldman. (Marty Feldman might be a name you recall; he was a very legendary comedic actor and writer. If you ever watched *Young Frankenstein*, the Mel Brooks movie, he was Igor.)

Example 7.7.1

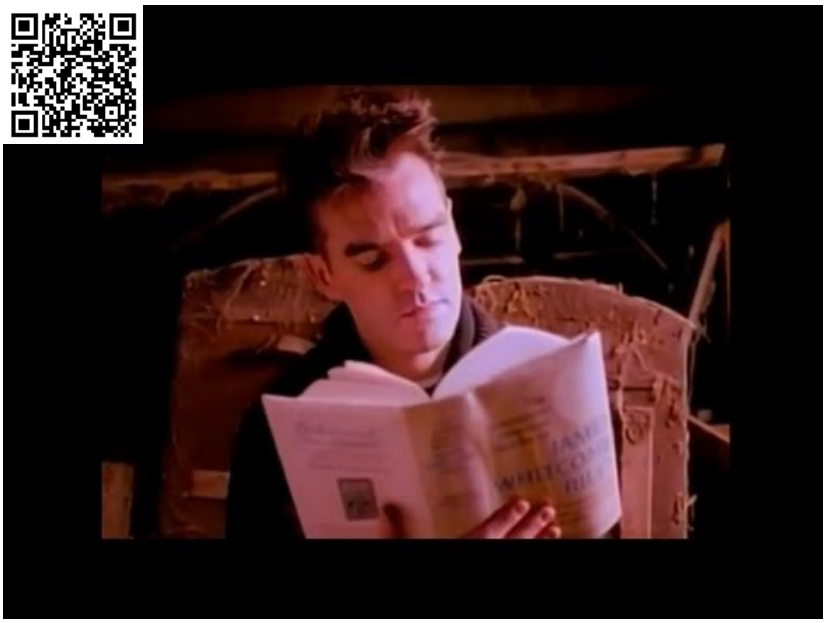
Omies and palones of the jury, vada well at the eek of the poor ome who stands before you, his lallies trembling.—taken from "Bona Law", a *Round The Horne* sketch written by Barry Took and Marty Feldman

Translation

"Men and women of the jury, look well at the face of the poor man who stands before you, his legs trembling."

That kind of sounds like English and kind of doesn't sound like English, so let me translate: ‘Gentlemen and ladies of the jury’; *omies* are men, *palones* are women. ‘Vada well’—look well—'at the eek’—at the face—'of the poor ome’—the poor man—'stands before you, his lallies trembling’—with legs trembling. *Vada* is directly from Italian; *vedere* is the Italian verb for ‘to see’, and if you're going to command somebody to see well, it's *veda*; *veda bene*.

I'm also going to give you a little bit of a Morrissey song that I absolutely love; it's called “Piccadilly Palare”—and the chorus of it is this one:



‘So good to see you, oh your lovely face and your lovely hair.’ *Riah* is hair, *eek* is face, and those are both more connected to Cockney.

There is also a sketch from the BBC comedy, “Are You Being Served?” I have to admit, this is probably one of my all-time favorite situational comedies or sitcoms; it was a very long running sitcom in the UK on the BBC, no less. It was all about this fictional store called Grace Brothers, which was similar to Saks Fifth Avenue or Nordstrom, very high end with the highest level of service. As you can see, this thumbnail is at a meeting: in the middle you have Mr. Rumbold the department manager for the men's and ladies wear; next to him is Captain Peacock, the floor walker who greets and directs folks as they come off the elevator; Mr. Granger is sitting on the other side of Mr. Rumbold, and he's the old head of the men's wear department. Mr. Grace, who is the owner of the store, is supposed to be in his 90s, but is very young minded and decides that there needs to be a change to attract more customers, specifically more younger customers. His change is to talk more like the youth, including some Polari. Take a listen.



That's Polari. It's also important to point out that the guy in the glitter suit, his name was Mr. Claiborne Humphries. He was considered camp in those days; the truth was they always made innuendos about his sexuality and eventually the character came out as gay, but not for 20 years. He had to play camp in order to be acceptable and get through the sensors at the BBC.

The final video that I’m going to play down here is a little bit from Rowan Ellis, a prolific YouTuber in the UK. She works predominantly to talk about LGBT+ issues, everything with respect to the culture. She didn't know about Polari much and so she talked about it.



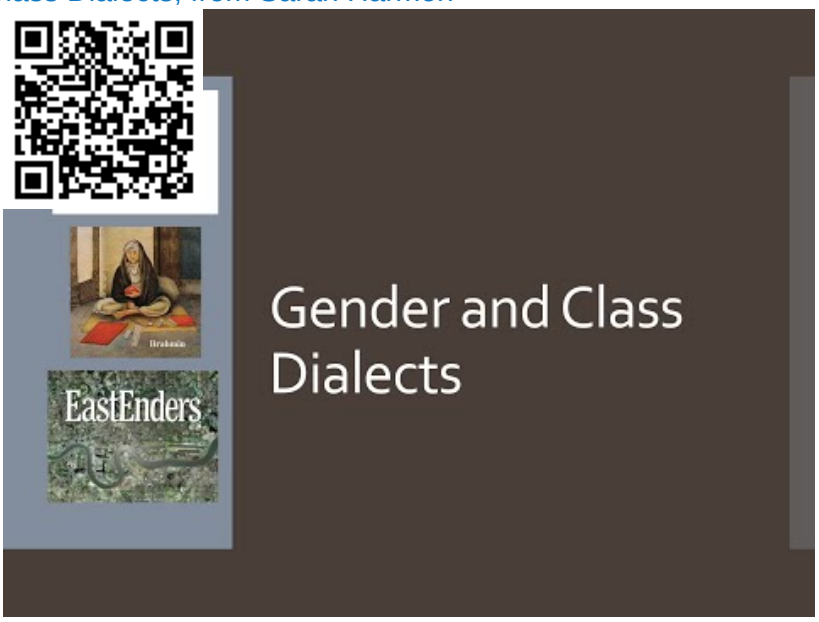
What is really interesting is that certain aspects of Polari have become a part of mainstream, just like Cockney has certain phrases and lexicon that have entered Mainstream British English. This is also similar to how various aspects of Appalachian English and African American English have become part of Mainstream American English. This has to do with **normalization**; at some point, a dialect that was either secretive or definitely considered substandard in prescriptive terms becomes accepted, or becomes normalized. Part of that is an evolution of the language and the culture along with it. Those of us that are old enough to remember when rap first started coming out, we remember that there was a huge shock at the language being used—this is before gangsta rap started, back when the Sugar Hill Gang, Run DMC, Big Daddy Kane, and all of these original rappers that were coming out and getting mainstream play. There was a big shock, mostly amongst white Americans, who were shocked at what they were hearing—that African American Vernacular English had been glorified. Within 10 years, to the early- to mid-90s, African American vernacular English became more mainstream. I remember having a fierce debate with my dad because he was aghast that I was listening to rap. He couldn't understand how I could connect with it; I just liked the rhythm, the beats; white suburban girl here liked it. I have to say my dad changed his opinion about rap pretty early on; he was pretty cool with it mostly because he had the same discussions with his mother when it came to rock and roll. When I brought up that comment, he backed off; he started listening. The same conversations happen with every generation or two: 'So-and-so's language, so-and-so's dialect is terrible; it's an impoverished blah-blah-blah… that's not what we do with respect to linguistics. We mark the trajectory; we observe and we document. What is true is that marginalized dialects, when they become less marginalized and even folded into the mainstream, pretty interesting things happen to the then-mainstream dialect.

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7.8: Gender and Class Dialects

7.8.1: Gender and Class Dialects, from Sarah Harmon



7.8.1.1: Video Script

In the video above, I have a little bit of something called Cockney, which we'll get into that in a minute. Cockney is part of a gender or class dialect that first started off with the men of Eastern London, and then quickly spread throughout the East End of London. When we talk about gender dialects or class dialects, they tend to be well connected to one another in a variety of ways.

7.8.1.1.1: Gender-based Dialects

Let's first talk about gender-based dialects. We're not just talking about women being a little more polite than others, or men being a little bit more straightforward than others or anything along those lines. When we're talking about a gender-based dialect, we are specifically talking about how there are phonological, morphological and sometimes even syntactic differences between how an identified male talks versus and how an identified female talks. Many of these differences can be seen, not just within the gender itself, so if a man talks to a woman, there could be differences there too.

I’m going to start with Muskogeean, a language in the Algonquin language family, and is spoken in the general northeast of the United States, a little bit closer to upstate New York. If we have these verb phrases

Male Speaker	Female Speaker	Gloss
kan	ka	'he is playing
molhís	molhìl	'we are peeling it
lakawhos	lakawbol	'lift it!' (command)

Notice that there is actually a difference between how a man says it versus how a woman says it, Notice, too, in these examples, the data that we have do not include anybody who is not such gendered. That is a hole, but sociolinguists are working to address these areas of need. It is really interesting to note that there is an actual difference in the inflection depending on whether the person identifies as male or female.

Traditional Japanese has some of the same characteristics, although not with a verb phrase, but with personal pronouns: the term for ‘I’. If you have learned Japanese, probably you do not speak Traditional Japanese; you speak Modern Japanese or Mainstream Japanese, which is usually based out of Tokyo. Traditional Japanese is what the upper class used to speak up until about 40 years ago and it's based mostly out of Kyoto. Traditional Japanese basically was isolated as a class difference, but then within that there were also gender differences in certain cases.

Note

Traditional Japanese (not general population)

- First-person singular pronoun 'I'
  - Female dialect: *átashi*
  - Male dialect: *watákushi*
- Sentence particle, 'it's a matter of'
  - Female dialect: *no-*
  - Male dialect: *n da*
  - Neutral dialect: *n desu.*

The first-person singular pronoun is an important pronoun, linguistically. Females tended to refer to themselves not as ‘I’, and if you know modern Japanese, then you know it's *wátashi*. Instead, they said *átashi*. Notice there's a difference between that and how an adult male almost always would say *watákushi*, not *wátashi*. In many ways the modern Japanese almost seems like a combination of the two: take the [w] sound from *watákushi* and put it to the front of *átashi* to get *wátashi*. This does not include the fact that in many dialects of Japanese, the first male of the family refers to himself as *boku*. This boku is used by many boys, although it can be continued on into adulthood, but *boku* is also different because others, especially the mother or grandmother of the family, will use that term with the first male child, instead of their name; there is more to this story, but it will be saved for another time. Much of the gender dialect distinction that existed in Traditional Japanese does not exist anymore in Mainstream Japanese, given that the regular use of Traditional Japanese mostly died out about 40 years ago and had been in decline for some time prior.

There is a sentence particle when you want to say ‘it's a matter of’, as in ‘it's a matter of respect’; ‘it's a matter of pride’; ‘it's a matter of (something). There was a neutral version usually used in mixed gender groups, and there was a male version and a female version.

By the way, this is not the same as Portuguese or any other language that uses grammatical gender on nouns and adjectives; for example, if you speak Portuguese, you know that the concept of saying ‘thank you’ is actually tied to the adjective for ‘obligated’, such that when you say ‘thank you’ to somebody you're saying ‘I’m obligated to do this for you’, but all wrapped up into one lexicon: *obrigado* or *obrigada*, depending on how the speaker identifies. There is a third option that's starting to come out and there's a couple different flavors of it, much like what is happening with Spanish. But this is a different thing; this is only with isolated cases in the case of like *obrigado* or *obrigada.* In the case of a gender dialect, we're actually seeing a systemic difference between how a cis-gendered female speaks and a cis-gendered male speaks. It has to do with syntax and morphology, not just phonology.

7.8.1.1.2: Linguistic Behaviors of Men and Women

We cannot leave this topic without talking about how men and women speak, and not just in English, but in all languages. Cis-gendered males and cis-gendered females definitely speak in different ways, both culturally as well as linguistically. It is interesting that this study really doesn't start until the early 1970s, in the US and actually specifically Berkeley. Robin Lakoff and Deborah Tannen are the two originators here, but there have been many others that have followed sense and have done studies, not just on American English, but throughout the world. There is a tendency, certainly in western cultures, to talk about women having certain linguistic characteristics and men tending to have certain other linguistic characteristics. Notice that I’m hedging a lot, using qualifiers like *tending*. Generally, we are not saying that every single woman uses more proper educated language, nor hedges to start an utterance, nor uses tag questions, nor uses more politeness techniques. We are not saying that no male does any, let alone, all of these. When Lakoff and Tannen were doing this evaluation this observation. They were not including the LGBT+ community at that time; that wasn't even on the radar at that era, although it has been interesting to see the evolution of area of sociolinguistics and the inclusion of various gender and sexuality groups. This is true both in the observation and the study of gender-linguistic tendencies, and in how all these different groups interact with one another and within themselves. It has been an interesting just observation lab for anybody who's a linguist. There are tendencies—not just with American speakers and not just with English speakers, but worldwide.

There is a tendency for women, especially those who are mothers and those who live and work in male-dominated societies, to have the following linguistic characteristics:

- use more prestigious language examples;
- hedge a little bit more;
- add tag questions—"You understand?" “Right?”—at the end of their statement; and
- use more politeness techniques.

Please note: this is not to say women can't be rude—we are very capable of being rude, we can very capable of being frank, speaking directly, using all sorts of jargon and slang and everything else in between.

Men have a tendency, especially if their fathers to have the following linguistic characteristics:

- use more colloquial speech;
- take stronger positions in language, although that can change;
- use fewer tools to check in with the audience like a tag question; and,
- use more direct in their statements.

It has been interesting to watch how empathy training in particular has made this change, or hasn't in some cases, and the reactions to it. This area of gender-based linguistic differences is evolving, and the data coming in now are fascinating. But in 1971 this was a pretty big revelation; in fact, Robin Lakoff and Deborah Tannen have both written extensively, not just on the subject, but on how their seminal work took off and let everybody explore this concept of what it is to use language in different ways, based off of your gender identity.

Why would any of this happened in the first place? Why would women and men have different language patterns? Frequently, especially in male dominated societies, women frequently have to negotiate a little bit more, we have to be a little nicer, we have to be non-confrontational; we have to double-down on that if we're in male-dominated arenas. Some of the research lately has shown that these tendencies are true even if in an all-female environments, but if there's a really dominant female that shows a lot of male linguistic traits, many women will take the other side of that coin, as it were.

Have these studies changed? Yes; we're starting to see quite a bit of change, especially in the last 10-15 years. Is this going to stay, or is that change going to entrench itself, or is it going to change further? We don't know is the answer, but that's what we're going to be doing as linguists: we observe language as it is used.

One of the things that we have noticed is that this concept of face is important to women, and not just here in the United States or in English-speaking countries or communities. It is important, almost universally in almost every culture, in particular if a woman is a caretaker or mother of children. **Face** is the concept of wanting to put your best face forward. Women tend to put a lot of emphasis on face, although it's not to say that men don't; certainly, some men do and some men don't it, and emphasizing positive face doesn't make them more feminine. I will be going back to this topic and later point in time, but I made a point when I first started working on this topic, maybe about 15 years ago, to write observations and current research at the time in a little journal and I told myself in 20 years I wanted to come back to that. We're almost up on those 20 years and I’m starting to cultivate a little bit of that research now, both in journal articles and books, but also in my own observations. In my case, I’m not looking at English; I’m looking at Spanish and I’m looking at Italian, which are the two languages I most often work in. I’m looking at how this is changing, especially given that Italian culture is heavily macho with male dominance being very strong; certainly, you can say for most if not all Spanish speaking cultures machismo is an element as far as how male driven or male dominant varies from one culture to the next. Spain is fairly macho, for example, and that's where I’ve been doing a lot of this initial investigation, looking at the dialects of Spain. I’m also looking at what's happening in Latin America, because there is so much information there and, in many ways, Latin Americans are a little bit ahead of the curve with respect to the Spaniards on this topic; there seems to be a bit more equity in language there. It's an interesting discussion; come back in about five years and we'll talk more.

7.8.1.1.3: Class-based Dialects

While there is some connection between gender-based dialects and class-based dialects—a connection that we’ll talk about later—it’s time to focus now on class-based dialects. In this section I’ll showcase two very different examples.

If you know anything about the cultures of South Asia, you know that, at least at one point and perhaps still, there was a caste system, which is a social stratification with different social levels. The highest caste was frequently called the Brahmin caste or the Brahmin group; they were usually priests, the royal families, the highest of the highest. That group frequently did not speak with lower caste members, which meant that there was isolation. In that way, the Brahmin dialect of many of the languages of South Asia, whether they are Indo-European or Dravidian, there are distinct differences. We see some examples from the Brahmin dialect of Tamil, which is spoken in Sri Lanka. It's a Dravidian language so it's not connected to Hindi, Gujarati, Urdu, or any of those

languages, as they are all Indo-European. Dravidian languages actually dominated what is now considered India, and then got pushed south to the southern part of India, as well as Sri Lanka.

We see differences of pronunciation, as well as morphological differences; while I don't have it here, but we do have some syntactic differences. Why is this important? These castes for the most part officially have gone away, although you could argue that unofficially they still exist. What is clear is the Brahmins that were of the upper echelon over the last several generations, they have mixed in more with many other of the general populace. As a result, many of these class-based dialects have started to neutralize and started to disappear, but others still exist. This is not just true of Tamil, but of most of the South Asian areas where there was a very distinct and very separate Brahmin caste or speech community.

The class-based dialect that I think for most English speakers is really the perfect example of a caste-based dialect is Cockney. You may have heard of Cockney before this class, certainly if you are into British soap operas and British media in general, you know of Cockney. It is probably best explained as a rhyming word play, but in truth it's almost a dialect. It's a coding, much like Polari is was a coding for gay men in particular of the 19th and 20th centuries, but Cockney in this case is more for those who are Eastenders. The term ‘Eastenders’ refers to those who live in a very specific region of the eastern part of London and, specifically, it has to do with if you are within sounding distance of the chime of a very specific church in that part of London, I believe it's Westgate. If you are within the sound of that bell, you are an Eastender and you probably know Cockney. There are two long running dramas in the UK—one is called *EastEnders* and the other one is called *Coronation Street*, often called ‘Corie’. They were examples of Cockney in action, as almost every character talked using Cockney.

The exact start of cockney is unknown, although we suspect that is probably somewhere in the late 18th-early 19th century; definitely by mid-19th century it is strongly entrenched into the East end of London, where we probably see its most with respect to the Irish laborers who lived in that part of the city. However, the roots of Cockney may go as far back to the Middle Ages. What we do know is that this concept of rhyming was used to code or not talk about certain things, as a way to get one on get one over on their landlords or their managers. It definitely has some distinct phonological and lexical aspects.

The phonological aspect is just something that's very common to eastern London. Examples include:

- Lenition, or weakening, of that r-sound at the end of a word; sometimes it goes to a [w] and sometimes it completely disappears;
- Reduction of a [t] to [ʔ], especially when intervocalic; think of that neutralization rule that we saw where [t] and [d] would combine to use that little tap, as in that we do not say [lætɻ] and [lædɻ], instead saying [lætɻ]. For Cockney, that [ɾ] is going to change to a glottal stop more often than not;
- deletion of an [h]; so this isn't a [haʷs], but [aʷs];
- the velarized [L] changes to a vowel; and,
- fronting of interdental [θ, ð] to labiodental sounds (something we saw in African American vernacular English)

Again, this concept of changing sounds reducing them down, it's a really interesting comparison with what we hear in so many other dialects throughout the English-speaking world.

Of course, if it's a rhyming slang, we clearly have to talk about lexical changes. Its seemingly random and yet not; it seemingly has some connection to mainstream media, but not always. It's a type of mental gymnastics you have to play. Instead of saying ‘a bottle’ of something, like a bottle of Scotch or a bottle of wine, you say ‘an Aristotle’, because ‘Aristotle’ and ‘bottle’ rhyme. Instead of saying something is in your ‘pocket’, you say something is in your ‘rocket’; again, the rhyme. You can also take a rhyme and then shrink it: if you want to say you're going ‘up the stairs’, you can say you're going ‘up the apples and pears’, or you can just say you're going ‘up the apples’ and just knock off the ‘pears’ part. If you are in trouble, you can say you're ‘in Barney Rubble’, or you can just say you're ‘in Barney’. Everybody knows what you mean. ‘Face’ as a ‘Chevy Chase’; ‘pub’ is a ‘nuclear sub’; ‘chest’ is a ‘bird's nest’; you get the point. There's a slew of these rhymes, and it's all as a way to code, so that the person you're talking to knows what you're saying while everybody else may not.

There's also some metaphoric slang, especially with respect to certain bodily functions or fluids. For example, like blood is claret, which is a type of red wine blend that is really popular and has been for hundreds of years in in England.

Below you have an example taken from the movie *Lock*, *Stock* and *Two Smoking Barrels*. Guy Ritchie is a filmmaker from the UK. You may have seen some of his work before, and he has a love affair with Eastenders; he loves including at least one, if not most of this cast, having Cockney as part of the repertoire. In the clip below, you have an example where somebody is describing a fight that happened in the bar the other night. It is captioned and by captions I mean it's actually translated subtitles as to what the person is trying to say in more mainstream British English; the closed captioning should also take that into account.

Have fun with it; Cockney is kind of fun.



7.8.2: Pronouns, language change, and the grammar police



Analogously to names, we also use pronouns to express things about our own identity and make guesses about other people's identities. We'll learn more about pronouns in Chapter 6, but for now here's a simple explanation. In standardized varieties of English[1], first-person pronouns (*I*, *me*, *we*, *us*) refer to the person who is speaking, signing, or writing and second-person pronouns (*you*) are for the person being addressed. Third-person pronouns refer to someone else, and can often replace a noun phrase in a sentence. Here are some examples of English third-person pronouns.

inanimate singular	*it*	Samnang really enjoyed the latest book by Ivan Coyote. Samnang really enjoyed it.
animate singular masculine	*he*, *him*	Samnang invited Steve to a movie. Samnang invited him to a movie.

animate singular feminine	*she, her*	Samnang thinks the woman who lives next door is a good gardener. Samnang thinks she is a good gardener.
animate singular ungendered	*they, them*	The passenger in Seat 3A forgot their coat. They forgot their coat.

In the sentence, “Samnang really enjoyed the latest book by Ivan Coyote”, we can replace that noun phrase, *the latest book by Ivan Coyote* with *it*. “Samnang invited Steve to a movie.” We can replace *Steve* with *him:* “Samnang invited him to a movie.” In the next sentence, “Samnang thinks the woman who lives next door is a good gardener”, we can replace that phrase with *she*: “Samnang thinks she is a good gardener”. In, “The passenger in Seat 3A forgot their coat”, we can replace that noun phrase with, “They forgot their coat.”

Notice that third-person singular pronouns give some vague clues about their referent: we assume that *it* refers to a thing, *he* to a boy or a man, and *she* to a woman or girl. Those three categories — thing, human male, human female — are very broad, and yet, they can still be used to do harm and exclude people. In many cultures there’s a general expectation that we use appropriately-gendered pronouns when we’re referring to people. Even when we meet a tiny baby who can’t possibly be offended, we’re still careful to ask “boy or girl?” and to use the relevant pronoun. After infancy, getting **misgendered** with the wrong pronouns can range from embarrassing to outright dangerous. Furthermore, a two-way distinction between masculine and feminine is too simple to describe the rich variation among human genders. A person who’s neither male nor female (for example, non-binary, genderqueer, or gender-fluid) can experience both *he/him* and *she/her* as misgendering. Here’s where the pronouns *they* and *them* are useful.

The pronoun *they* doesn’t offer many clues: it doesn’t specify whether the referents are animate or inanimate, masculine or feminine. Here are some examples of plural *they*:

plural ungendered animacy unspecified	*they, them*	The pistachio cupcakes are delicious. They are delicious.The prof told the students that class was cancelled. The prof told them that class was cancelled.

In fact, *they* doesn’t always even specify whether it’s singular or plural. Here are some more examples.

number unspecified	I don’t know who was in here but they left a big mess.
singular, gender unspecified	One of my students told me they needed an extension.

In “I don’t know who was in here but they left a big mess”, we don’t know how many people left the big mess – it could be one, two, or twenty, and the pronoun *they* doesn’t give us any clues. In this next one, “One of my students told me they needed an extension”, it’s clearly only one student who asked for an extension, and either we don’t know their identity or it just isn’t relevant to the story, so *they* also does the job. This singular use of *they* has been common in English for about 600 years. These days, English is changing to include the use of *they* to refer to a single person whose identity we do know, as in, “Samnang told me they needed an extension.”

In many ways, this shift from unspecified-singular-*they* to specific-singular-*they* feels like a tiny change to the grammar of English. But since this change is related to a change in patriarchal gender norms, people who benefit from those norms tend to get prescriptive, insisting that singular they is always ungrammatical in every circumstance. The *Chicago Manual of Style* tells people “it is still considered ungrammatical”, and the *AP Stylebook* tells you it’s “acceptable in limited cases” but they’d really prefer if you didn’t use it. And then there are the extremely crabby folks like Jen Doll, who complains, “The singular they is ear-hurting, eye-burning, soul-ravaging, mind-numbing syntactic folly. Stop the singular they. Stop it now.” (Doll 2013). But no matter how much the prescriptivists complain, specific-singular-they is getting used more and more widely. In 2015 the American Dialect Society voted it the Word of the Year and the Merriam-Webster Dictionary did the same in 2019.

The funny thing is, the English pronoun system went through a very similar change hundreds of years ago. In the 16th century, English used to have both a singular and a plural second-person pronoun. If you were talking to a group of people, you’d say *you* just like we do now. But if you were talking to just one person, you’d address them as *thou* or *thee*, like, “What classes art thou

taking this term?" or "Can I buy thee a drink?". By the 17th century, *thou* and *thee* had all but disappeared and were only reserved for conversations with people you're very close to. So the pronoun *you* became both singular and plural. In modern English, we don't have *thou* or *thee* at all unless we're trying to be funny or old-fashioned. But it can be pretty useful to have a way of distinguishing between singular and plural, so some varieties of spoken English have other plural forms, like *y'all* or *you guys* or *youse*. Maybe your variety of English has one of these.

Linguists are conducting systematic research on how the change to English *they* is unfolding. Bjorkman (2017) found that English speakers with a conservative grammar didn't use *they* in this way, but those with an "innovative" grammar did. Ackerman (2019) has proposed that the more trans and non-binary friends you have, the likelier your grammar is to have specific-singular-*they*. Conrod (2019) showed in their dissertation that older people were less likely to use it and younger people were more likely, and Konnelly & Cowper (2020) tracked the three stages of grammatical change that are in progress.

No one can stop language from changing. But language users can speed up language change. Misgendering people does real harm. One way to make it less likely that non-binary people will be misgendered is for English to make this small change to include specific-singular-*they*. And the way that language changes is for people to change how they use it. If you already have specific-singular-*they* in your grammar, use it as much as you can! And if you'd like to change your own mental grammar, Kirby Conrod (2017) gives some good advice — slow down, listen to people who use it in their own language, and practice! The more you use it, the more natural it will feel.

7.8.3: Check your understanding

7.8.4: References

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1. Many languages have more subtle distinctions than these in their pronoun systems but all languages encode at least a three-way difference between first-, second- and third-person pronouns. ↵

7.8.5: Do women and men use language the same way?, from Anthony Pym (optional)

Anthony Pym is a professor of sociolinguistics and translation at Rovira i Virgili University in Tarragona, Spain. He has a series of lectures on his YouTube channel on language. This is one of his talks on how women and men use language. (There is no video script associated with the video, but it is captioned via YouTube's autogenerated captioning.)



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7.9: Prestige and Politics

7.9.1: Prestige and Politics, from Sarah Harmon



7.9.1.1: Video Script

I made it clear at the beginning that there are certain dialects that are given more prestige than others. When I say they're given more prestige, it is not by linguists; we don't give prestige to anyone. However, in a society, a certain dialect or manner of speaking will get more prestige than others and frequently, it has to do with power and therefore politics so let's briefly talk about that.

In every single culture, there is considered a prestige dialect. What does that mean? The prestige dialect is the one that everybody emulates frequently, although not always; it is the dialect of those who are generally in power—not just one person, but several people. That being said, I have to reiterate the fact that we as linguists do not mark something as supposed to be prestigious. We observe. The other thing we observe is that frequently non-prestige dialects are considered substandard—not just nonstandard but substandard—and then many times, even being banned. That can be true not just of dialects, but of minority languages that are used in that society.

Let me give you some examples of languages and dialects that have been banned. This has to do with prestige and power.

If you know anything about the history of Spain, especially in the modern times, in the in the 30s there was the Spanish Civil War, and Francisco Franco came into power. He banned all other dialects of Spanish outside of Castilian Spanish, because the capital Madrid is in Cast, therefore, that is, the mainstream and of story, and so, for the 42 years that he was empower if you spoke anything other than Castilian Spanish, you had problems. This attitude was doubled down on the other languages that were spoken in Spain; Basque, Catalán, Gallego, Valenciano, these were all banned. When I say banned, I mean you could not speak them or read them or write them in public. Music, radio, TV, schools, print media, none of it.

That is a pretty extreme example; by no means is it unique. When we're talking about modern times, so think the Renaissance forward, there have been multiple cases of a group put into power that banned all other dialects and languages. In France, part of the French Revolution in the 1780s and 90s had to do with the marketing of Parisian French as the standard, as the prestige dialect, as the language of the people and of the language of the revolution. As a result, all other dialects, as well as all other languages, spoken in France were not allowed in schools, exactly because they were just not prestigious enough. That continues to this day. You have Basque, Breton, Occitan, Provençal, Gascon, all of them—if they have not already died out, they are severely threatened. The Basque community is probably the strongest of that group, mostly because of the Basques who are in Spain helping the ones in France. Breton is still around, although very much endangered. Provençal on its very last legs; there probably are only literally a handful of native speakers left. Gascon and Occitan have already disappeared.

The Celtic languages in general, but especially in the United Kingdom and the British Isles, including when Britain also included Ireland as part of its realm. The Celtic languages were all suppressed by the government and by the churches, first the Catholic

Church and then the Anglican Church. It continued all the way through the early-mid part of the 20th century; it's really only since about the 1970s that there has been a concerted effort to revitalize the Celtic languages of the British Isles. The revitalization movement started in Ireland, once it gained its independence in the 1910s. It was able to start establishing Irish Gaelic as an official language to start building up the speakership, and it has gotten to the point that most folks, depending on where you grow up in Ireland, are exposed to Irish Gaelic. All are taught Irish Gaelic throughout their schooling years.

Certainly, if we talked about this topic in modern times, we do need to bring up the USSR or Soviet Russia. Although the seeds of this really start before the revolution, at the start of the Russian Empire; being that Moscow was the capital, Muscovites were given prestige for their dialect. Any other dialect of Russian was not held in such esteem, and, of course, the same was true for any of the non-Russian languages spoken in the Empire. This is particularly true of any of the non-Indo-European languages. We still see this battle in the Ukraine, with respect to Ukrainian versus Russian, and that Ukrainian is definitely coming back strong. We also see the other side in Belarus, as Belorussian is very endangered, all thanks to the close ties that the current government regimes have had with Russia. As you can see, it also with Lithuanian, Georgian, Armenian, Kazakh, Uzbek, and so many other languages in what first was part of the Russian Empire and then later Soviet Russia.

Why it's important to bring this up is the fact that when we talk about language policies, one of two things happens: either the language that is being affected—the minority languages, at were—is being tamped down and goes underground. This mostly happens with languages, but it can happen with dialects; African American English is actually a great example of this. When these folks were enslaved, they were pushed to not speak these dialects but then, as there was more and more freedom to do so, more and more folks spoke African American Vernacular English in their daily lives. It can also lead to revitalization efforts down the road. For example, once Franco passed away in 1978, one of the first things that happened was a revitalization, especially of Basque and Catalán. This was not surprising, because the Basque Country and Cataluña are the two richest provinces in all of Spain, the two biggest ports and the two biggest longstanding cultural areas. Gallego and Valenciano have had more of a struggle. Gallego is starting to get some traction back and certainly connections with Portuguese help, but it hasn't come along the same way that Catalán and Basque. Valenciano is even more endangered, especially given that, if you think about where Valencia is in Spain, it is halfway between Castile on the one hand and Cataluña on the other. In many ways, Valenciano is almost a in-between language that encapsulates aspects of both Castilian Spanish and Catalán. It's not having as much success as either of those languages in it's going forward.

In the case of the Celtic languages, we see a very strong showing with respect to Welsh, we see a pretty strong showing with respect to Irish Gaelic, although there are questions about sustainability. However, we see less sustainability with Scotts Gaelic, although there may be a reinvigoration again. Manx completely disappeared and then completely came back, all because of the will of the people. Breton is very much endangered, and Cornish is completely gone, although you still see vestiges of it now and then, if you go to Cornwall. Those are just the languages; when we talk about dialects, it's the same route as well.

All languages evolve, of course, but at some point, something's going to happen and all languages at some point will have a death. It's just inevitable, but how that happens depends. For example, most of the time it just gradually falls out of use, with generation after generation after generation opting for something else; this is **gradual language death**. Sometimes that something else is forced upon them because of a change in government or society, but often it's also just due to historical evolution; think of Latin, which had a fairly gradual death. If you think of Classical Latin, that actually was not being spoken by most folks when Augustus Caesar came into power. The upper elite might have been using Classical Latin, but certainly not the common folk; they were using Vulgar Latin, and that evolved into the modern Romance languages. Sometimes you do have a **sudden language death**, where you have a total extinction of the population all at once; think of a genocide, in particular. **Radical language death** happens due to political influence, usually within one to two generations. It's maybe not quite as sudden as the first one, but definitely is within a couple generations. We also have **bottom to top language deaths**, when the language just falls out of use, but it's still being used on some levels; this is actually the case of Latin, as it's a combination of three and four. It just started gradually not being used, and then it comes back a little bit with respect to Medieval Latin and Clergy Latin, which is the Latin that was used in the monasteries all throughout England and mainland Europe right through to the Renaissance.

It is important to also realize that when we're talking about how languages can become extinct, a lot of it just has to do with circumstances. A great example of this right now is Covid-19, and the fact that we have seen devastating losses in so many speech communities where the language may have already been on the way out, if not highly endangered. We're seeing it throughout parts of Asia and the Pacific Islands; we're seeing it throughout Australia; we're seeing it through the Americas as well with indigenous populations; and, to a lesser extent, we're also seeing it in Africa. It's important to understand that when we have language

extinction, yes, there is a sadness to it. However, as a linguist, it's also a natural part of evolution; this is what happens. As long as we try to document what happens and what how that language has been spoken for some time, we at least do what we can.

It is a reminder, by the way, that just because a language becomes extinct, that does not mean that we can't revitalize it. The Celtic languages are really great example of this; another one is Hebrew. The Modern Hebrew that is spoken today has really only been in existence for about 150 years. Classical Hebrew died out many centuries ago. It was revitalized because a group of people wanted to do it, and they did so in a systematic way: taking Classical Hebrew and adding modern aspects, including aspects of Modern Arabic and Amharic, two closely related or sibling Semitic languages. Manx is another example; essentially, it was extinct for at least three generations, but then the people brought it back with a concerted effort.

No matter what you do language changes. It evolves, period, end of story. Every time a child is born and they acquire at least one, if not more than one language, there are changes that happened. There are changes genetically, sociologically and linguistically that just happen. When you have a change in population and/or speech community—mass migration, massive illness that takes out a very large group of people—we also have change with respect to analogy. I'll explain a little more of that in historical linguistics; suffice it to say that when we talk about analogy, we're talking about weeding out irregularities. We also just see other changes in society; take Latin for an example. In Classical Latin, you have very distinct, very crisp inflections—almost always suffixes—that are full of consonants. By the time we get to Vulgar Latin and Late Latin—Vulgar Latin is the Latin of the people, Late Latin starts with the century of the Roman Empire, roughly the 5th century CE—we start seeing constant deletion, especially at the word final position. However, if that consonant is part of how you distinguish one inflection from another, that's going to have a lot of repercussions, and one of them is the loss of case system—no more fancy inflection for the subject versus the object. You have more fixed word order, and this all happens at the same time, so it becomes a chicken in the egg paradox. You can't really tell when one change starts and then the other change is affected next; they all seem to happen all at the same time. It reminds me of watching metal, especially like gold or silver, in a crucible. It goes from a solid state to a liquid state lickety-split and all at once. A lot of these changes seem to happen that same way, or at least they start that way, and then they continue to evolve as speakers continue to use the language.

7.9.2: Linguistic Law Enforcement



In many cultures there’s a general sense that it’s rude to criticize or call attention to various kinds of social difference. In Canada, most kids learn in school that it’s impolite to stare at a person who has a visible disability, to make jokes about fat bodies, or to comment on someone’s gender-nonconforming appearance. Or at least, we learn not to express these opinions in public.

In contrast, it’s not only socially acceptable but even expected and encouraged to criticize language use that deviates from the privileged standard, calling it improper, ungrammatical, or worse. In this unit we’ll look at some of the domains where prescriptive standards of grammar get wielded like law enforcement, to keep social order.

7.9.3: Policing Voices

We saw in the previous unit that people who object to using *they/them* pronouns for non-binary people often phrase their objections not in terms of gender norms but terms of grammar, insisting that *they* can't possibly be singular because that would be ungrammatical! Bradley's (2019) work has shown that people with prescriptive views of grammar also tend to have conservative views about the gender binary — in other words, it's not just about grammar.

Another way that people police language use to enforce gender norms is by criticizing women's voices. When I was young, the older generation complained about uptalk? When your pitch rises? At the end of a sentence? Beginning sometime in the 2010s, the moral panic started to center on **vocal fry**. Chapter 3 will give us a chance to explore more about how humans make speech sounds in the vocal tract. For now, you should know that vocal fry is a way of producing speech with very low frequency vibrations of the vocal folds, so that it sounds creaky. **Creak** is actually one of the technical linguistic terms for this voice quality, and creak is a systematic part of the phonetics, phonology, and prosody of many spoken languages around the world (Davidson 2020).

In addition to the jobs the vocal fry does in the grammar, it also provides social cues that listeners interpret. Davidson's (2020) review article mentions studies that found that speakers who use vocal fry are perceived as more bored, more relaxed, less intelligent and less confident, among other attributes. But even though men and women speaking English are about equally likely to creak, for some reason listeners, or at least listeners older than 40, find it wildly more irritating when women do it. Ira Glass, host of the podcast *This American Life* and frequent vocal fryer himself, reports that he's received dozens of emails complaining about his female colleagues' vocal fry, "some of the angriest emails we ever get. They call these women's voices unbearable, excruciating, annoyingly adolescent, beyond annoying," (Glass, 2015) but no emails complaining about his voice or those of his male colleagues. Confirming Glass's anecdotal report, Anderson et al.[1] (2014) found that, "The negative perceptions of vocal fry are stronger for female voices relative to male voices" and they recommend that "young American females should avoid using vocal fry speech in order to maximize labor market opportunities." Does that sound familiar? Just like the résumé study we learned about in the previous unit, this is another instance of job candidates being judged not for their qualifications and experience, but for the social cues being indexed by their voice. It's not too likely that the pitch of your speaking voice is related to your job performance, so rather than telling job candidates to change their name or change how they use language to conform to the biases of the hiring manager, how about we train hiring committees to overcome these biases?

7.9.4: Policing Accents

Besides voice, another part of language use that is subject to linguistic law enforcement is accent. Everybody has an accent, but we tend to notice only the accents that are different from our own. In an earlier unit, we learned about the common belief that a standardized variety is the best or most correct way of using language. That logic extends to accents as well: a non-standard accent is often **stigmatized**. The accent itself is neither bad nor good, but the stigma means that people have negative attitudes and expectations about it. Where English is the majority language, people who learned English later in life often encounter that stigma. And there are also L1 varieties whose speakers experience stigma, such as Black English, the varieties spoken in the southeastern United States, and Newfoundland English.

Chapters 11 and 12 deal with how children and adults learn language in much more detail. Here, we'll use the term ***first language*** or **L1** to refer to the language(s) that you learned from birth from the people around you, and **L2** for any language you learned after you already had an L1, even if it's actually your third or fourth language.

Why do L2 users have different accents from L1 users? The short answer is that, when you learn an L2, your mental grammar for that L2 is influenced by the experience you have in your L1. (The longer answer comes in a later chapter!) So your accent in your L2 is shaped by the phonology of your L1. What this means is that if your L1 is English and you learn Japanese as an L2, your accent in Japanese is likely to be different from that of your classmate whose L1 is Korean.

For people whose accents are different from the mainstream, there can be many negative consequences. You're less likely to get a job interview (Oreopoulos, 2011), and your boss might not recognize your skills (Russo et al., 2017). It's harder to find a landlord who's willing to rent you an apartment (Purnell et al., 1999; Hogan & Berry, 2011). If you have to go to court, what you say won't be taken as seriously (Grant, 2019), and the court reporter is likelier to make mistakes in transcribing your testimony (Jones et al., 2019). Kids whose accents aren't mainstream are disproportionately labelled with learning disabilities and streamed out of academic classrooms into special ed (Adjei, 2018; Kooc & Kiru, 2018). And probably Alexa, Siri, and Google won't understand your requests (Koenecke et al., 2020)!

Why do these things happen? Well, in the case of Alexa, it's because the training data doesn't include enough variation in dialects and accents. But the rest of these situations arise from people's expectations, and their expectations come from their experiences and their attitudes. Two linguists at the University of British Columbia conducted a matched-guise study with UBC students as listeners (Babel & Russell, 2015). They recorded the voices of several people who had grown up in Canada and had English as their L1. When they played these recordings to the listeners, they presented them either as audio-only, with a picture of the face of a white Canadian person, or with a picture of a Chinese Canadian person. For any given voice, the listeners rated the talker as having a stronger accent when they saw a Chinese Canadian face than when they saw a white Canadian face, and they were also less accurate at writing down the sentences the talker said. Apparently the faces influenced how well the listeners understood the talkers.

The researchers interpret their results as a mismatch of expectations. In Richmond, BC, where they conducted their study, more than 40% of the population speaks either Cantonese or Mandarin. If you live in Richmond, you have a greater chance of encountering L1 Chinese speakers in your daily life than L1 English speakers. So when you see a face that appears Chinese, you have an expectation, based on your daily experience, that that person's English is going to be Chinese-accented. If the person's accent turns out to be that of an L1 English speaker, the mismatch with your expectations makes it harder to understand what they say.

So we've seen that people's expectations, their experiences and their attitudes can lead to stigma for language users with accents that are different from the mainstream. And that stigma can have serious, real-life consequences on people's employment and housing and education. In addition to the consequences for the person producing an unfamiliar accent, there can also be consequences for the person trying to understand an unfamiliar accent. Those consequences can be pretty serious if you're finding it difficult to understand the person giving you medical advice (Lambert et al., 2010), or teaching you differential equations (Ramjattan, 2020; Rubin, 1992). Accent "neutralization" is big business and L2 English speakers experience a lot of pressure to "reduce" their accents (Aneesh, 2015). As we'll see in more detail in Chapter 12, it's hard to change your accent after childhood, because your L2 grammar is shaped by your L1 experience. And your accent is part of who you are — it's part of your story and your community. As linguists, let's resist the narrative that pressures everyone to conform to some arbitrary standard accent. Luckily enough, psycholinguistic research shows us that it's much easier to change your comprehension of unfamiliar accents than it is to change your L2 production.

Just as our experience and our expectations can lead to stigma, our experience also influences our perception. The more experience we have paying attention to someone, the better we understand them: this is called **perceptual adaptation**. Perceptual adaptation was first shown for a single talker: the longer people listened to an unfamiliar talker, the more they understood of what the talker said (Nygaard, 1994). Extensions of that research have also shown that experience listening to several speakers with a particular accent makes it easier to understand a new speaker with that same accent (Bradlow & Bent, 2008). And it turns out that listening to a variety of unfamiliar accents then makes it easier to understand a new talker with a completely different accent (Baese-Berk et al., 2013). In short, the more experience we have paying attention to someone, the more familiarity we have with the way they produce language, and the more familiarity we have, the better we'll understand what they're saying.

So if you want to better understand someone whose accent is different from yours, the best way to accomplish that is to pay attention to them for longer. Likewise, if someone thinks your accent is hard to understand, you can just tell them to pay attention!

7.9.5: Check your understanding

7.9.6: References

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1. No relation to the Anderson of this textbook! ↵

7.9.7: Legally Enshrined Harms

In previous sections we saw how people police each other's language as a means of asserting power. But what about language policies imposed by actual governments in power? Governments and institutions use language to create unity in some cases and division in others. One way that governments wield their power is through language policies, which can be used to erase or reinforce social identities. They can be used to encourage or force people to speak or not speak particular languages, to prove competency in a language, or affect the physical landscape of our communities by regulating the language that appears on signs. Language policies can be implemented for positive or negative motivations, or sometimes they are well-intentioned, but short-sighted.

Canada, of course, has two official languages, French and English, but as we will see in Chapter 15, there are over 80 languages Indigenous to Canada from 9 different language families! Why should French and English, both imported languages, be the official languages?

The *Official Languages Act* was instituted in 1969 by Prime Minister Pierre Trudeau in order to maintain national unity between English and French Canada, in response to increasing francophone nationalism in the province of Quebec. At the time, the anglophone minority dominated the industrial, commercial, and financial sectors in Quebec. The *Official Languages Act* also led to Canada's policy of multiculturalism.

The *Official Languages Act* had some positive effects across Canada; it improved education and employment opportunities for francophones outside of Quebec. New Brunswick became officially bilingual. The Supreme Court of Canada overturned a law that had been in place since 1890 that made Manitoba officially monolingual, despite the fact that, when Manitoba joined Confederation in 1870, it had approximately equal numbers of francophones (often Métis) and anglophones. However, the *Official Languages Act* has a major shortcoming. What about Canada's Indigenous peoples? It does not offer protection or even recognition of the importance of these languages.

In Canadian history, language policies have been used as a part of the oppression of Indigenous peoples. Sections 1.4 and 2.4 in this book introduce the harms done to Indigenous people and communities by the residential school policy in Canada, which forced Indigenous children's attendance at the government and church-run facilities. The Government of Canada policed Indigenous people's language even prior to the creation of residential schools in the 1880s, with policies pushing toward assimilation and the loss of Indigenous languages and cultures. The government's goal was the assimilation of Indigenous children, to train them for menial jobs and weaken their claims to their land. Official policy dictated that English and French be the only languages of instruction at residential schools. Schools forbade children from using their home languages, and enforced the ban with cruel punishments. These policies were examples of **linguistic imperialism** or **linguistic colonialism**, wherein the suppression of language is part of a more general oppression of Indigenous cultures by settler-colonial powers (see Griffith, 2017). They further constituted attempted linguicide (the killing of a language), because children were prevented from practicing their first languages and associated their use with punishment and feelings of shame. These children also felt isolated from their home cultures as the ability to communicate in their home languages were lost (see e.g., Fontaine, 2017). The harms to people and communities due to the loss of languages at the hands of residential schools are lasting and ongoing. The parent-to-child transmission of language has been broken in a majority of Canada's Indigenous communities. Some residential school survivors still find it difficult to speak their native tongue because it is associated with trauma from their time at school. New legal policy may however be a positive part of the process of reclamation of Indigenous languages. For example, in a 2017 article, Fontaine calls for legal policy entitling children to education in their ancestral language, beyond the right to education in English and French (see the Canadian Charter of Rights and Freedoms, 1982, Section 23). The calls to action of the Truth and Reconciliation Commission of Canada included calls for the protection of Indigenous languages (see The Truth and Reconciliation Commission 2015), leading to the establishment of the *Indigenous Languages Act* in 2019. This act provides legal protection to Indigenous languages including funding for reclamation and revitalization.

The consequences of Canada's official focus on English-French bilingualism are still evident today. When Mary Simon was appointed Governor General in 2021, she was criticized for her lack of French proficiency, even though she is bilingual in English and Inuktitut. Simon promised to learn French and also related her language experience to educational policy in Canada, stating that "Based on my experience growing up in Quebec, I was denied the chance to learn French during my time in the federal government day schools" (as reported by CTV news, 2021).

The province of Quebec has its own language laws, with the goal of protecting French from assimilation into the anglophone majority in Canada. Quebec's language laws limit who is allowed to attend an anglophone school and require the French on signs to come first and to be twice as large as other languages. Unfortunately, though, these laws do not apply only to English, but to all languages, which negatively affects the Indigenous peoples of Quebec. The majority of Cree and Mohawk speakers in Quebec, for example, have English as their second language, and so these laws increase their difficulty in accessing education and other provincial services.

The Quebec Cree passed their own language act in 2019, the first law passed since they achieved self-governance in 2017. In contrast to Quebec's laws, however, they are not enforcing compliance for now. Instead, local governments, businesses, and others will need a Cree language plan for increasing the use of Cree in their organizations.

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7.10: Social Norms

7.10.1: Social Norms, from Sarah Harmon



7.10.1.1: Video Script

When we're talking about social norms, we're talking about how these social norms affect language in this case. Believe it or not, there's actually quite a bit that we can say about this.

Let's start off with talking about taboo. **Taboo**, of course, is that concept in which we talk about something that is unacceptable in society. In most every culture, there are certain cuss words or swearing or profanity words that you're not supposed to use…yet, everybody uses them. We use them as some kind of exclamation, or some kind of intensifying agent, and very frequently those profanities have something to do with blasphemy (having to do with the god or gods of whatever religion is being practiced in the area). They could also have to do with body parts or body fluids or bodily functions. Think about the cuss words or the profanities that you know—not just in English, but in any other language you speak. Chances are they have to do something, either with blasphemy, or something with the body. It is really interesting, by the way, to note that in so many cases in English, the profanity comes from an old Germanic word, but the acceptable term is frequently a Romance word. My favorite example is *shit* vs *manure*; *shit* is an old English word, very Germanic word, while *manure* is definitively French and got borrowed. In many cultures, there's an avoidance of death to the point of not saying any word having to do with death: not saying the names of dead people or dead ancestors, there's a number of ways to go about this. The most famous example, perhaps, has to do with the Chinese languages. Because of how the writing system reflects usually a number of things, the character and the term for the word *four* is very close to the character and the pronunciation of the word for *death*; it's either the exact same term just different tone or very similar. As a result, the number four is a very unlucky number. This is spread, not just from China and the various Chinese languages and cultures, but throughout most of East and Southeast Asia, simply due to the influence of the Chinese and their geopolitical status. By contrast, in most languages of the Sino-Tibetan realm, the word for *eight* and the word for *fortune* or *luck* are either the same or very similar, and so the number eight is good luck.

Euphemism and dysphemism. You probably have heard the term **euphemism** before, when you are making something better. The prefix *eu-* means ‘good’ so a euphemism. Instead of talking about how shitty somebody looks, you talk about how different they may look, how unconventional they may look; for some people, that would be a euphemism. **Dysphemism** is the opposite; it is purposefully including taboo, profane language or anything negative into something My favorite example of this is the word *fuck* in English, not just because it's a word I tend to use, but because its usage is amazing. This is true not just in American English, but in all world Englishes, that term has a life of its own. We can even make it an infix to make something even more intense. For example, take the adverb *absolutely*, and infix -fucking- into the middle of it, and you get *abso-fucking-lutely*. We even have a couple of famous acronyms, FUBAR and SNAFU—I'll let you look them up—that are examples of dysphemism.

Humor is always a part of social norms. I told you I’m a fan of *Archer.*



I like *Archer*, and the fact that not only the joke is pretty straightforward with respect to humor, but the name of the character: Fuchs. It's meant to be a play on a German last name, but you get the point. Humor is always a part of social norms in language, as it always taps into what is taboo and makes fun of it somehow. It's also very culturally specific; what works in one dialect or one speech community may not work in a different one.

Other elements to talk include **register**, which describes the changes that arise when we speak to different speech communities. If there is a significant difference—a class difference, role difference, along those lines—we measure the difference in register. When we think about going formal or informal in our speech, that's an issue of register. In many languages, you actually change morphology, syntax, semantics, and/or the lexicon when you use formal language; think of different types of inflection, different forms of address, along these lines. **Politeness** is also factored into register; how you are polite to your mother may not be how you were polite to your sibling or how you reply to your boss, or how you are polite to somebody you really don't like. In many ways we modify our language. Even the use of **jargon**—when it's appropriate to use jargon versus not when you have to explain it, and when you can just leave it as-is.

These are all elements of what we like to call social norms. Below is a is a video by Anthony Pym on diglossia and that really is going to hit with respect to register. **Diglossia** is when we maneuver between different speech communities and we modify our language accordingly. Sometimes it's being in a different dialect, but often is not; it also includes register and how we maneuver between these different groups.

7.10.2: The Power of Names



Our names are intimately entwined with our personhood. In addition to pointing to you as an individual, your name also provides many clues about your membership in social categories. People make guesses about your gender, age, and ethnicity on the basis of the clues they infer from your name. For example, imagine you're moving into residence at a Canadian university and you see your neighbours' names on their doors. On one side is Kimberley and on the other is Kimiko. Even before you meet Kimiko and Kimberley, you've probably made a guess about what they look like based on their names. Your guess might be wrong because these clues arise from general patterns, not absolutes, but your experience gave you some expectations.

7.10.3: Matched-Guise Study

It can be hard to make direct observations of people's attitudes about social difference, because it's generally not socially acceptable to express negative attitudes towards minority groups. So instead, we can use a technique called a **matched-guise** study to try to draw conclusions about attitudes. It works like this: The researchers present participants with some kind of **stimulus**. In one study (Oreopoulous 2011), the stimuli were a set of résumés. The researchers held the stimulus constant and changed the **guise** that it appeared in — in this case, the guise was the name at the top of the résumé. Different employers received the same résumés (the same stimuli) under different names (different guises).

The core idea in a matched-guise study is that if you find a difference in your participants' ratings, that difference isn't because of the stimulus, because you've held the stimulus constant. Any difference in ratings must be because of the guise — the way you labelled your stimuli.

There's evidence from social science research that employers and landlords also make guesses about people based on their names. And as you might expect, the guesses they make are shaped by societal structures of power and privilege. In a matched-guise study in Toronto, (Oreopoulous, 2011) the research team submitted thousands of mock résumés to job postings. They found that a given résumé with an English-sounding name like *Matthew Wilson* was much more likely to get a callback than the same résumé under the name *Rahul Kaur*, *Asif Sheikh*, or *Yong Zhang*, even when the résumé listed a Canadian university degree and indicated fluency in English and French. That same year, another matched-guise study (Hogan & Berry 2011) sent email inquiries to Toronto landlords who had advertised apartments on Craigslist. The landlords responded to emails from typically Arabic male names like *Osama Mubbaarak* at much lower rates than to inquiries from typically English names like *Peter McDonald*. It's clear that the hiring managers and the landlords in these studies used applicants' names to make judgments about their ethnicity and about their value as a potential employee or tenant.

I'm guessing that many of you reading, watching, or listening to this have names that are not traditionally English, and maybe you've grappled with this question: do I use my own name, or do I choose an English name that will be easier for my teachers and classmates to pronounce? On one hand, using an English name might just make daily life a little bit simpler in an English-dominant society. On the other hand, it's not fair that this pressure to conform to English even exists! Your name doesn't just do the job of signaling things about you to other people; your name can also be a vital expression of your own individual identity, representing a profound connection to your family, language, and community.

This is the case for many people who are working to reclaim their Indigenous languages: using a name from that language not only connects them to their ancestors, but also expresses resistance to the colonial names assigned in residential schools. When children arrived at residential school for the first time, they were given an English or French name and their hair was cut, two powerful symbols that the school intended to sever the children's connections to their home communities. Because of that trauma, many survivors of the schools also chose English or French names for their children and grandchildren rather than names from their own languages. This was the case for Ta7talíya Nahanee, a Sḵwx̱wú7mesh decolonial facilitator and strategist, whose grandfather gave her the English name that appears on her official Canadian documents. In June 2021, in response to Call To Action 17 of the Truth and Reconciliation Commission (2015), Canada launched a program that allows Indigenous people to reclaim their Indigenous names on passports and other official documents free of charge. But when Ta7talíya applied to have her documents changed to her Sḵwx̱wú7mesh sníchim name, the government denied her request, because of a rule that forbids numerals like "7" in legal names. But in Sḵwx̱wú7mesh sníchim orthography, 7 is not a numeral — it's a letter that corresponds to the glottal stop [ʔ], a contrastive phoneme in the language (see Chapter 4). Ta7talíya Nahanee is currently fighting for the right to her name. In an interview with the Toronto Star, she argued: "If all of us are able to share with the world every time we show our ID, it just opens up that normalizing Indigenous language, normalizing Indigenous teachings and normalizing Indigenous ways. So please make policy that works for us." (Keung, 2021)

Trans folks also know how powerful names are for expressing identity. If you've gone through a gender transition you might have experienced a sense of liberation when others call you by a name of your choice that matches your gender. And maybe you've also experienced the pain of being **deadnamed**, when someone uses your old name either accidentally or deliberately.

Deadnaming, forcible renaming, and mispronouncing names are all ways that people use language, specifically names, to enforce social structures of power. In the early 1900s when travelling by train was a luxurious experience for middle class white people in Canada, most of the train porters were Black, and all of them were called George. As historian Dr. Dorothy Williams says:

> *"Using Black men at that period, just 10, 20, 30 years from the end of slavery was a signal or a signpost to whites that these men should still be servants to them. […] So they didn't have to have an identity. Just like in slavery, they didn't have to have an identity as these Black men were now going to be called George, because that was the easiest reference most whites could make to get attention. Just call him George." (Bowen & Johnson, 2022)*

And it's not just in the olden days that Canadians expressed white supremacy through names. During the 2021 federal election, at least one person on Twitter repeatedly referred to NDP leader Jagmeet Singh as *Juggy*. Of the three leaders of the main federal parties, Singh was the only person of colour. Calling him *Juggy*, with English spelling and that diminutive affix -y, not only erased his Punjabi-Canadian identity but also infantilized him.

These examples all illustrate what Mary Bucholtz (2016) calls **indexical bleaching**. Replacing someone's name with an English one, or mispronouncing it so it sounds more English, are ways of "bleaching" that person's identity: it strips away their connection to family, community and language, and in place calls them by a name that sounds more English, that is, more white. In other words, it's a way of reinforcing existing structures of power and privilege.

7.10.4: Check your understanding

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7.10.6: Language and Offense



Content Note: This section discusses swear words and also makes brief mention of the concept of racial slurs.

7.10.7: Taboos and offence

In the previous section, we saw that language has a power beyond communicating the literal meaning: things can happen in the world as a result of us uttering something. Language is very powerful in this way. We just discussed how language is how we perform our identity. Another power that language has is the emotional effect that producing and/or perceiving certain expressions can have on us. Let's unpack what that means in this section and the next section.

What do we mean by emotional effect? One example of this is swears. Although the English words *poop* and *shit* have the same basic meaning and refer to the same physical substance, they are not completely interchangeable in conversation. While *poop* is fairly innocuous, almost childish, *shit* is considered **taboo**, which means that its use is avoided in except under certain circumstances. Violating this taboo by using it in the wrong circumstances is likely to cause offence. For example, if you break your toe and shout, "Oh, poop!", no one will be offended (though you may not feel as satisfied!), but if you ask a young child, "Do you need to take a shit?", this will surely offend many adults. Context matters, and using taboo language in the wrong context is culturally offensive, rather than just amusing or awkward.

Contrast this with other pairs of words that have the same basic meaning but different associations, but neither of which are considered offensive. For example, the English words *odour* and *aroma* both refer to smells. We tend to talk about unpleasant odours and pleasant aromas, but mixing up these associations won't offend anyone. The negative association of the word *odour* is not sufficient to make the word taboo.

It's easy to think that taboos are avoided in conversation because the taboo words themselves are bad somehow. This might be true for cases like *shit* where the word itself has a lot of negative emotional content attached to it. However, this is not always the case. In Kambaata (a Highland East Cushitic language of the Afro-Asiatic family, spoken in Ethiopia), it is traditionally taboo for a woman to use any words that begin with the same sounds as the name of her spouse's parents, so she is expected to use **taboo avoidance**, which is the replacement of taboo words with other words (Treis, 2005). This is not because of any negativity towards the in-laws or their names, but rather, it is a sign of respect for these relatives.

So language taboos can exist for either negative or positive reasons. What makes an expression taboo is that uttering it breaks the taboo and causes offence. Across the world's languages, there are many types of taboo language. The names of respected people

are often taboo: in-laws (as in Kambaata and many other languages), community elders, emperors, etc. Many languages also have taboo words for bodily waste, sexual organs and functions, death, and religious items or ideas.

Likewise, the strategies for taboo avoidance are varied. In Kambaata, many words have alternate forms that would be used to avoid matching an in-law's name. For example, a married Kambaata woman whose father-in-law is named *Tiráago* might replace the word *timá* 'leftover dish' with *ginjirá* to avoid using the beginning *ti–* sound that matches her father-in-law's name.

Instead of avoiding similarity, another taboo avoidance strategy is to replace the taboo word with a similar form, to help evoke the taboo word without actually uttering it. This is common for swear words, which may often be replaced with less offensive words that have similar form. An English speaker might yell out *sugar* or *shoot* when they stub their toe instead of *shit*. The matching initial sound retains some of the emotional power of uttering the actual swear word, while minimizing the offence that could result from violating the taboo against swearing.

7.10.7.1: **Swearing and physical pain**

The power of swearing is very real! Many studies (e.g. Stephens et al. 2009; 2020) show that swearing in response to pain actually seems to reduce the pain we feel. Interestingly, though similar-sounding words from taboo avoidance might carry some of the same emotional power, they don't seem to help with the pain itself in the way that the original swear words do. So the next time you drop a hammer on your foot, take comfort in knowing that your offensive swears can be beneficial!

7.10.8: Using a word versus mentioning a word

Most of the time when we communicate, each word is just one of many words strung together in an utterance. This is the ordinary **use** of these words. So in an English sentence like *wheat is a grain*, each of the words are used to say something about the world. In this case, the sentence is discussing wheat as a real world object, the actual physical grain itself, with the word *wheat* being **used** to refer to the grain.

However, an important feature of language is that it can be used to describe itself. That is, we can use language **metalinguistically** to discuss properties of language. This is what makes the entire field of linguistics possible! But it's not just linguists who do this. Ordinary language users frequently have metalinguistic conversations about language, and they do so by **mentioning** words and expressions as linguistic objects, rather than using them to refer to real world concepts. For example, while we use the word *wheat* in sentences like *wheat is a grain*, a sentence about the word itself would be mentioning it rather than using it, for example, if we were talking about how the word *wheat* is historically related to the word *white*. Here, we are not talking about the physical grain itself or the literal colour white, but rather, we are talking about the English words for that grain and that colour.

How to be a linguist:

The convention when we're being meta, that is, mentioning words that we need to talk about metalinguistically, is to present the mentioned words and expression in italics. We will revisit this convention in Chapter 7, when we talk about the meaning of linguistic expressions.

This difference between using a word and mentioning it is sometimes called the **use-mention distinction**. It is helpful to keep this in mind especially when discussing taboo words. In some cases, mentioning the taboo word doesn't seem to call up the taboo the same way that using it does. To return to our *shit* example, there's a fairly strong taboo against using swear words in professional writing like textbooks, so it would be surprising if we used the word *shit* in this chapter. However, when the topic under discussion is swear words as linguistic objects, as a phenomenon within language, we need to be able to mention the word *shit*, which is what we've done here.

The use-mention distinction does not give us the free pass to utter all taboo words in all contexts. There are especially offensive and highly volatile taboo words, like racial **slurs** (words that insult and denigrate certain marginalised groups of people, in this case based on perceived race), whose mere mentions are known to cause visceral emotions in hearers. Even for non-slurring taboo words like *shit*, some contexts are so sensitive to the taboo, that even mentions of them violate the taboo. In both of these cases, if you need to allude to the word, you can use a different strategy. You might choose a complex circumlocution like *a four-letter word referring to excrement*, or you might mask the word in some way by replacing some letters with asterisks or dashes (*s****, *s–t*), referring to the word by its first letter (s-word), bleeping an audio track, or blurring an image or video.

7.10.9: Check your understanding

7.10.10: References

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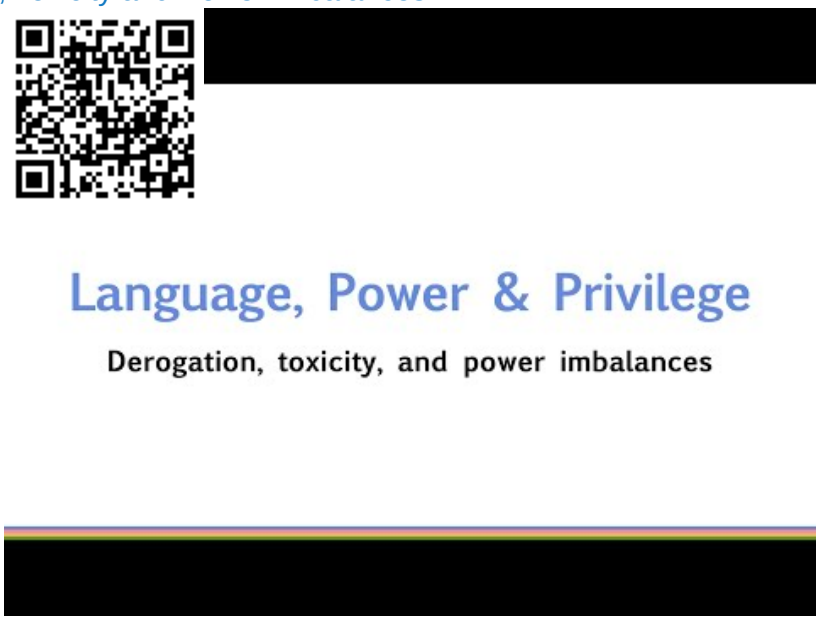
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⚠️ **Content note:** This paper mentions a highly volatile racial slur without censoring it.

7.10.11: Derogation, Toxicity and Power Imbalances



Content Note: This section discusses swear words and the concept of slurs. A slur that is used against women is mentioned briefly.

7.10.12: Offense revisited

At the beginning of this chapter, we discussed how language can be used to perform actions and construct our identity. This can be a good thing: we might use language, for example, to establish positive social relationships with people. When I went to elementary school in Japan, it was typical for my classmates to call me *Taniguchi-san* towards the beginning of the school year. *-san* is a suffix you can add to the end of names in Japanese: *-san* is fairly polite, but not too polite. When my classmates in elementary school started to get to know me better, they started to call me *Ai-chan*. That linguistic act let me know that we're friends! *-chan* is a suffix for names, used for endearment. Some of my *super* close friends even gave me in-group exclusive nicknames like *Ai-pyon* (*-pyon* is

roughly a hopping sound in Japanese; but they gave me this nickname not because I hopped a lot, but mostly because it sounded cute)! Now *that* linguistic act said that we were really, really good friends. In this way, language can be an act of expressing solidarity with others.

It's important to recognize, however, that language can do harm, too. We introduced the notion of **offense** in the previous section. Vulgarities

The term **vulgarity** refers to expressions that involve taboo bodily references (e.g., *shit*, *ass*). The term **expletive** refers to expressions that are used for outbursts (e.g., *damn*). Some expressions can be both a vulgarity and an expletive.

like *shit* can cause offense in some contexts. Offense is a kind of social and/or psychological harm that is done to discourse participants. This means that if you say *shit* in a spoken conversation where it is taboo, it's the people who hear it that the harm is done to. If you sign what is shown in Figure 1 in a signed conversation where it is taboo, then it's the people who see it that the harm is done to. The harm can range from fairly mild to more severe, depending on how offensive the expression itself is, and what context it was produced in. For example, for some people, *I don't give a damn* generally may not be as offensive as *I don't give a shit*. If a small Japanese child says *kuso omoshire:* (roughly 'fuckin' hilarious') during dinner out of rebellion, that might not be as offensive as an adult saying the same thing in a room full of children.

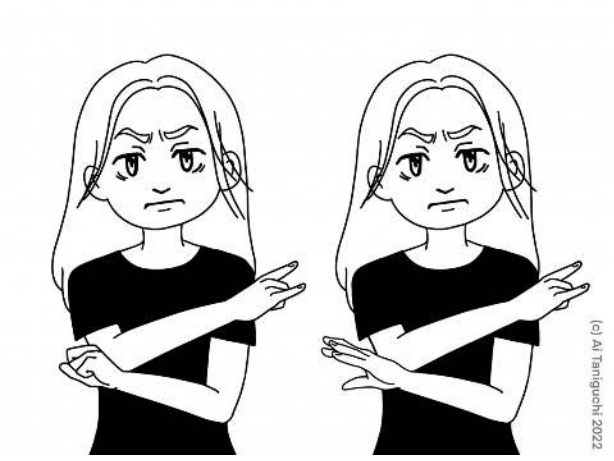


Figure 1. American Sign Language (ASL) sign for *bullshit.*

Offense can happen regardless of speaker/signer intent. Let's say you were learning Japanese and you had no idea that *kuso omoshire:* was vulgar (maybe you thought it just meant 'extremely funny'), and you say it in front of children. People who hear you can still be offended by this, regardless of your lack of malicious intent. Unintentional utterances of vulgarities are likely perceived to be less offensive than intentional ones, but nevertheless, the harm that it caused at the time of utterance cannot be undone — however small it is. It is similar to how stepping on someone's foot does its harm, regardless of whether it was intentional or not.

7.10.13: Derogation

Another kind of harm that language can do is **derogation** (or **pejoration**). Some linguistic expressions are **derogatory** (or **pejorative**), which means that these expressions disparage people. For example, the word *jerk* and *asshole* in English are derogatory: they express the utterer's condemnation of the referent. Offense and derogation are not the same thing. Offense has to do with how discourse participants are affected: if you spill coffee on yourself and say "Shit!" in front of your grandmother, your grandmother may take *offense* upon hearing that vulgarity. However, what you have said is not derogatory towards her (or anyone); it's not an insult towards her (or anyone) in any way in this context. So the vulgar expletive *shit* is offensive (in this context) but not derogatory. Speaking about taboo topics, even if you do not use vulgar terms (e.g., using more "neutral" terms to discuss bodily functions over dinner), may also be offensive but not necessarily derogatory.

Of course, many expressions that are derogatory are also offensive. The vulgarity *asshole* is taboo in some contexts and therefore offensive in those contexts. It's also derogatory because you're putting someone down with that term.

It is also possible for expressions to be derogatory but not offensive. This one is a little bit trickier because many derogatory things also cause offense. One example where something may be derogatory but not offensive on the surface might be **coded slurs**. In 2012, a police officer was fired partially because he called one baseball player a "Monday". *Monday* is sometimes used as a coded

racial slur. This means that for those who share the knowledge that *Monday* is code for certain racialised groups, they can say things like *I hate Mondays* to express their bigoted ideologies to each other — and the people who are targeted by the slur will be unaware of this derogation. So in this case, *Monday* is (secretly) derogatory, but would not cause offense without the in-group knowledge.

7.10.14: Slurs, toxicity, and power imbalances

In summary of what we have learned so far: **offense** has to do with the impact that a linguistic expression has on the discourse participants, and **derogation** has to do with the attitude that the utterer of the linguistic expression has. Derogatory expressions like *jerk*, *idiot*, and *asshole* are sometimes called **particularistic insults** or **general pejoratives**. They are used to condemn a specific person (and not an entire group of people) for some specific behavior at some specific time. When you use particularistic insults, you are expressing your strong disapproval of the other person based on something they did.

Other derogatory terms may disparage an entire group of people, rather than a particular person for a specific incident. **Slurs** are insults that denigrate specific marginalized groups of people. For example, *femoid* is a slur against women, used in certain online subcultures. Calling someone a *femoid* expresses the utterer's attitude that this person is condemnable *because* this person is a woman. This is not a particularistic insult, because it is not the case that the utterer is expressing disapproval of this person (that happens to be a woman) for some specific incident. Rather, they are expressing disapproval of women in general, and therefore by extension disapproval of this person who is a woman.

Slurs are powerful, highly taboo, and can cause a lot of harm. The great emotional weight of slurs arises from the power differential between the person using the slur and the person targeted by it. Where such a power differential exists, the person wielding the slur is invoking and reenacting an entire historical context of violence against the targeted group (Davis & McCready, 2020). Expressing racism without a slur (e.g., "I hate Japanese people") and expressing racism with a slur (e.g., "She is a ___") are both terrible things to do, but using a slur causes extra visceral emotional harm. In fact, some studies show that slurs are processed in a different part of the brain than other forms of language (Singer, 1997). This particular kind of offensive emotional power that slurs have is sometimes called the **toxicity** of slurs (Rappaport, 2020). As alluded to in the previous section, some slurs are so toxic that even mentioning them or accidentally using words that sound or look similar to them can do harm.

Because power imbalance is a crucial component of a slur, insults aimed at high-status groups of people don't have the same effect. Such an insult can be impolite or even offensive, but without the associated invocation of targeted violence, it doesn't achieve the same level of harm that a true slur does.

Another consequence of this understanding of slurs is the possibility to **reclaim** a slur as a means of empowerment, as a marker of shared identity and solidarity against oppression. For example, the word *queer* was long used as a slur for members of the 2SLGBTQ+ community, but in the 1990s activists and academics began to reclaim the word and use it to express queer solidarity among themselves. These days, *queer* is a common umbrella term for this community, and Queer Studies is a recognized area of academic study. At the same time, some members of the community who've been targeted by this slur are not yet ready to embrace it.

On the other hand, some slurs have been so thoroughly rehabilitated that they've become mainstream. Women fighting for equal voting rights, or suffrage, were originally called *suffragists*. A British journalist coined the term *suffragette* in 1906, using the diminutive, feminine *–ette* ending in an attempt to insult. But the activists adopted the term themselves and it is no longer considered a slur.

A recurring theme of this chapter and of this book is that language is about more than grammar, and words do more than just refer to literal things in the world. Slurs provide one example of how language encodes and enacts social relationships: we can use language to express our status relative to others, and we also use language to enforce other people's status relative to ourselves. With your linguistics training in hand, you can use your metalinguistic awareness to examine some of these power relations, and maybe even to resist or correct the damage that can be wielded through language.

7.10.15: Check your understanding

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⚠ **Content note:** These papers mention a highly volatile racial slur without censoring it (sometimes in a reclaimed sense, sometimes not).

7.10.17: Diglossia, from Anthony Pym (optional)

Anthony Pym is a professor of sociolingusitics and translation at the Rovira i Virgili University in Tarragona, Spain. He has a series of lectures on his YouTube channel. In this talk, he discusses diglossia. (The video is captioned via YouTube's autogenerated captioning system. There is no video script.)



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7.11: Languages in Contact

7.11.1: 7.9.1 Languages in Contact, from Sarah Harmon



7.11.1.1: Video Script

The last section, at least the last required section for this chapter, is languages in contact, and this is one of my favorite sections. In part, there's a little bit of history in here, which that's why I like it. However, it's also because it really encapsulates what it means to be a human being and use language. Very rarely does a single person, certainly in the modern era, only surround themselves with people in their own speech community. Whether is mass media or trade or travel or anything else, we are constantly in contact with different dialects and different languages. Let's talk about what happens when two languages come together.

I'm going to start off by setting the scene. Picture it: You have this group called the Lasinki. The Lasinki leave their home island of Lasinkia and they go off to find a new home. About a month later, they finally land in a different place; they call it Walonkia. There are indigenous folks in Walonkia, but they speak a language that has nothing to do with the language of the Lasinki; they're completely different languages. Initially, things are good, the Lasinki and the Walonkians are trading and they're conversing. But then, things turned sour and the Lasinki end up conquering the Walonkians, and in doing so, the Lasinki become the group that are in power. They impose a number of elements of their way of life onto the Walonkians, and this includes the language. On the side, the Walonkians will speak their language to each other when the Lasinki are out of earshot, like at home or perhaps in a small gathering of fellow Walonkians. However, when they're in public they're forced to speak Lasinki.

We know the situation; what happens linguistically?

It's a three step process. When the two groups are doing okay, they're the see each other as equals and their trading, they're using what we like to call a **lingua franca**. That term is something you may have heard of before, but let me put a linguistic spin on it. Specifically in linguistic terms, a lingua franca is a trade language. There's no shift in power; the two groups see each other as equals, therefore it is just a little bit of this and a little bit of that, with a lot of gesturing and not an exact language. I think of a lingua franca when I think about my dad whenever he goes into a place that he doesn't speak the language. He loves traveling; he's gone throughout parts of Latin America and parts of Europe. He's a salesman and he likes to go into markets to buy things. He never brings an interpreter nor a translator; he always goes by himself. He will phrase it that he uses 'the language of trade', which means he's using a lot of gestures. If he knows a little bit of the language—like I have taught him a little bit of Spanish and a little bit of talent of Italian—so that when he's gone to some of these places, he can say, "What is that?" It may not come out perfect, but he knows a little bit. That would be like a lingua franca.

The second that the Lasinki come into power they conquer the Walonkians, and they come into power and they impose their language on them, then you have a shift in the paradigm. At that point, they are no longer equals politically; you have the Lasinki higher in society and you have the Walonkians lower in society. Because there is that difference, that strata difference, the Lasinki

become the dominant or superstratum language, the Walonkians become the substratum language. When they start mixing, you get what is called a **pidgin**. It must be said, a pidgin is not a native language; it only comes about for a single generation, that initial change in situation. However, it is systematic; when you force two groups to combine their languages, there ends up being a systematic reordering and combining of those languages. Always when we see a pidgin, we see a very strong reduction in everything: we see fewer consonants, fewer vowels, we see fewer puzzle pieces or morphemes. Those morphemes now take on different roles, well more than what they used to. There are patterns, but there's slipshod, meaning there isn't a strict word order or strict set of inflections that are being used. There's a lot of play going on, a lot of multiple roles doing multiple things. Lexical entries undergo the same systematic shock; a lexicon can mean a wide variety of things. For example, a *bottle* can be anything that holds liquid, whether it's something like a water bottle or a baby bottle or a giant jar or jug.

The second that you have a new generation learning that pidgin then that becomes a creole. A **creole** is basically a standardization of that pidgin. As each child is born into that society, they learn this pigeon and subconsciously start putting order to the chaos. This happens regularly, and what is really interesting is that within two generations of a pidgin forming, you have a fairly stable creole. While there is more stabilization in an early creole, there can be still be quite a bit of linguistic flexibility. You can have a lot of possible meanings tied to one specific morpheme for up to 10 generations, it can happen or it can just change and be done.

There's a very interesting debate that's been going on for some time, and not just among linguists. Anthropologists have gotten in on this debate regarding at what point does an early creole standardize, as it were, becoming more regular and, dare we say, become a language. There's a lot on this topic, and I don't have nearly enough time to get into it, but suffice it to say that in its earliest stages know a creole is not a language. There are still too many possibilities that are in play, too much manipulation and not as much standardization. However, what happens if you have a creole that has been spoken for five generations or more, that has become much more stable and has become much more regular? At what point does it stop becoming a creole—a ‘lesser than’, if you will—and starts becoming a language? There are different camps in this arena: there's one camp—and I will openly admit that I’m part of this camp—that says that once you get a creole that has been spoken for about four or five generations, it's pretty much a language. The reason is because you have regular rules, a growing lexicon, a system of derivation, and, perhaps most crucially, you have native speakers for multiple generations. A child hears not just their parents talking in this creole, but their grandparents and maybe great grandparents at that point. You probably have a language. Certainly, if we're talking about a creole that has been around for 150, 200 years—and we do have those—then we're probably talking about a language.

There is a sizable number of linguists and anthropologist who say, even at that point, it's still a creole and not a language. Their rationale is that because there's too much variation, the grammar can get played with a little bit more, meaning that there's a lack of standardization at times. This argument is changing in favor for those of us who believe that after a certain number of generations a creole is really a language, and it gets back to that point of variation. The fact that when we talk about dialects, we're talking about variance—and I’ll go back to the African American Vernacular English. There aren't one or two dialects of that; there could be upwards of 20 or 30, maybe even more dialects and sub dialects of African American Vernacular English. Who are we say that a creole is no different? In many ways, if we really want to look at the objective landscape of a creole, most would have to agree that there's quite a bit of regular derivation and regular evolution of these creoles.

I'll give you some examples of what I’m talking about when I say long-term creoles, in the table below.

You see Hawaiian Creole, Haitian Creole, and Sranan. Hawaiian Creole and Sranan are both English-based creoles; that means English was the predominant **super-stratum language**, and then the indigenous and other languages were the **substratum languages**. Hawaiian Creole, of course, has the Hawaiian language as the substratum. Sranan is spoken in Suriname, South America, so the Arawak languages that were spoken in that area and form the substratum base. Haitian Creole as a French-based creole that has some Taino and other Arawak languages, but mostly, it is a number of central and western African languages that make up the substratum. Exactly because of the Slave Trade, because Hispaniola—the full island where Haiti is—was a processing center for a number of slaves. As a result, a lot of the substrate languages that we see for Haitian creole come out of central and western Africa.

In this table, I have the verb ‘to walk’ in third person singular.

Form	Gloss	Hawaiian Creole (English-based)	Haitian Creole (French-based)	Sranan (English-based)
Base	'he walks'	He walk	Li maché	A waka
Anterior	'he has walked'	He bin walk	Li té maché	A ben waka
Irreal	'he would/will walk'	He go walk	L'av(a) maché	A sa waka
Non-Punctual	'he is/was walking'	He stay walk	L'ap maché	A e waka
Anterior + Irreal	'he would have walked	He bin go walk	Li t'av(a) maché	A ben sa waka
Anterior + Non-Punctual	'he was/had been walking'	He bin stay walk	Li t'ap maché	A ben e waka
Irreal + Non-Punctual	'he will/would be walking'	He go stay walk	L'av ap maché	A sa e waka
Anterior + Irreal + Non-Punctual	'he would have been walking'	He bin go stay walk	Li t'av ap maché	A ben sa e waka

Yes, we're using the masculine pronoun here. Realistically, the data still suggest that this is going to be the case for masculine or feminine, especially with Sranan and Haitian, but there is change here too. I've given you the grammatical explanation of the verb conjugation, and I've also given you the gloss, which describes exactly what verb denotes. Notice 'he walks': *He walk, Li maché, A waka.* We see 'walk' in that conjugation—Hawaiian English is using it with no change, same with Sranan, and Haitian Creole has a simplified pronunciation of *il marche*.

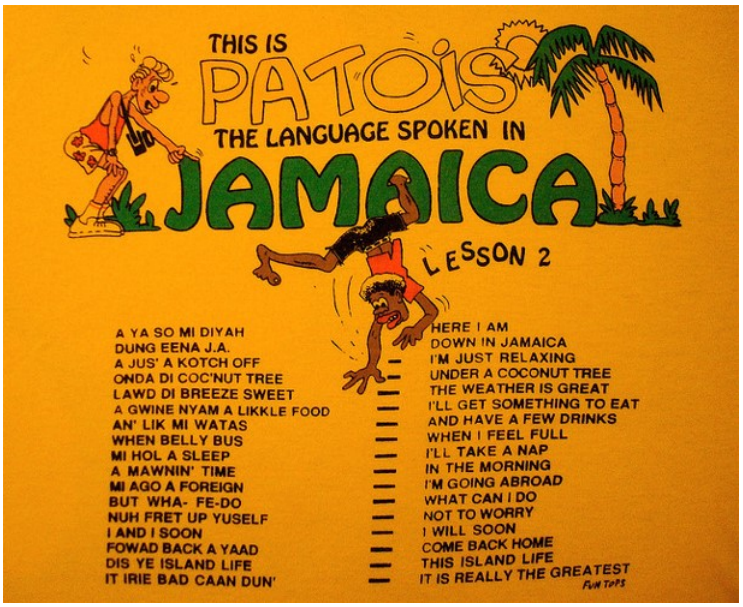
Notice that any tense, aspect, or mood that we would use an auxiliary for in English, you have it in Hawaiian creole, but you have modified or simplified versions, in some cases, and the same in Sranan. If you know, French, you will recognize some of the same thing here in Haitian Creole.

All three of these creoles have been in existence for over 200 years. At what point do they stop being creoles or lesser-than and start becoming languages? The best example of that is Haitian Creole. While it does have a couple of different variants, depending on how much French versus how much other substratum languages are being used, by large Haitian Creole has a standard mainstream form. It's the language of the Haitian government and the Haitian media, and it has been this way for over 100 years. Haitian Creole has existed for 250 years. Additionally, you have a full written version; it is taught in schools and has different dialects. So again, at what point is it no longer 'not a language'? At what point have we graduated it to become a language?

For those of us who believe that Haitian Creole is probably a language at this point, you could also argue the same for Hawaiian creole. Although it is dying out in favor of English, as you would imagine, but also Hawaiian. There is a concerted effort that has been going on over the last 40 years to reinvigorate the Hawaiian language. It is still considered an endangered language. The University of Hawaii in Manoa on Oahu is leading the charge and has been for 40 years on preserving Hawaiian. You still have Hawaiian creole, and they are still showcasing it so that it may continue to grow, but Hawaiian creole is being less favored, compared to Hawaiian English (the American English spoken in Hawaii) and Hawaiian, which is pretty interesting.

There are creoles around the globe; these are some of the areas that we see a number of creoles. Not shockingly we're talking about places that have been heavily colonized. It is interesting that creoles are not just based in English and French; we have Dutch-based creoles, especially in some of the Pacific Islands and as well as in the Caribbean. We have creoles in Latin America, which is not a place that most people think of. When we talk about that region, Belize would probably be the biggest example. Belize has an English-based creole, with the superstratum being English and the substratum languages are not the indigenous Maya languages of the region and some of these African languages from Central and Western Africa—because Belize was another processing point, as well as an escape point, for slaves. We also have Spanish-based creoles that are mixed with a number of indigenous languages, especially throughout the Andean region of South America. Additionally, the one that nobody thinks of is Portuñol, which is a creole of Spanish and Portuguese and depending on which side of the border, whether you're in Brazil or Paraguay, depends on which is the dominant language.

If I say 'creole', many people think of Jamaican Creole or Patois, as called in Jamaica. Here's another great example a creole that has been around for over 200 years—close to 300 years even—and is part of the mainstream. It is part of the government, the schools, and the media. Of course, when we're talking about music and culture from Jamaica, you can't not talk about Patois. I love Patois because it's a great example of trying to document from an early stage how a Creole came to be. This is a graphic taken from a lesson that you can find on on the Internet for how to speak Patois.



You have the standard English on the right side and then you have Patois on the left side and for most speakers of English that looks very foreign but if I say it, maybe it'll be a little easier.

Example 7.11.1

A ya so mi diyah, dung eena J.A. A jus'a kotch off, onda di coc'nut tree. Lawd di breeze sweet. A gwine nyam a likkle food, an'lik mi watas. When belly bus, mi hol a sleep. A mawnin' time mi ago a foreign. But wha- fe-do, nuh fret up yuself. I and I soon foward back a yaad. Dis ye island life it irie bad caan dun'.

A bit of translation and correlation:

- Here I am down in Jamaica: dong eena J.A
- Just relaxing: a jus' a kotch off.
- Under the coconut tree: onda di coc'nut tree.
- The weather is great; lawd de breeze sweet. 'Lord the breeze is sweet'.
- I'll get something to eat: a gwine nyam a likkle food. 'likkle', 'little'. Food. You got going, gwine.
- and have a few drinks: an' lik mi watas. Lick as in to lick it up.
- When I feel full; when belly bus; 'when belly bust',
- I'll take a nap; mi hol a sleep. 'Going to my hole to sleep.'
- In the morning; a mawnin' time.
- I'm going abroad; mi ago a foreign, so 'going foreign'.

And you can go on from there.

What I love about creolization and this process that languages go through as they connect and combine—especially as we start to document this and how it changes over time—is that you get a little window into the past. You can start seeing how maybe some of these standard or mainstream languages that we talked about—English, Spanish, Russian, Japanese, Mandarin, Swahili, Arabic, Hebrew—how maybe they came to be when they got confronted with other languages. It's important to realize that, as we stop focusing so much on hierarchical evaluations and when we just step back and observe language, creoles and especially well-established creoles, really are languages.

If we talk about creolization and we talked about languages in contact, the other piece of this puzzle is bilingualism. Many of you are bilingual—in my case, I'm a learned bilingual. I learned Spanish and I learned Italian, so I'm multilingual in my case. Many of you may be natively bilingual or natively multilingual, meaning you learned all of your languages while you were a child. It's important to understand that being bilingual is not a bad thing; it's not going to make you stupid or unintelligent, and it certainly does not mean that you're not capable of anything. I say that because that mentality still exists to this day, even here in sunny California, in the United States—in this progressive area, it still exists. It also existed and has existed well from time *in memorium*.

The reality is quite different, and we have started to change that narrative, beginning in the 1980s. Now, it is getting even stronger, because we can prove that bilingualism is not a bad thing. Rather, it's probably the best thing you could do.

Codeswitching, which frequently gets lumped in with so-called 'poor language skills', in fact is nothing of the sort. We're increasingly showing that those who code switch actually have a really strong grasp of more than one language in multiple areas. Code switching is something we do when we go back and forth between two languages, and we do it for a variety of reasons. Sometimes it's just what happens to fly out at that moment; other times there's a reason for it. For example, I like to talk about this phrase that we have in Spanish: the *ganas*, which is part of a longer phrase, *tener ganas*, 'to have *ganas*'. If you are a native Spanish speaker or a learned Spanish speaker, like myself, you've heard that term and you know that term. There isn't a good translation for it into English. It gets translated as 'motivation', sometimes it's 'the will to do something', if you have the *ganas* to do something, you want to do it. However, it's not really that. It's every fiber of your being wants to do it; or, if you do not have the *ganas* for something, every fiber of your being does not want to do it. How do I translate that? well I don't a lot of times if I'm talking to someone who speaks Spanish, even if somebody just learned a little bit of Spanish and that's what I'm feeling, then I'll just say, "I just don't have the *ganas* to do it today." Or if it's something I really want to do, like, I have a lot of *ganas* for this, I'll just switch it.

Education is both a hindrance and a motivator with respect to bilingualism. It is formal education that has been the main arena that most children have been forced to not be bilingual anymore, and some of you may have experienced some of that in your own lives or in your family's lives. Certainly, that was the case in my family with respect to Italian, and it was the case of my husband with respect to Japanese, and there are many similar stories. Yet, what we have shown over the last 40 years of research is that if you have a strong bilingual education system, the children that come out of that system not only are they very strong in two different languages, but they have critical thinking skills that far surpass anything that a monolingual student will have. What is more, if you are talking about one or both of those languages being related to the heritage of the child, then that is a huge positive boost for the child; they start to see pride and then feel that pride in their respective backgrounds. This is where that discussion on Ebonics also comes into play. It was so important to have educators recognize that the children who spoke Ebonics or African American Vernacular, that the worst thing you could do was to tell them they were dumb because they couldn't speak proper English. Rather, if you showcase them and said, "This is one dialect; let's get good at that. Here's the other dialect you need to know; let's get good at that," and then showcase when we use the different dialects with which groups of people with which context—when you do that, there's a lot of pride that comes in to the child. They grow up being a stronger person culturally. We've seen this now with African American Vernacular English and we have seen it in other areas as well. There have been studies recently about diglossia education with respect to Appalachian English. While for a number of generations people eschewed their Appalachian past and were ashamed of it, now people are starting to be proud of their culture and their history, at least as far as being proud to be a speaker of that dialect.

I know for me, I'll sometimes start sentence in Spanish, y termino en español.



This is pretty much what we all do when we codeswitch; those of us who are multilingual, we do this all the time. There's nothing to be ashamed about; it’s just what happens when you have two cultures, two languages, and a lot of positive vibes.

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7.12: Exercise Your Linguistics Skills

Exercise 1. In addition to *saw~sore*, a few other minimal pairs in New York City English were listed in section section 10.5: *udder~other, beg~bag*, and *bruin~brewing*. In each of these pairs, the second word contains a different linguistic variable. Can you identify each of the three variables and their variants based on the minimal pairs? Would all of these pairs of words be minimal pairs in the variety/varieties of English that you're familiar with?

Exercise 2. Different points throughout this chapter contain 'reported speech' – a representation of some past or hypothetical speech or thought. In English, reported speech is typically introduced with a quotative verb like 'to say'; orthographically reported speech appears within quotation marks (""). Skim back through the chapter looking for all instances of reported speech and document the **quotative verbs** used to introduce each token. How many variants did you find? Can you think of other variants?

Exercise 3. Not all variables that correlate with social class also correlate with contextual style like in Figure 10.4. Labov makes a theoretical distinction between variables that are **markers** (they correlate with both social class and style) and variables that are **indicators** (they correlate with social class but do not correlate with style). What do you think is important about this distinction between markers and indicators? Hint: Think about the fact that the correlation with contextual style is also a correlation with attention paid to speech.

Exercise 4. You and your colleague are conducting a study of variation between the citation form variant and lowered variant of the KNOW, THINK, and NAME signs in Auslan. You've collected a corpus of sociolinguistic interviews and counted up the number of tokens of these signs used during casual conversation. You have data from people who identify as men, women, and nonbinary. Your colleague has put together Table 10.2. and and Figure 10.8 based on the data in the corpus.

	Tokens of citation form	Tokens of lowered variant
Men	60	60
Women	45	55
Nonbinary	30	50

Table 10.2. Tokens of citation form and lowered variant of KNOW, THINK, and NAME in a corpus of Auslan. (Hypothetical data)

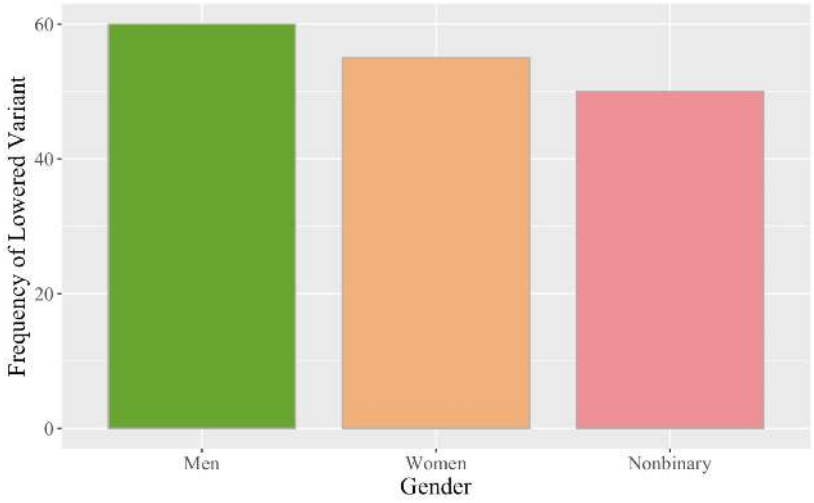


Figure 10.8. Bar plot that your colleague has produced based on Table 10.2. (Hypothetical data)

(Politely,) explain to your colleague why Figure 10.8. is not the best way to represent the data presented in Table 10.2. (Your explanation should make use of the concepts and terms introduced in this chapter.) Then, draw an alternative graph based on Table 10.2. What can you say about this variable and gender? Which group is most likely to use the lowered variant? Which group is least likely to use the lowered variant?

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CHAPTER OVERVIEW

8: Historical Linguistics

Learning Objectives

When you have completed this chapter, you will be able to:

- Explain that language change does not, overall, affect the complexity of language.
- Demonstrate that language change often has complex effects and occurs cyclically.
- Explain how the methods of historical linguistics can be used to demonstrate and document the historical relationships between and within languages
- Analyze and classify language changes according to their type and cause, using technical terminology

Language is always changing. Many people find it inherently interesting to discover historical connections and common origins between words and grammatical structures. But studying language change can provide us with more than just interesting connections. The kinds of change that occur can also tell us a lot about the nature of language. For example, many kinds of language change happen in cyclical patterns. This indicates that there is not an overall trend towards simplification or complexity, but rather that the range of variation in human language is somewhat stable. We cannot travel back in time to see how people used to speak, but in this chapter we will discuss some of the ways that languages have changed, and also what kind of evidence we use to figure it out.

People sometimes have strong opinions about the effects of language change, and advocate for the older, 'pure' version of a language. But how far back do we have to go to find the 'pure' language? Is 100 years enough? How did that compare to the language from 1000 years ago? The fact of the matter is that, just like different dialects aren't necessarily any better or worse than each other, neither are different historical stages of a language. Language changes occur in systematic ways that compensate for each other and preserve overall the level of complexity and expressiveness of language.

8.1: Language Change Facts and Definitions
8.2: Reconstructions and Analysis
8.3: Phonological change
8.4: Indo-European and Romance Phonological Reconstruction
8.5: Stages of English
8.6: Morphological change
8.7: Syntactic and Lexical Changes
8.8: Typology
8.9: Language Families
8.10: Writing Systems
8.11: Arabic and Romance- A Comparison (Optional)

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8.1: Language Change Facts and Definitions

8.1.1: 8.1.1 Language Change Facts and Definitions, from Sarah Harmon



8.1.1.1: Video Script

Okay, folks: we're getting into the fun bit. Alright, for me it's the fun bit. Historical linguistics is my specific area of expertise, so this entire chapter of our text is all me, as Catherine Anderson doesn't really go into historical linguistics. I also should mention that this is not all my research; in fact, this is quite a number of pieces of people's research that are used to put together this chapter.

To set the scene a little bit, let's talk about some basic definitions and some basic facts. Up to this point, we've talked about those core areas of linguistics that we did earlier: phonetics, phonology, morphology, syntax, semantics, and pragmatics. We've already talked about sociolinguistics, where we focus on synchronic language change. **Synchronic** means 'at a given moment', usually tied to the current moment. When we talked about dialects and we talked about register and all those areas, those are all synchronic.

Now, we're going to move from the synchronic to the diachronic. **Diachronic** means 'over a long period of time', not one or two or three generations; now we're talking hundreds of years. This is an area that has always fascinated me because I love history and I love how language changes over time. One of my early influences to this area was within my own family, when my mother's family came over from Italy at the turn of the 20th century. At that time, Italy was technically a unified country, but to be very clear it wasn't. If you know anything about modern Italian history, you know that the reunification movements that happened, starting in the 1860s and through the 1880s and 90s, the country was not actually unified very much, not like when we think of like the Roman Empire. In truth, everybody spoke multiple dialects and, in fact, there were actual multiple languages of Italian spoken all the way through really the 1930s. That's when things changed due to a dictatorship (and that's a story for another time). However, when my great grandparents came to the United States, they were still speaking *lombardese* and *Genovese*—the dialects specific to Lombardy and the area around Genoa, which are both in the north west portion of Italy. They spoke very different dialects; in fact, at the time, you probably could still say that *lombardese*, as it were, might have been a different language, or certainly one of the Galo-Italic dialects. In addition, the Galo-Italic language was its own thing—the languages of the Northwest corner of Italy, and you can include Provençal and maybe even a little bit of Occitan, which were both spoken in the southwest portion of France. When I started learning Italian, I started learning standard Italian., which is based off of the Florentine regional dialect, and what I was learning was very different than what my two family dialects were—that has everything to do with history and with the change of language over time.

To give us a little bit of a background before we go into analyzing language change over time, let's talk about three important facts with respect to language:

Language change is not random. I know it may feel like it, and certainly as we go on to study how to reconstruct and how to analyze language, over time, some of these changes may seem random. Then again, every time you have learned a language, there

might have been aspects that may have seen to you to be random language change and language as a whole is not random, it is not we have proven that pretty well over the last 75-80 years of diachronic analysis. Rather, it is rule governed at all stages and across all stages, that means that there's always a reason for it, and at times, when we cannot find that rule or pattern, we say, “Okay, we'll come back to this,” and rethink this, re-analyze this later on when we have some more tools and, especially, if we come across more data. As linguists, again, we want to be objective, we want to describe what we see and part of that is saying that randomness doesn't really exist; there's always a reason.

Historical change always affects the components of a grammar, meaning every aspect of it; it affects the phonetics, the phonology, the morphology, the syntax, the semantics, and the pragmatics. You can say that it affects not just one specific dialect, but frequently affects others as well.

Historical changes also relentless. In fact, one of the banes of my existence is when I hear people say, “These young kids today, they don't respect the language like we used to do, like we do now. Our older generation really knows this language much better than this new one.” That just does not fly with respect to linguistics; that is not an objective, descriptive mentality. It's highly prescriptive, and it also flies completely in the face of what we know to be true, which is that all languages change. They all change because when they stop changing, they've died out.

Another term that you're going to hear is the term **proto-language**. A proto-language is a reconstructed, undocumented earlier version of a language; frequently, we’ll call it a **parent language** to another set. Focus on those two terms: **undocumented** and **reconstructed**. When we create something in linguistics, we are very careful to mark it as either a tested or hypothetical and, just like in the sciences, a hypothesis is an idea that needs to be tested and until it gets enough testing and data behind it. It remains a hypothesis, then it could become a rule or law or a phenomenon that is described when there are data behind it. When we're able to test it out, the same is true for proto-language or proto-languages; it’s our best guess based on the data that we have available and how we know languages in general, as well as within this family, with respect to change. You will hear me use the term **Proto-Indo-European (PIE)** quite frequently in this chapter, and that is because we have no written documentation of it. We have no direct, written data of PIE to suggest that this is definitely what the parent language of Latin, Ancient Greek, Sanskrit, Aryuvedic, Hittite, Old Germanic, Old Celtic, you get the point—we don't know what that actual parent language did. We have really good guesses; we have hypotheses that are backed up with data that we have found. But that is it; we do not have actual written documentation of Proto-Indo-European, and that's why we have that *proto-* prefix in front of it.

As we go through the rest of this chapter, these three facts must be kept in mind as well as the information about a proto-language, and the reason is this: we need to continuously be objective and descriptive and understand that this is a social science.

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8.2: Reconstructions and Analysis

8.2.1: 8.2.1 Reconstruction and Analysis, from Sarah Harmon



8.2.1.1: Video Script

In the previous section, we started talking about a proto-language. In this section, we'll talk a little bit more about what reconstruction is and how we start to analyze historical linguistic data. This is just a primer; this is just the beginning. If you ever have a chance to take an historical linguistics course, usually it's an upper division course, and you're going to learn quite a bit more. For now, suffice it to say that this is your first step into being able to see diachronic change in action.

To start off let's talk about language reconstruction. What is this when we say that we reconstruct a proto-language? What does that mean?

It starts off with the **comparative method,** which is pretty much what you think it is: it is when you compare data that you can trust, and you come up with your best reconstruction of what the earlier language might have sounded like. Notice, I said, "sounded;" we tend to use the comparative method most with respect to sounds, phonetics and phonology. We can use it for morphology and syntax, although it's less used. We do compare and contrast, but not quite in the way that I'm going to show you. We don't really do this with respect to lexical reconstruction, or talking about how lexicon change over time, because that's a different animal altogether. When we deal with lexical reconstruction, or specifically historical linguistics focusing on semantics and pragmatics, that's a different type of analysis. Mostly we use the comparative method for sound, and the sound is going to help us understand the other parts as well.

When we look at a data set, we have a specific series of steps that we follow. The comparative method always focuses on an individual sound at each corresponding position. I'm going to walk you through a data set soon enough, but just to kind of walk through the process, let's say we are analyzing a language family. We have data from four different languages and the data include 25 lexicons. These are **cognates**, meaning that they are pretty close with respect to sound and meaning. For example, if you know, a Romance language, the word for 'water' is pretty close, if not exactly the same, across the Romance languages. In some cases, they sound exactly the same, and others well there's been a few changes to the sounds. Regardless, the word for 'water' is the same, and so, if we were to take *agua* from Portuguese, *agua* from Spanish, *acqua* from Catalan, *eau* from French, *aqua* from Italian, and we were to spread those across, we would be able to reconstruct the original lexicon. We start with that [a] first, that first vowel, and go across, and it's the same vowel for pretty much everybody, except for French—probably the earlier version also had an [a] at that same place. That consonant sound right afterwards is close but not exactly the same; sometimes it's a [g], sometimes it's a [k], and sometimes it has disappeared, like in French.

As we continue to reconstruct, we go across, analyzing each individual sound; we see where there's similarities and where there are differences. When there are differences, and specifically if there isn't a 'majority rules' situation—meaning all the data but one

show the same sound in the same place—if there's a majority, then we know the majority is probably going to win out. If you can't tell, then you use the **consonant hierarchy**. This is something I showed you when we talked about phonetics; I talked about how certain sounds are stronger than other sounds, and that we go from top to bottom on this list. In the case of *agua, acqua, eau*, and the other words for 'water' in the Romance languages, the big difference consonant-wise is that you either have a [g] or [k] or you have nothing, it's been deleted. We see that deletion at the bottom, so clearly, there used to be some kind of consonant and French just deleted it. Going between a [k] and a [g], you're going to go with the sound that is higher in that list, meaning that is higher in the hierarchy. In that case, voiceless sounds are higher than voiced sounds; [k] is a harder, higher sound then [g]. That means in the earlier version, probably, it was a voiceless [k] that existed and, in fact, that is what we see both in Classical Latin and then Vulgar Latin; that that consonant is a [k], it's voiceless, so we know that it's right.

With respect to vowels, it's hard to exactly reconstruct those, but sometimes we can. For example, in the Polynesian languages, most of them have between three and five vowel sounds, sometimes up to seven. Chances are, in Proto-Polynesian there were probably a few more vowel sounds that merged together; across human languages, we tend to see more merger. That isn't always the case, and I will come back to a really famous example in the next section. Vowels are very hard to do with respect to comparative method; it's much more suited to consonants, but sometimes we catch a break.

The comparative method is one way that we start reconstructing languages proto-languages, we start giving our best hypothesis for what the earlier version looked like or sounded like. However, it's not the only thing that we do in historical linguistics. One of the other areas that we focus on is **classification**. We'll talk more about classification when we get to topology, which is a further section in this chapter. When we try to see which languages might be related to other languages, there are certain core facts core data that we are looking for. The first is the numerals, and most specifically it's numerals one through 10 for mildly obvious reasons: most of us, typically, are born with 10 digits on our hands, so the numbers one through 10 are going to tend to stay pretty close; you're not typically going to borrow any number one through 10. We also look at nuclear family terms; as we talked about in semantics, family terms can range and sometimes those terms can be borrowed. Close family members—such as parents, children, and siblings, frequently grandparents (not always) and grandchildren—those terms do not tend to be borrowed from one language to another. There are exceptions to this rule; in fact, one really big one is many of the Filipino languages borrowed a number of family terms from Spanish. While I don't actually know the reason why, I would suspect it could be that the Spanish terms gave more specificity than what the then Filipino languages offered up so. For example, in Spanish, you have specific terms for 'aunt' and 'uncle', for 'cousin', for some of these other kinds of family terms, and it could be that in at the time of contact that many of the Filipino languages just didn't have as many specific terms. To be clear, that's hard to understand as to why that is the case. The third area that is really important with respect to genetic classification are the core elements of syntax and morphology. Notice it is specifically those two areas, and if we want to get very specific, it's how a given language embeds a clause or derives nouns and verbs. Why would that be? For example, English is a Germanic language. If you've ever learned a little bit about the etymology of many words in English, you'll know that we have borrowed a very large number, starting from the eighth and ninth century, when the Vikings started raiding the shores of the British Isles. The Angles and Saxons and Jutes, who were there and had established themselves, they were speaking a Germanic language, but it was a different Germanic language than what the Viking spoke, which was Old Norse. And so there were terms borrowed from the Vikings. Then, fast forward to 1066, when William the Conqueror came over from Normandy, which is in France, and he spoke Old (Norman) French—and Old French became the court language, which meant that a slew of terms for anything having to do with court life, government, aspects of a castle—the fact the term *castle*—all borrowed from Old French at that time. Fast forward a few more years to the Renaissance, you have a massive influx of Latinate terms that everybody shares. English has accumulated a very large number of lexicons from other languages, most of them Indo-European and well beyond with the colonization of various parts of the world. Yet the core makeup of English—specifically how we derive our nouns and verbs, how we rely on certain processes, how we create our phrases—that is very Germanic, and that has not changed in the history of our language with respect to external influences. Internal influences, yes, there have been changes and we'll talk about those coming up. For these reasons, we don't focus on the lexicon with respect to core elements of syntax and morphology. We look at the lexicon as a whole, and by that same token, we don't look at the phonology as much. Certainly, there are characteristics that are typical—the sounds that we have an English are very Germanic. We have a number of fricatives and a lot of vowels; that's very Germanic. However, we can't look specifically at the sounds themselves, because we have borrowed or modified so much over history.

The fourth piece, as I said, the external influences; we do have to look at the migration patterns, we have to look at how the given language has gone through the world. What I have here is the key migrant routes from Africa to Europe, because this explains not just how a number of these African languages have changed over time with their influence or colonization or being conquered by European groups, but also just in the major influences. When we look at the migration patterns and we see a consistent migration

pattern, we know that there's going to be some kind of influence of one language over the other. There's so much more to this part of the story, and we'll get to some pieces, as we go through these next several sections.

I could go on forever talking about classification, and I will come back to more when we get to typology. For now, just know that when we talk about a language family, they have quite a few pieces in common. This is how we start figuring that out.

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8.3: Phonological change

Many of the phonological changes we find diachronically are the same phonological processes that we find synchronically (see Section 4.9 for spoken languages and Section 4.10 for signed languages). A few additional types are discussed in the section.

8.3.1: **Sporadic phonological change**

One type of sporadic phonological change is **metathesis**, in which parts of the pronunciation swap positions with each other. For example, the ASL sign for $DEAF_1$ touches near the ear first and then near the mouth, but there is a metathesized version $DEAF_2$ that swaps the locations, touching near the mouth first and then near the ear.

$DEAF_1$: https://www.signingsavvy.com/media2/mp4-ld/23/23017.mp4
$DEAF_2$: https://www.signingsavvy.com/media2/mp4-ld/23/23016.mp4

Other signs can have metathesis in ASL, such as HEAD and RESTAURANT, but since this is a sporadic change, it only affects a few signs, so there are many more signs that do not normally have metathesis, such as CHILDREN and THING (Liddell and Johnson 1989):

$HEAD_1$: https://www.signingsavvy.com/media2/mp4-ld/30/30884.mp4
$HEAD_2$: https://www.signingsavvy.com/media2/mp4-ld/30/30885.mp4
$RESTAURANT_1$: https://www.signingsavvy.com/media2/mp4-ld/22/22673.mp4
$RESTAURANT_2$: https://www.signingsavvy.com/media2/mp4-ld/22/22674.mp4
CHILDREN: https://www.signingsavvy.com/media2/mp4-ld/21/21593.mp4
THING: https://www.signingsavvy.com/media2/mp4-ld/29/29617.mp4

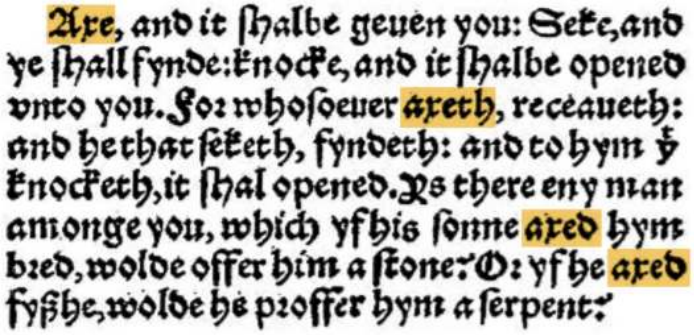
Metathesis also happens in spoken languages, where it affects the position of phones. For example, the English word *ask* has undergone metathesis multiple times in its history. In Old English, we find it first attested as *ascian* with [sk], but we soon find evidence of a metathesized form *axian* or *acsian* with [ks]. Both versions persisted in various regions, but *axian* was dominant enough throughout Old English that it resisted a different Old English sound change, [sk] > [ʃ], which we see evidence for in words like the following:

- *bishop* < *bisceop*
- *fish* < *fisc*
- *shine* < *scīnan*
- *wash* < *wascan*

If the original *ascian* had been stable through Old English, it should now be pronounced like *ash* in Modern English due to the [sk] > [ʃ] sound change. Any word now with [sk] must have gotten its [sk] by avoiding this sound change somehow. In the case of words like *skip* and *whisk*, they were borrowed later in Old English, after the [sk] > [ʃ] change was complete. In the case of *ask*, the *axian* variant was dominant while [sk] was changing, so *axian* was unaffected, like many other [ks] words:

- *axle* < *eaxl*
- *axe* < *æx*
- *vixen* < *fyxen*

The [ks] variant stayed dominant through Middle English and into Early Modern English. For example, it can be found multiple times in in the Coverdale Bible, the first complete version in English, published in 1535. See Figure 14.4 for sample text from Matthew 7:7–10 with four instances of the [ks] variant.



Axe, and it shalbe geuen you: Seke, and ye shall fynde: knocke, and it shalbe opened vnto you. For whosoeuer axeth, receaueth: and he that seketh, fyndeth: and to hym yt knocketh, it shal opened. Ys there eny man amonge you, which yf his sonne axed hym bred, wolde offer him a stone? Or yf he axed fysshe, wolde he proffer hym a serpent?

7 Ask, and it shall be given to you; seek, and you shall find; knock, and it shall be opened unto you.
8 For whosoever asks, receives, and he that seeks, finds; and to him that knocks, it shall be opened.
9 Is there any man among you, which if his son asked him (for) bread, would offer him a stone?
10 Or if he asked (for) fish, would he proffer him a serpent?

Figure 14.4. Scan of Matthew 7:7–10 from the Coverdale Bible (top left, adapted from The Internet Archive), the same text transcribed (top right), and a more modern equivalent (bottom), with different forms of **axe** and **ask** highlighted in each.

Some time later, metathesis happened again, and we now have [æsk] for many English users today. However, [æks] has persisted in many dialects due to its long history in English. In many cases of such long-standing variation, we often accept the difference: many Canadians say [əˈlumənm̩] *aluminum* and [ˈvaɪtəmn̩] *vitamin*, while many Brits say [ˌæljəˈmɪnim̩] *aluminium* and [ˈvɪtəmn̩]; many Canadians say [ˈædl̩t] *adult*, while many Americans say [əˈdʌlt]; etc. These differences are usually no more than points of curiosity and polite joking.

But with [æsk] versus [æks], we find intense dislike and outright vitriol. People who use [æks] are often ridiculed as unintelligent, uneducated, and unworthy of respect. A key factor is that [æks] is popularly associated with African American English (although it is used in many other dialects), so expressing disdain for the people who use [æks] is a way to covertly express racial prejudice through linguistic prejudice.

But the linguistic prejudice is just a convenient mask. No one expresses as much hate towards metathesis in general; everyone ignores *wasp* and *bird*, which are metathesized from Old English *wæpse* and *bridd*. No one expresses as much hate for similarly small differences between dialects, such as *alumin(i)um* or *adult*. However, because this particular metathesized word happens to be associated with African American English, the hatred more readily comes out. Given the issues of language and power that we have touched on throughout this book, especially in Chapter 2, this unfortunate outcome is unsurprising.

8.3.2: Sporadic sound change

A language change that affects the phonology of a spoken language specifically is known as a **sound change**. One type of sporadic sound change is a **spelling pronunciation**, which is where the pronunciation of a word shifts to better match its spelling. This happens in English because the connection between spelling and pronunciation is often inconsistent (see Section 3.6), so a spelling pronunciation can help reduce this inconsistency.

For example, the English word *Arctic* was originally borrowed into Late Middle English from Middle French *artique*, which itself is derived from Latin *arcticus*. The spelling was changed a few hundred years later, with a <c> added based on the Latin spelling, which eventually caused the pronunciation to shift to [ɑrktɪk]. Other examples of spelling pronunciation in English include the following:

- the [l] in *falcon* (borrowed from Old French *faucon*, then respelled to match Latin *falcōnem*)
- the [h] in *hectic* (Old French *etique*, Latin *hecticus*)
- the [k] in *perfect* (Old French *parfit*, Latin *perfectus*)

Interestingly, many people today still pronounce *Arctic* as [ɑrtɪk], closer to the original Middle English pronunciation, though this pronunciation is often stigmatized and is frequently found on lists of “commonly mispronounced words”. However, this attitude directly contradicts a common belief among language pedants that language change “ruins” language. If change itself is stigmatized, then older forms should always be more prestigious. However, with *Arctic*, it is the newer pronunciation [ɑrktɪk] that is prestigious, because of its spelling.

Of course, spelling pronunciations are not always prestigious either. Pronouncing the [h] in *honest* would likely be ridiculed, not prestigious. So neither history not spelling are reliable guides to a prestigious pronunciation. In fact, there is no consistent linguistic factor that correlates to prestige. Some prestigious forms are older, some are newer; some are pronounced to match their spelling, some are not. What is consistent across prestigious forms is that they are used by those who hold social power (see Chapter 2 for more discussion).

A different type of sporadic sound change involves stereotypes about the pronunciation of words in other languages, and using those stereotypes rather than the original pronunciation. This is known as **hyperforeignism**. There are many examples of hyperforeignism in English, such as the following:

- The capital of China is called *Beijing* in English, which is borrowed from Chinese *北京 (Běijīng)*. The Mandarin pronunciation is [pèɪ.t͡ɕíŋ], which is very similar to a possible English pronunciation [be͡dʒɪŋ]. However, many English speakers use the hyperforeignism [beʒɪŋ] instead, because [ʒ] is relatively rare in English but does occur in many borrowings (*azure*, *Dijon*, *genre*, etc.), so it reinforces the foreignness of Beijing as a city in another country.
- The word *lingerie* was borrowed from French, where the final vowel is pronounced [i]. However, many French borrowings have a final [e] sound (*ballet*, *chez*, *fiancé*, etc.), so the pronunciation of *lingerie* was changed in English to match this stereotype by replacing final [i] with hyperforeign [e].
- Another stereotype about French is that where English might have a final [s], French does not. We see this in many borrowings from French into English, where the word looks like it should be pronounced with final [s]: *chassis*, *foie gras*, *rendezvous*, etc. However, French does allow final [s], as in the expression *coup de grâce* [ku də ɡʁɑs], but in the borrowed form in English, we drop the final [s] so that it seems more French-like, resulting in the hyperforeignism [ku də ɡrɑ].

There are many other types of sporadic sound changes, too many to go into detail here. Here a three more types, with brief summaries and examples:

- **dissimilation**: when a phone shifts to avoid being to similar to a nearby phone; for example, despite the spelling, *governor* is often pronounced [ɡʌvənɾ̩], so that the first <r> is not pronounced in order to dissimilate from the second, leaving only one [r] in the word (note that the first [r] is still pronounced in the base verb *govern*)
- **analogy**: when a word shifts to match a pattern found in other words, especially from a rare pattern to a more common pattern; for example, *nuclear* has a very rare [-kliɾ̩] sequence that many people pronounce by analogy as the more common sequence [-kjəlɾ̩], as in *binocular*, *circular*, *molecular*, *muscular*, *particular*, etc. (see more discussion and examples in Section 14.4)
- **immediate model**: a special type of analogy where a word shifts by analogy to match another word that it is frequently used together with, especially in an established sequence; for example, *February* is normally pronounced [fɛb**jəw**ɛri] rather than [fɛb**ru**ɛri], by immediate model with [d͡ʒæn**jəw**ɛri] *January*, since the two words are often said together in sequence

8.3.3: Regular phonological change

So far, we have looked mostly at sporadic changes, which affect only a limited number of words. However, a phonological change can be **regular** instead, which means that it applies uniformly in a consistent environment across every word possible, similar to how synchronic phonological rules apply. For example, if the [sk] > [ks] metathesis had been regular in Old English rather than sporadic, then every word with [sk] would have changed, not just *ascian*.

Modality seems to affect the potential for regularity in phonological change. Spoken languages can have both regular and sporadic sound changes, while signed languages seem to undergo only sporadic phonological changes. This is likely for the same reasons that signed languages do not seem to have productive phonological rules, but it could instead be due to our lack of understanding of the phonology of signed languages (see Section 4.10 for discussion). Thus, we focus on regular sound changes here.

The idea of that sound change could be regular was theorized in the late 1800s. Prior to that, historical linguists primarily focused on describing observed changes in the written record of known languages. However, a group of German linguists known as the **Neogrammarians** proposed that all sound changes were regular, not sporadic. So if a change existed, it had to affect every word it could; exceptions must be due to borrowing or some other separate process. This proposal is known as the **regularity principle** or the **Neogrammarian hypothesis**.

We now know that the regularity principle is not fully true. As discussed earlier in this section, many sound changes are sporadic. But even for those that are regular, they may spread slowly through the lexicon, word by word or morpheme by morpheme, typically affecting higher frequency words first, through a process called **lexical diffusion** (Wang 1969, Chen 1972, Chen and Wang 1975; see also Schuchardt 1885 for early recognition of this phenomenon). This means at any given moment, we may see only a partial effect of a sound change, affecting some words but not others.

For example, in Philadelphia, words like *bad*, *glad*, and *mad* have a tense [æ̝] due to a sound change affecting /æ/ before /d/. However, there are lots of other words in the lexicon, such as *dad* and *sad*, that still have lax [æ] because the sound change has not diffused to them yet (Labov 1981).

However, despite the flaws of the regularity principle, it was crucial for the development of the field of historical linguistics, as it turned from pure description to a predictive science (see Appendix 2.3 for discussion). The regularity principle is the core tool used in Sections 14.8–14.11 for helping us understand and make reasonable hypotheses about the linguistic past.

8.3.4: Conditioning of regular sound change

Like synchronic phonological rules, a regular sound change may be **conditioned**, which means that it only happens in a specific set of environments, such as at the end of the word or between vowels. For example, by Middle English, [sw] clusters were pronounced as [s], but only before back vowels. So *sword* and *answer* (from Old English *andswaru*) now have [s] because of the following back vowel, while *sweet*, *swift*, and *swell* all retained their original [sw] because the following front vowel blocked this change from applying.

We can notate such conditioned sound changes similarly to how we notated phonological rules in Section 4.7, using the symbols / and _ to specify the environment, but using > instead of → to represent that this is a diachronic sound change rather than a synchronic phonological rule. The conditioned change of [sw] to [s] change could thus be represented as follows:

- [sw] > [s] / _ back vowel

Some regular sound changes are instead **unconditioned**, which means they occur everywhere, regardless of the environment. For example, Old English had a high front round vowel [y] that changed to [i] everywhere in Middle English, as in *brycg* > *bridge* and *cyssen* > *kiss* (compare the German cognates *Brücke* and *küssen*, which still have a high front round vowel). This unconditioned change would be notated as [y] > [i], with no environment.

8.3.5: Phonemic effects of regular sound change

Sound changes can also be classified by whether they affect the number of phonemes in a language. If a regular sound change decreases the number of phonemes in a language, it is called a **phonemic merger** or simply **merger**. The [y] > [i] change was a merger, since /y/ and /i/ were separate phonemes before the merger. We can highlight the phonemic nature of this change by using slashes instead of square brackets: /y/ > /i/. In addition, mergers are sometimes notated with both of the older phonemes on one side, as in /i, y/ > /i/, to highlight that this was a merger.

When we acquire a language, we do not acquire its history, so once two phonemes have merged, there is no longer any way to reliably distinguish them. Thus, when a child acquires *kiss* and *miss* now, they cannot know that 1000 years ago, *kiss* used to be pronounced with [y] and *miss* with [i]. The merger has caused these two words to be perfect rhymes in Modern English, even though they used to be pronounced with different vowels in Old English (*cyssen* with [y] and *missan* with [i]).

Other changes can increase the number of phonemes. This is called a **phonemic split** or just **split**. An example of a split is the emergence of voiced fricatives as phonemes during Middle English. Old English only had voiceless fricatives as phonemes, but these already had voiced allophones between vowels. For example, *cnif* 'knife' was pronounced [kniːf], but its plural *cnifas* was pronounced [kniːvas], and we still have the [v] in the plural in Modern English *knives*. But [f] and [v] were allophones of a single phoneme /f/, until English borrowed a lot of Old French words that had [v] in a position where it was in contrast with [f], as with *fine* and *wine*. As discussed in Chapter 4, once there is contrastive distribution and the potential for minimal pairs, the phones belong to separate phonemes, which meant a new phoneme /v/ came into existence in Middle English.

A sound change may also keep the number of phonemes constant, only changing their pronunciation. This is known as **non-phonemic shift** or just **shift**. There have been a number of such shifts in the vowel system throughout the history of English. In particular, Late Middle English had four short vowels, [i], [e], [o], and [u], that shifted in pronunciation into Early Modern English by becoming lax, plus an fifth short vowel [a] that did not change (see Figure 14.5). Since there were no pre-existing lax vowels, these shifts resulted in no mergers, so there was no change in the number of vowels.

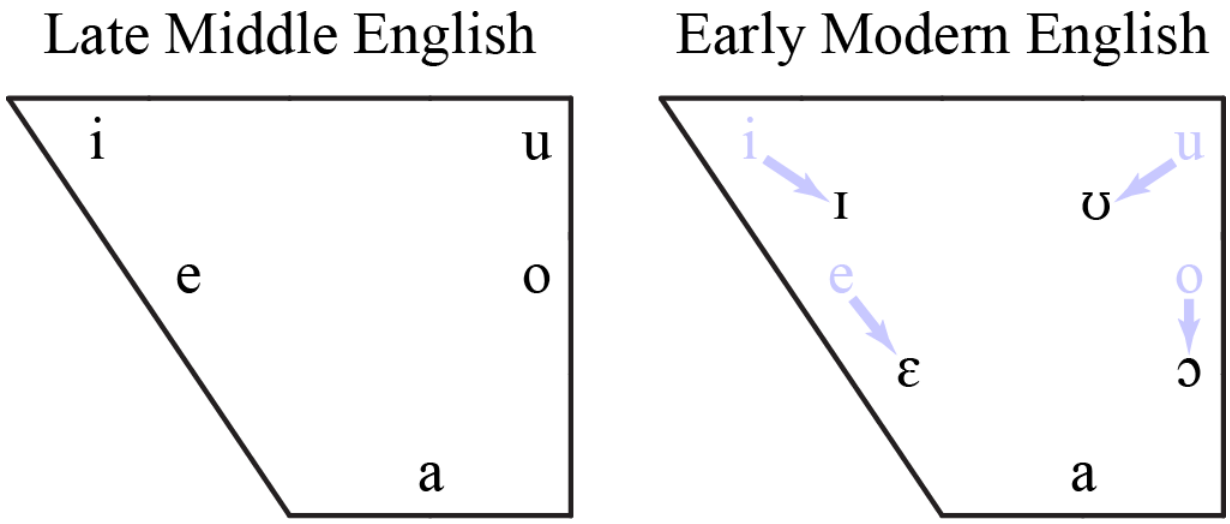


Figure 14.5. Shifts in the short vowels from Late Middle English to Early Modern English.

In this case, the different shifts did not interact with each other, but it is possible for shifts to overlap. This happened with the Middle English long vowels in a shift known as the **Great Vowel Shift**, which is one of the major features marking the transition from Middle English to Modern English, which we'll see in shortly.

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8.4: Indo-European and Romance Phonological Reconstruction

8.4.1: 8.3.1 Indo-European and Romance Phonological Reconstruction, from Sarah Harmon



8.4.1.1: Video Script

Now that we have studied a bit about reconstruction, let's start talking about reconstruction in action with some data. This is going to focus primarily on the Indo-European languages and the Romance family specifically. There are a few reasons, not just because this is my area and I'm going to be able to explain this best. With the Indo-European language family, we have a very special set of data—it is the language family with the longest continuous deciphered writing data. We have a about 3,500 years of continuous deciphered data from a variety of sub-families. Technically speaking, the oldest writing systems are not in the Indo-European families. Certainly, the Chinese writing system has been around for about 4000 years, give or take, and that isn't even touching Egyptian Hieroglyphics, or especially what we consider to be the first writing system, the Sumerian writing system.

However, there are some problems: the Sumerian writing system is excellent and it got borrowed from the Sumerians to later generations, specifically the Akkadians, who spoke an Afro-Asiatic language, and the Hittites, who spoken an Indo-European language. We're still trying to decipher a lot of pieces with respect to just Sumerian, let alone any of the others. There's the unfortunate aspect of the Sumerian language being an isolate; to this point, we have yet to connect it to another language family or even subsequent languages. It's very difficult, so we have to put that one aside. With respect to the Egyptian Hieroglyphics, we definitely know how most of them were pronounced throughout their history; we've gotten pretty good data on that. As far as the oldest hieroglyphs, that's a little harder to decipher. We're not entirely sure how they were pronounced and so I'm going to put that aside as well. Finally, with respect to Old Chinese: no question that the ethnic groups that have spawned and continued to thrive in that region have had a writing system for a very long time. But we aren't entirely sure how everything was pronounced. While a lot of work has been happening in China with respect to that, and there is a good amount of research in that area, there's still a lot of controversy with respect to that data. For now, I'm going to also put it to the side; who knows, maybe in a few years, I will be able to include it. Therefore, I will stick with the Indo-European languages, and specifically Romance, which is my actual specific area of expertise.

We have not just the modern Indo-European languages, and not just the classical languages of Latin and ancient Greek. We have to include Sanskrit, which has a very long history, and Vedic or Aryuvedic, which has an even longer history of being written down, and then the granddaddy of them all, which is Hittite. Hittite is the earliest attested Indo-European writing; they borrowed the Sumerian writing system buccaneer form, but it is the earliest documentation and it has helped us to understand some of the potential sounds of proto-Indo-European.

Let's take a walk into the past, shall we?

This first slide shows a couple of different reconstructions that we can do. The top is Romance, and this is modern Romance. This should be in into international phonetic alphabet (IPA), but it's not, although most of you probably either have some knowledge of how the Spanish or French or maybe both are pronounced. There may be some of you who are Italian speakers, Portuguese speakers, and so you can pronounce them. I will go through them just the case.

When we reconstruct, we say, "Okay, let's look at each sound individually across the board, and let's see what the sound could be in the earlier parent of that language." Admittedly, we are cheating a little bit with Romance because we have the parent is written down—I don't just mean Classical Latin, but I mean Vulgar Latin. There's really only a window of about 150 years that we have no writing, or precious little writing, in any Romance language. It really goes all the way back to Old Latin.

In reconstructing these sounds, we go across. The word for 'dear', like 'a dear person' or 'a dear friend': *cher* in French, *caro* in Italian, *caro* in Spanish, *caro* in Portuguese. Therefore, we know that that first sound in each modern word is a [k, k, k, ʃ]. One of these things is not like the other. (Come on, you know that song, right?) Because of those data, we know:

- That first sound is probably going to be a [k], because three out of the four languages, the data here suggests that that is the sound.
- The next is the vowel: [a, a, a, ɛ]. Again, one of these things is not like the other, so probably it's going to be [a] because that's pretty close.
- As far as the R is concerned, I don't have them written out here and IPA but technically speaking. Spanish and Italian both use that alveolar tap, that real quick flick that hits the alveolar ridge. If you speak Spanish, you know what this is; Italian has the same sound. It's not like the trill; that's not the term that we use. What is interesting is that both French and Portuguese, depending on the dialect, that 'r' rhotic, has intensified and velarized; it has gone to the back of the mouth, and almost always it's the velar region. It is either a trill or a kind of fricative, depending on the dialect. For right now, I'm going to actually keep it as an alveolar trill, because there's so much play and the alveolar trill is higher up on the hierarchy than the others.
- This final sound—the [o, o, o], deletion—clearly, French is not going to represent the old pronunciation. It is going to be a lot closer to what we hear in Spanish or Italian.

We can do the same thing for the term for 'field'. If we go across:

- [k, k, k, ʃ], so we know that that first sound is a [k] because three of the four have it.
- [a, a, a, a], okay all four languages show that it's the same sound, so it's probably going to be an [a].
- we have an [m] sound, and then we have a [p] sound at all for the languages
- again, three out of four and in a vowel is probably an [o].

The word for 'candle', you can do the same thing, right?

- Three of the four have a [k];
- All four have an [a];
- All four have an [n];
- The next sound is almost certainly some kind of a [d]-like sound;

- There's a lateral liquid;
- Three out of the four have an [a], the fourth has an [ɛ], so the chances are that it's going to be [a].

The great news is, as I said, these are Romance languages, and we actually know that this was how both Classical Latin and Vulgar Latin sounded, so this is a pretty good clue. In fact, many of the Indo-European languages are frequently test runs for any historical linguistic theory; if you can prove it on any of the Hellenic family (that's Greek), anything with respect to Romance to Latin, and if you can do it with Sanskrit (Hindi or Gujarati and the languages in northern and central India, Pakistan and parts of Afghanistan). Those languages have such a long and rich attestation, and we have so much data for those three language families in Indo-European alone. If your theory holds water there, it might hold water elsewhere. This is one of the reasons I got into Romance linguistics; I wanted to be able to test out theories. If a theory can work to explain something in the Romance languages, then it might be a pretty good theory for how languages change. If not, well, we might have to find something else that might work.

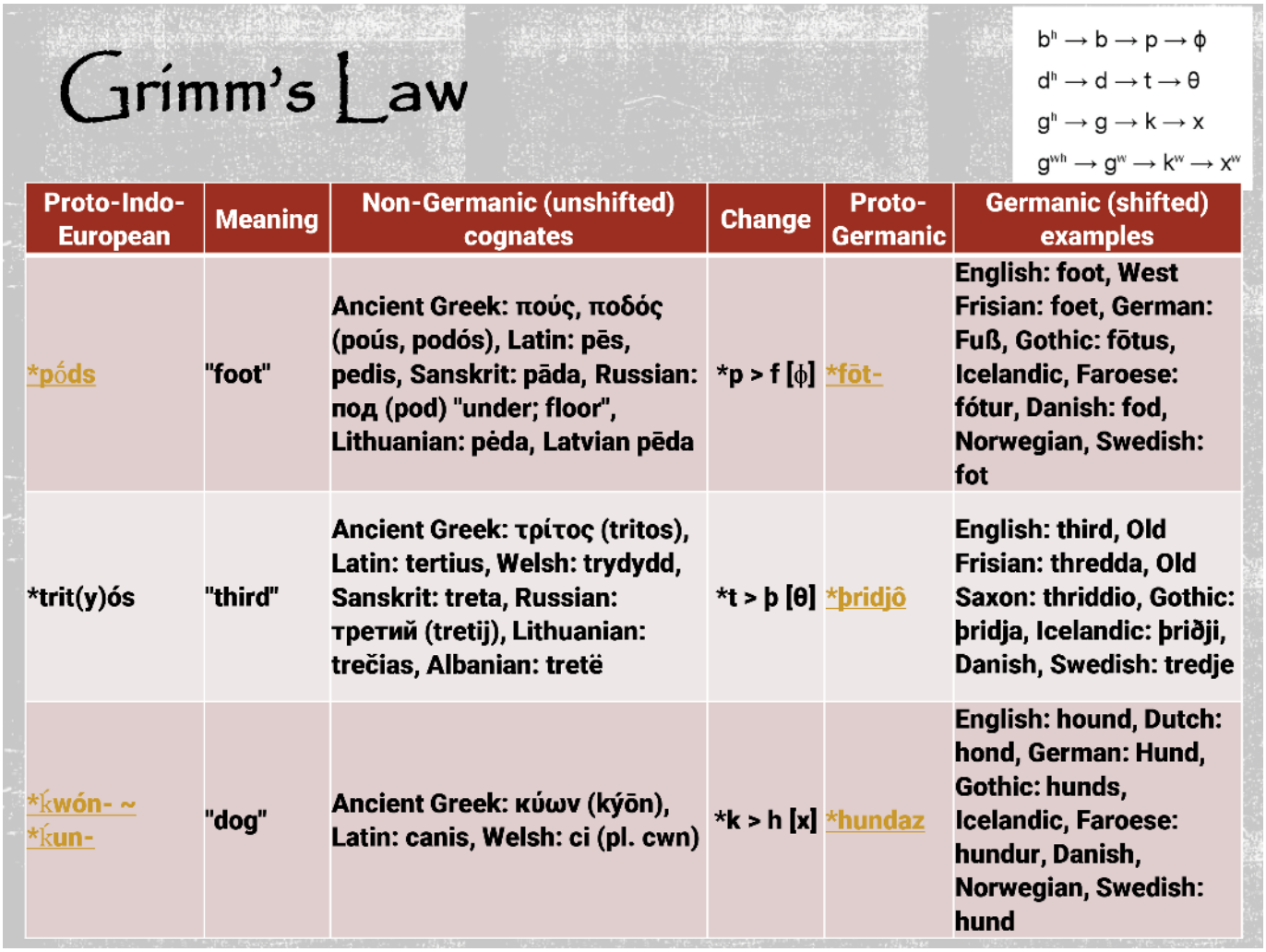
With respect to Proto-Indo-European, as I said, there is a reconstruction based off of the oldest attestations of the Indo-European languages—not just Classical Latin, but Old Latin, for which we do have good records, as well as the various ancient Greek language, including Attic, especially as we get to know more about Mycenean, which is written in Linear B. The more we start understanding Hittite, the best data seem to come from there, because it is the oldest attestation of an Indo-European language. As we get those languages together, and as we start comparing and contrasting and seeing how these correspondences work, we can start building how Proto-Indo-European might have sounded like.

Here are some correspondences. if you think of the term for 'father'. Remember that English is a Germanic language, so 'father' is frequently with that labiodental fricative. *Pater* in Classical Latin—actually, most attestations of Latin—and notice that the word for 'father' in most of the Romance languages, if not all of them, begin with a [p]. In Sanskrit, it's very similar, and if you speak Hindi, Urdu, Gujarati, or any of the Indic languages, you know that your term for 'father' is very similar to *pitar*. What we're going to say is that the Proto-Indo-European sound is almost assuredly that same [p], that there's a sound change that happens in the Germanic languages. As you go around, the word for 'three' and most of the other languages do not begin with that interdental fricative; it begins with a [t]. Chances are in Proto-Indo-European it probably also started with a [t].

When you see consonants that have an 'h' afterwards, if you speak an Indic language or even an Indo-Aryan language as a whole—Farsi still has some of the sounds, too—these are what we like to call breathy sounds. It's not just a [b], but there's a <glottal vibration/exhale> with it: [b̤]. They tend to be voiced obstruents, almost always stops, but you can have some fricatives and affricates in there. We see them in Sanskrit, Vedic (Farsi's much older ancestor) and we see something similar in Hittite. Therefore, the chances are that Proto-Indo-European might have had it, too.

One more thing to point out: notice that the Proto-Indo-European sounds all have an asterisk in front of them. If you recall when we were in syntax, we said that the asterisks meant that it's ungrammatical, that it doesn't follow the phrase structure rules for the language. There is a different meaning here—arbitrariness, right? In historical linguistics, we use the asterisk to mark that something is reconstructed. This means that we do not have evidence or data of it being that way, but based off of the data of the child languages, the chances are pretty good that this is the sound that was in the proto-language.

When we talk about phonological languages or phonological changes as a whole, we're going to talk about some of these things that we saw way back when we talked about phonology. The same rules apply; in fact, most of what we saw with respect to phonological change all the way back in chapter three is due to an historical process, meaning there's some change over time that has happened. Whether we're talking about loss or deletion, apocope is part of that, insertion or epenthesis, assimilation and dissimilation rules and metathesis—all of these are going to come back in a big way. We know that these are processes that happen, not just within one generation, or maybe spilling into a second, but we're talking over 3, 4, 5, up to10 generations where we see the change happen. Most language change is gradual; it is not instant by and large. There are some exceptions to that rule, but we'll talk about that at another time. I'll show you a couple of phonological changes that we see in the Indo-European languages, and I'm going to start with Grimm's Law—by the way, Grimm is Jakob Grimm, as in one of the Grimm Brothers. We know them for collecting fairy tales throughout Central Europe. Jacob Grimm was also comparing languages, specifically the languages that were spoken throughout Central and Eastern Europe, as they were going out into the countryside and collecting tales. What he ended up showing was a little bit about why the Germanic languages sound different than the other languages of Central and Eastern Europe—Slavic languages, Romance languages, and the like. He came up with some interesting facts. We have subsequently found more data, and we still call this Grimm's Law, even though he didn't fully flesh it out; he gave us the idea and we attribute it to him. Specifically with respect to Grimm's Law, focus on this top right corner of the graphic.



Proto-Indo-European	Meaning	Non-Germanic (unshifted) cognates	Change	Proto-Germanic	Germanic (shifted) examples
*pṓds	"foot"	Ancient Greek: πούς, ποδός (poús, podós), Latin: pēs, pedis, Sanskrit: pāda, Russian: под (pod) "under; floor", Lithuanian: pėda, Latvian pēda	*p > f [ɸ]	*fōt-	English: foot, West Frisian: foet, German: Fuß, Gothic: fōtus, Icelandic, Faroese: fótur, Danish: fod, Norwegian, Swedish: fot
*trit(y)ós	"third"	Ancient Greek: τρίτος (tritos), Latin: tertius, Welsh: trydydd, Sanskrit: treta, Russian: третий (tretij), Lithuanian: trečias, Albanian: tretë	*t > þ [θ]	*þridjô	English: third, Old Frisian: thredda, Old Saxon: thriddio, Gothic: þridja, Icelandic: þriðji, Danish, Swedish: tredje
*ḱwón- ~ *ḱun-	"dog"	Ancient Greek: κύων (kýōn), Latin: canis, Welsh: ci (pl. cwn)	*k > h [x]	*hundaz	English: hound, Dutch: hond, German: Hund, Gothic: hunds, Icelandic, Faroese: hundur, Danish, Norwegian, Swedish: hund

It's the concept of Proto-Indo-European [b, d, g] and [p, t, k], all changing. It's a specific change within the Germanic languages, because we see a number of shifted sounds—and by shifting, I mean they go from voiced and breathy to voiceless—and then they get fricated—meaning they turn into fricatives. The term for a 'foot' and you see here: *foot*, *foet*, *fuß*, *fōtus*, *fótur*, *fod*, *fot*. All the term for the thing at the end of your leg that you stand on. Notice that in every other Indo-European language, almost without exception, that term starts with a with a [p] sound: *poús* or *podós*, *pēs* or *pedis*, *pāda*, *pod*, *péda*, *pēda*. Pretty important work. It should be noted that Latvian is thrown; Latin and Lithuanian are both Indo-European languages, although they have been heavily influenced by their Finno-Ugric neighbors, especially Estonian but even Finnish. Yet, their core vocabulary tends to be Indo-European.

Why do we have these languages up here? That is what Jakob Grimm looked at; he compared all of the Germanic languages. Most of those you probably have heard before. West Friesian is part of some of the islands off of Scotland; the Faroe Islands are between Scotland and Iceland. The others you probably recognize. He went and compared them to Ancient Greek and Classical Latin, because he knew those languages, and he had access to Sanskrit. Given his status, he would have had access to it. Grimm knew plenty of Russians, and he came across those who spoke Russian, Lithuanian and Latvian, even included some Albanian, and for kicks and grins included some Welsh. All of these cases—the [f] sound, the [θ] sound, and the [h] sound that we have in the Germanic languages—many times have more obstruent counterparts. They were more occlusive; they are stops in almost all cases in the more modern Indo-European languages.

To take it a step further, what Grimm hypothesized was that there would be in a parent language something a little bit harder, probably a little bit more involved, and so what we see is that in the Proto-Indo-European, we see that it is occlusive, it is a stop. It's also a very hard stop; it has softened over time, and softened even further when we get to the Germanic languages. The Germanic languages showcase a really great example of what a language family describes: this tendency to exist because there was an initial group or speech community that pulled off, got established elsewhere, and then spread out on their own. Think of migration patterns, as they are the same thing. In the case of the Germanic languages, what we have learned subsequent to Jakob Grimm and his work, is that the Germanic languages, the Germanic peoples seemed to have broken off later than other Indo-European groups. In doing so, they started interacting with the other peoples in and around Eurasia. Because of this late separation and intermingling with other linguistic communities, their patterns are is going to be very different than what everybody else ended up doing with respect to the sounds.

That's a little bit about the Germanic languages, let me show you a little bit about the romance languages. Again, this is a little bit of my specialty and I have to give a shout out to one of my professors at UC Davis, Robert Blake, who was mentored by one of my professors at the University of Texas who also became my mentor, Carlos Solé.

When we talk about Romance languages and we talk about palatalization—remember that term? That the sounds are going more towards the palatal region of the mouth—if you think about the different Romance languages, there's a lot of palatalization. It's not exactly the same palatalization rule; we have different forms of it. What we see in the history of this language family is different waves of palatalization. I've put up here Spanish and Italian, and then I've given you what we have in Classical Latin, but slightly modified, and that's what we're going to see with Vulgar Latin. Vulgar Latin was the language of the people. It wasn't vulgar, like full cuss words; Vulgar Latin just means it was the language of the people, what people tended to speak, instead of Classical Latin, which was studied and written, but not really spoken much once you get to the end of the reign of the Latin kings—before the Republic. By the point that we get to the Republic, even Classical Latin is not really spoken that much anymore; certainly, by the time you get to Julius and Augustus Caesar, Classical Latin is not spoken hardly at all—maybe only by the Emperor and that class, maybe a couple generals, but that's about it.

The 'yod' palatalization from Latin into the Romance languages

Classes of yod	Effects on various vowels

Classes of yod		Effects on various vowels				
1st yod: oldest change; doesn't affect vowel	ty/ky → [t:s, z, ɵ, tʃ]	fortia → Sp. fuerza; It. forza	pettia → Sp. pieza; It. pezza	lutea → Sp. loza It. ---	malitia → Sp. maleza; It. ---	m Sp It.
2nd yod: influences open vowels only	ly, k'l → [l: à x/ʎ]	folia → Sp. hoja; It. foglia	reg(u)la → Sp. reja; It. ----	cusculiu → Sp. coscojo; It. ----	cilia → Sp. ceja; It. ciglia	pa Sp It.
	(mnà) ny, gn → [ɲ, n:, n]	somniu → Sp. sueño; It. sonno	ingeniu → Sp. i/engeño; It. ingegno	cunea → Sp. cuña; It. cuneo	ligna → Sp. leña; It. legno	ar Sp It.
3rd yod: regularly affects open vowels, sometimes closed vowels	gy/dy → [j, dʒ]	podiu → Sp. poyo It. poggio	pulegiu → Sp. poleo It. puleggio	fugio → Sp. huyo It. fuggio	fastidiu → Sp. hastío (It. fastidio)	ex Sp It.
	by/my → [j, bj/b:, mj/m:]	fovea → Sp. hoya (It. fovea)	nerviu → Sp. nervio; It. nervo	rubeu → Sp. ruyo/royo It. ----	vindemia → Sp. vendimia; It. vendemmia	la Sp It.
4th yod: regularly affects vowels	kt, ks → [tʃ/t:, ʃ à x]	nocte → Sp. noche; It. notte	lecto → Sp. lecho It. letto	tructa → Sp. trucha It. trota	strictu → Sp. estrecho It. stretto	fa Sp It.

We see four different waves, and you see this term **yod**. This is actually a letter of the Hebrew alphabet, but, more specifically, it has this [j] quality to it in Classical Hebrew. Whenever you had that letter written, you knew that the sound that came before it was palatalized somehow. That's why that term was borrowed, to explain what happens in the Romance languages; this does not mean that Hebrew has any effect on the Romance languages, at least not in this way. It also should be noted that these four waves all happened before the fall of the Empire, so this first yod actually starts during Imperial times. This is the oldest change; it doesn't produce any effect on the vowel. There were seven vowels in Classical Latin, and they were both long and short. Realistically, the only modern Romance language that has anything similar to that is Sardinian; most all of the other Romance languages have five vowels, and they sound very different. To explain this table, we're talking about when you have a [t] or [k] next to this yod, and this is almost always a high vowel or a front vowel. In this case, *fortia*, which means 'strength'; notice that is next to a [i] sound, so there's your yod that's the palatalization effect. We have *pettia, lutea, militia, minacia*. If you speak Spanish, you'll recognize most, if not all, of these terms; some of them are older terms and may not be used very often. I'm giving you the Italian because there's a slight difference in how Italian palatalized over Spanish; if I had more room, I would include Spanish and Portuguese, probably Romanian as well, just to give you an idea. We'll start with *fortia* because the term *force* that we have in English is borrowed from French, and it comes from the same root. In Spanish, this becomes *fuerza*, so this [t] softens to a fricative, and may, depending on your dialect even front a little bit to [θ]. If you're in Spain, this is not [fuɛrsa] in Spain, this would be [fuɛrθa]. In Italian, it's [foɾtsa] so becomes a affricate [ts]. You see that here: *amenaza* for *minacia*, which is a 'threat' in Classical Latin, and [amenasa] or [amenaθa], depending on your dialect in Spanish, same thing; [minatʃa] in Italian, same thing. Notice it's a [tʃ] sound, not a [t] sound. A little bit later, maybe four to five generations later, you get the second yod, where you start opening up the vowel a little bit, and you have more consonants that are affected by it. You have the [l, ɲ], and the 'ng' together. Think, for example, the term for a 'leaf' or 'sheet' is a *folia* in Classical Latin; notice that I'm palatalizing that a little bit. In Italian it's [foʎja]; it's a fully palatalized sound. In Spanish, it's an [oxa], so that [x] is an even further palatalization. Yes, I know there's an 'h' there and that's another discussion. Yet, what you can see is the various progressions of this yod and this palatalization rule.

With respect to Grimm's Law and the Romance palatalization rule, you do not have to remember the individual steps at this time. In an upper division historical linguistics course, that's a totally different thing. What is important to understand is that these changes happen, that they are relentless. In fact, even if we go back to this first y'all and we think about the Spanish pronunciation that pronunciation has changed, and is still changing and continues to go on. For example, the pronunciation of the written 'j' in Spanish depends greatly on what dialect you're speaking.

When we talk about Proto-Indo-European, what we're really thinking at this moment—and I say 'at this moment', this is a map from 2007 and reflects the latest that we know with respect to historical linguistics and specifically the Indo-European group—this family started most likely in this Ukrainian Steppe region, near the Balkans and Greece. It seems to start with the Yamna culture or Kurgan culture. 'Kurgan' refers to the fact that they had burial mounds; it's a really specific type of burial that you learn about in anthropology. We know that this culture existed 4500 to 2500 Before the Common Era (BCE)—we don't say 'BC'/'AD' anymore, we say 'Common Era' (CE), 'Before Common Era' (BCE). This Kurgan or Yamna culture, we're talking for 6000 years ago, Proto-Indo-European is what we believe, to our best estimation, was spoken between 3000 and 5000 years ago. It could be older, it could be a little younger, but that's our best attempt at dating it right now. We do know that there are early splits so the earliest split would be to the Afanaseco culture, which is in Central Europe, or excuse me, Central Asia, and then the Maykopf, which is down to the south. We know that there's also the Anatolian branch, which splits off very early; this is where the Hittites are. We know that that branch was existent at least 1000 to 2000 years before the Hittite's kingdom comes to be, so we believe it to be about 4000 BCE. It's in the second millennia BCE, about 1700 BCE, that we start seeing the Hittite kingdom. Notice that we have multiple expansions into Asia; it's not just Europe. Remember, this is the Indo-European language family. This family also includes the Tocharians, which I still find to be the most fascinating group because we still only know pieces about them. This language family was in Central Asia and Western China; the Wusun are kind of in that realm, as well. These two families had a kind of writing system, but we are still trying to decipher it. The Ancient Chinese writings very rarely talk about them, so there's a lot more that we still have to learn; I'm hoping that there's some archaeological dig yet to be found that has more data.

When we're talking about the Indo-Aryan languages, we're talking about Persian or Farsi and its ancestors that's the Aryan branch—Vedic or Aryuvedic is part of that, as is the Iranians who are a different branch. The Vedic branch is where you get Sanskrit and then the subsequent Indic languages. Armenian is an Indo-European language—people forget about that, but it is—and then you have the various branches in the early first and second millennia BCE, you notice that there are various splits.

Below, I have included two SoundCloud links, examples of what we believe Proto-Indo-European sounded. They are a couple of stories. This is a really fascinating just piece to hear. Again, it's hypothetical, but our best guess so far.



Archaeology · Sheep And Horses



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8.5: Stages of English

8.5.1: 8.4.1 Stages of English, from Sarah Harmon



8.5.1.1: Video Script

Let's start talking a little bit about why English is so weird—okay, not exactly weird, but you get the point. When we talk about why English has a very different setup, one of the big areas has to do with the vowels. We tend to say that vowels change but not radically over the course of the history of the language. English does not follow that rule; in fact, it's one of the perfect examples of not following that rule, and that is the Great Vowel Shift. Yet, a lot of that has to do with how English came to be in the first place, so let's talk about the various stages of English, what that means, and specifically get a little bit into the Great Vowel Shift.

When we're talking about English, we're talking about Old English, Middle English, and Modern English. Despite what you might think when you try to read Shakespeare, that's actually Modern English. Before that, if you want to know what English used to sound like before the Norman invasion, read *Beowulf*. *Beowulf* is **Old English**; in fact, *Beowulf*, when you look at it, it is very similar to Old High German, which is, if you will, the parents or ancestor to Modern German. It is not easy to read at all; in fact, if you know German you might pick up some words, maybe, but, honestly, not much it's very, very difficult to read. Old English has a full case system, it is highly complex with how it combines its terminology, it is very synthetic and realistically, very fusional. Everything changes in 1066, and if you know the history of the British Isles, you know what happens: William the Conqueror leaves Normandy, which is the northern part of France; the Normans spoke Old French—although interestingly, they were genetically more Viking than French—so they brought Norman French to the Court. This meant that every part of the upper half of English society or British society, if you were in middle class or higher you were learning and you were speaking French. You would be bilingual, especially in the middle classes, in both Norman French and the English that was being spoken. However, there's a big change that happens; if you were to read, for example, *The Canterbury Tales*, that is **Middle English**—in fact, in the middle of Middle English. It really encapsulates what happens when you have two mildly, but not really, related languages pushed together and combining. If you think back to sociolinguistics, when we talked about languages in contact, we talked about of lingua franca that goes to a pidgin that goes to a creole. There are a number of researchers and linguists who say that Middle English shows a number of examples of creolization:

- The case system reduces drastically;
- The vowels change;
- The word order becomes stricter; and,
- The language becomes less synthetical and little more analytical in how we combine our morphology and syntax.

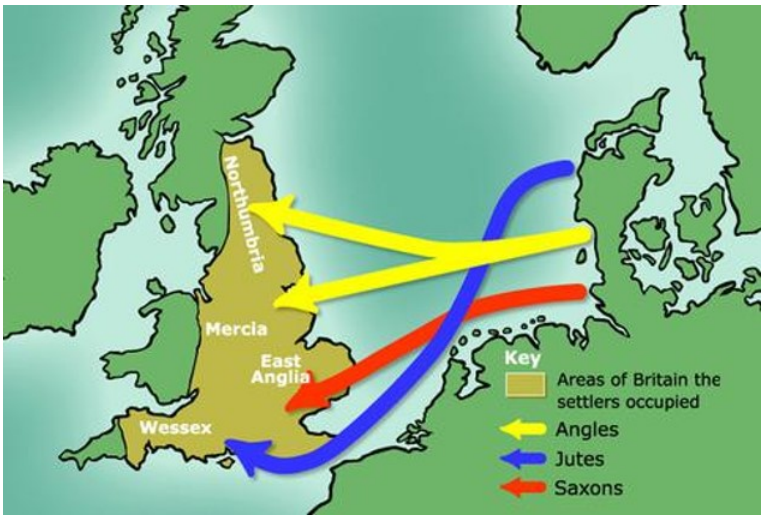
If you were to compare a page of *The Canterbury Tales* to a page of *Beowulf*, they would be different, miles apart. That is why there is a thought that maybe this stage of English is a kind of creolization. Personally, I'm not going to entirely subscribe to that theory; it is an interesting theory, and I like pieces of it, but I think there's plenty of evidence to the contrary of that. Suffice it to say

that there are certain major changes that happened with Middle English. Notice that's only a 400-year period, yet there is approximately 600 years of Old English. OE was a pretty stable language—not is not 100%, but pretty stable, you can see it through the history. That 400 years of Middle English is raucous; there are a number of changes happening. By the time you get to the Elizabethan era, now you're talking Shakespeare; this is Modern English. **Modern English** is usually set at 1500 CE, to say that that is when you start seeing a language that resembles the modern English language: there's no case system anymore. Word order fully replaced everything in the syntax. Shakespeare's difficulty is legendary, and I will not say that it's not a difficult thing to process and read—in part, it's because he moved stuff around to make sure he had the right rhythm, the iambic pentameter. However, if you were to read a document written in Elizabethan English prose, you would get a large chunk of it; you may not get everything, and in the last almost 500 years there's been some changes, but realistically it's pretty close. It's also about at that point that you start getting much more dialectical spread—clearly, if we think about the history of England and, right around that time is when you start getting this concept of Great Britain, in addition to colonization of the world (first of the Americas, and then throughout the world). One of the things that we see with respect to human language is that as we colonize, there's more stabilization in certain realms with respect to language, and that probably is tied into the stabilization of **Early Modern English**. When we talk about Early Modern English, we're talking about think Shakespeare. When we're talking about **Late Modern English**, which is 1700 CE and beyond, now we're talking more modern stuff; think Charles Dickens, which is difficult at times to read, in part that's because of what Victorian prose was like. Yet, the syntax, semantics, and morphology hasn't changed much from the time of Shakespeare. There have been changes—specifically, with respect to semantics, of course, but pronunciation of the vowels has changed, as well as the consonants. It's not that different.

What you're going to hear below are examples of all four really of these stages and you'll hear the difference between them. It's also really important to remember with respect to English, we have heavily borrowed from the Romance family. I tend to say Italic family because Latin is in there; Latin is the parent of the Romance languages, but it is not itself a Romance language. It is an Italic language, so one step up, therefore I tend to say either from Romance or Italic origin. It started really with 1066 CE, the Normans coming in and taking over the English court, but it continues through all the way into the Renaissance and beyond. For example, the language of science is frequently Latin; by that I mean when we create a scientific term, we're using either Latin or Greek as a root. There's been a lot that has been borrowed in, and not just to English, but to all of the Indo-European languages. This goes beyond and into technology as it goes forward. Note that, if you take the 1000 most common words in English, 30% of it are Latinate or Italic or Romance. This is only the lexicon; remember what I said a couple of sections ago that when we reconstruct the language and we try to classify it within the realms of what family it's in. We're going to look at syntax and morphology more than the sounds, and especially more than the lexicon.

When we look at the syntax and morphology of English, it is Germanic; the only thing we don't do anymore really is case—we're the only ones that don't, although Dutch has a reduced case system—and we don't switch the word order of subordinate clauses. If you go to learn another Germanic language, you'll know that if you have an embedded clause, the word order switch becomes SOV, that the verb is at the end. English stop doing that by Modern English, and it was already starting to phase out in Middle English.

When we're talking about the waves of migration, this is just a quick map to show you this.



With respect to the origins of Old English, we really have three main waves: we have the Saxons and the Angles, and they are predominantly the first groups to come over. The Jutes came over and went into southern England, to what is now considered southern and southeast England. If you know anything about the various dialects of England, you'll notice that the dialects of Wessex have certain examples that we do not see in the rest of England, and that predominantly is the influence of the Jutes. What's not represented here are the Vikings and, as I said, the Vikings came from what we now call Scandinavia: Denmark, Norway, and Sweden. They raided all of the British Isles, such that it's not only Old English that got affected. The Celtic languages—Scottish Gaelic, Manx, Irish Gaelic, Welsh, Cornish—all were severely affected by those raids. We have now seen in the last 150 years more archaeological evidence that suggest that while many of the Vikings raided and then went back, but many others stayed. The more they stayed, the more Old Norse mixed with the local language, whether it was Anglo-Saxon, which is frequently another term for Old English, or Scottish Gaelic, Irish Gaelic or Old Manx, all of them have various aspects that were brought in by those Old Norse speaking Vikings.

Just to prove to you that English really is a Germanic language—and I know you may not always believe it but it's the truth–think back when we classify languages, and we look at the core lexicon or vocabulary: the numbers 1-10 and other basic, core vocabulary. I have examples: *man, hand, foot, bring, summer*. These are core vocabulary about people, body parts, basic verbs (*to go, to come, to bring, to be* if it's existing, *to eat, to drink*), and phenomenon that are shared, such as flora and fauna that are shared (*summer,* in this case seasons. having to do with whether, basic terms for like *flower* or anything like that). If we look at these examples, the term for *man* in Dutch, German, Danish, Swedish or Norwegian, you have: /mæn, man, manʔ, man/. It's pretty much the same as 'man' or the vowel has changed, but nothing else. The word for *hand*: /hant, hɔʔ, hand/, .so pretty much the same across the board. Danish is just going to have a lot more glottal stops, even though Danish is technically a dialect of the Swedish/Norwegian. There's some big changes for phonetically for Danish, as compared to Swedish/Norwegian. *Foot*: /vu:t, fu:s, foðʔ, fo:t/. *Bring*: /breŋe, brɪŋə, breŋə, briŋa/. It's the same term, right? *Summer*: /zo:mer, zomer, sɔmər, sɔmar/. In fact, near where I live—I'm at the southwest corner of San Jose—and up in the Santa Cruz Mountains, you have Solvang, which is a Swedish community and Midsomar is a big festival in June. For comparisons, these are all Germanic languages, and here's Turkish down here; very clearly not a Germanic language, very much not an Indo-European language either. The word for 'hand' is /adam/--yes, Adam as in Adam and Eve, more on that another time—/el/ for 'hand', /ayak/ for 'foot', /getir/ for 'bring', /yaz/ for 'summer'. It's very different.

As I said, English has changed over time. This is a copy of The Lord's Prayer.

The Lord's Prayer Through Time

Late Modern English

Our Father who are in heaven, blessed be your name. May your kingdom come. May your will be done, on earth as it is in heaven. Give us this day our daily bread. And forgive us our sins as we forgive those who sin against us. Do not lead us into temptation, but deliver us from evil.

Early Modern English (Authorized King James Version, 1611)

Our father, which art in heaven, hallowed by thy Name. Thy kyngdome come. Thy will be done, in earth, as it is in heauen. Giue vs this day our daily bread. And forgiue vs our debts, as we forgiue our debters. And leade vs not into temptation, but deliuer vs from euill.

Middle English (Wycliffe's Version, 14th century)

Oure fadir þat art in heuenes, halwid be þi name; þi reume or kyngdom come to be. Be þi wille don in herþe es in heuene, yeue to us this day oure bread ouir other substance, & foryeue to us oure dettis, as we forgeuen to oure dettouris, & lede us not in to temtacion: but delyuer us from yuel.

Old English (West Saxon, ca. 1000)

Fæder ure þu þe eart on heofonum, si þin nama gehalgod; tobecume þin rice; gewurþe þin willa on eorðan swa swa on heofonum; urne gedæghwamlican hlaf syle us to dæg; and forgyf us ure gyltas, swa swa we forgyfað urum gyltendum; and ne gelæd þu us on costnunge, ac alys us of yfele.

Anybody who's a Christian knows this prayer, although you might have a different version of it, but you get the same idea. Even most non-Christians are aware of this prayer. The Late Modern English is from a few generations ago:

Example 8.5.1

Our father who art in heaven, blessed to be your name. May your kingdom come; may your will be done on earth as it is in heaven. Give us this day our daily bread and forgive us our sins, as we forgive those who sin against us. Do not lead us to temptation, but deliver us from evil

If you are Christian in any way, or if you were brought up as Christian, you know that prayer, and it's one of the first prayers that Christians learn. This is the King James version, so this is 1611.

Example 8.5.1

Our father, which art in heaven, hallowed by thy Name. Thy kyndgdome come. Thy will be done, in earth, as it is in heauen. Gius vs this day our daily bread. And forgiue vs our debts, as we forgiue our debters. And leade vs not into temptation, but deliuer vs from euill.

Notice I modified my pronunciation a little bit. I'm okay at Elizabethan English, although not great; there's better examples and I'll give you some examples of that. OK, some spelling changes, but you see that that's pretty much the same poem, that you can read it. I am not going to read Middle English or Old English; I'm going to give you those links below. Just look and compare; even Early Modern English from 1611 to the Wycliffe's Version, which is 14th century, so 300 years before. Notice that the Late Modern English version was probably written around 1940. Three hundred years before that, it's pretty much the same. But 300 years before that? The language is very different. And then 400 years before that? It's even more different.





One real quick note: this letter that looks like a 'p' but with an extra extension up? That is called thorn, and that letter is the voiceless interdental fricative, the sound [θ]. You will see in the Old English a letter that looks familiar, at least with respect to IPA. This is edth, right? It's the 'd' that has that cross, that's kind of written on a slant, and has that cross through the upright. Edth is the voiced interdental fricative, just like an international phonetic alphabet. Play those recordings and listen to them, read along with them. Listen to the amazingly different sounds.

The biggest change…are the vowels. Let's talk the **Great Vowel Shift**! This is going to explain a whole lot of weirdness, as it were, with respect to English. As I said, most of the time, vowels can change, but not that much. And then you have English…. This is the vowel system that we have in Old English: /a:, e:, i:, o:, u:/ as long vowels; they could also be short vowels but those didn't change as much. We're going to focus on the long vowels because the Great Vowel Shift is predominantly in these long vowels.

What happens between here and over here in step one, which is the beginning of what we call Middle English, around 1100 CE, you basically get an up and out movement. Think of the trapezoid of vowels, and the movement goes up and out. The long [a:] moves up and out to become long [ɛ:] and long [ɔ:]. [e:] and [o:] more or less stay the same, but now we don't just have [i:] and [u:] as long, we also have diphthongs. Now we go from a five-vowel system to seven. Do you see where this is going? A few more generations of up and out and we get what you see in step two. You start having a little bit more change, a firming of the sequence; notice there's no long low vowel. There is [e:, o:, i:, u:], and then [aj]. This is what we're hearing right around 1500 CE, in the Elizabethan era. Then, one more change up and out, so that for long vowels in Late Modern English, by the time you get to 1700, they have firmed up to what we have now.

This is going to explain a whole lot with respect to the spelling system of Modern English. The spelling system is archaic, meaning it is trapped in time. It reflects a pronunciation that we have not had in many hundreds of years; realistically, it is a lot closer to what Old English really sounded like. For example, *bite*, *beet*, *beat*, *made*, *foal*, *fool*, *foul*, that is how we pronounce those lexicons. Yet, the vowels like *beet* and *beat* are said exactly the same, but they're written totally different. Why? Because we have the Great Vowel Shift.

- *Bite* really was said originally as *beat*, and then [bi:t] went to [bəjt] and then went to [bajt].
- *Beet*, as in the root vegetable, was really sad as [be:t]; that's why it's written with two e's is because it was a long [e:], and the [e:] when [i:] and then shortened to [i].
- *Beat* was really pronounced as [bɛ:t]. Clearly, there was a difference, but that difference merged over time; that's Great Vowel Shift.
- *Made*—ever wondered what the heck that silent 'e' is in English? It represents the fact that in Old English, that was a schwa sound and it got deleted pretty early.

You can see how this goes.

When we say, "English is weird," it is true, at least from a bystander's point of view. We can explain all of that so-called weirdness, and the reality is there's a reason for these changes. The Great Vowel Shift happens because there's a radical shift in the population. Could these changes have happened on their own, if the Normans never came over and if Angles, Saxons and Jutes with some Vikings around continued in the British Isles? Sure, it's possible. But what we know to be true is that when you have big clashes of language contact, such that there is now a superstratum and substratum set of languages, any changes that might have occurred normally get accelerated hugely. It's possible that that could have happened, but probably got accelerated during that Middle English period. It is one of the most fascinating aspects to the history of the English language.

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8.6: Morphological change

8.6.1: **Paradigm change**

In many languages, root morphemes may combine with different inflectional affixes (see Section 5.2 for discussion of root morphemes and Section 5.7 for discussion of inflectional affixes). The resulting set of words is called the root's **inflectional paradigm** or just **paradigm** for short. Verb paradigms are sometimes called **conjugations**, while noun and adjective paradigms are sometimes called **declensions**, especially in language learning courses. An example paradigm is given in Table 14.1 for the English verb *move*.

Table 14.1. Inflectional paradigm for *move* in English

move	present tense, except for third-person singular (*I move*)
moves	third-person singular present (*she moves*)
moved	past tense and past participle (*I moved*, *I have moved*)
moving	present participle (*I am moving*)

Many other English verbs (*check*, *end*, *sign*, etc.) have this same basic pattern in their paradigms, so it can also be useful to talk about that pattern as a kind of paradigm itself, separate from specific verb roots. This basic verb paradigm in English is given in Table 14.2.

Table 14.2. Basic verb paradigm in English

ROOT	present tense, except for third-person singular
ROOT-*s*	third-person singular present
ROOT-*ed*	past tense and past participle
ROOT-*ing*	present participle

There are other verb paradigms in English with different patterns. Some verbs have different past tense and past participle forms, such as *show*, which has the paradigm in Table 14.3.

Table 14.3. Paradigm for *show* in English

show	present tense except for third-person singular (*I show*)
shows	third-person singular present (*she shows*)
showed	past tense (*I showed*)
shown	past participle (*I have shown*)
showing	present participle (*I am showing*)

In addition, many verbs undergo changes in pronunciation in some parts of the paradigm, such as **internal change** (changing one or more phones in the root) or even **suppletion** (changing the entire root); see Section 5.3 for discussion. Some examples of paradigms with internal changes and suppletion are given in Table 14.4, with internal changes highlighted in blue and suppletion highlighted in orange. Note that *gone* has an internal change, with the vowel of the root changing from [o] to [ɒ], though this is not apparent from the spelling.

Table 14.4. Paradigms for *ring* and *show* in English

internal change	**suppletion**	
ring	*go*	present tense except for third-person singular
rings	*goes*	third-person singular present

internal change	suppletion	
*r**a**ng*	***went***	past tense
*r**u**ng*	*g**o**ne*	past participle
ringing	*going*	present participle

English has many different verb paradigms, mostly with internal change. In addition to the *ring-rang-rung* pattern, there are patterns like *fly-flew-flown*, *ride-rode-ridden*, *speed-sped-sped*, *speak-spoke-spoken*, and *think-thought-thought*. There are even degenerate patterns like *hit-hit-hit*, *put-put-put*, and *quit-quit-quit*, which have only a single form where many other verbs have three different forms.

Differences between paradigms can be a source of language change. Languages often shift to make their paradigms more consistent, either within a single paradigm or across multiple paradigms. They may copy existing patterns from elsewhere in the same paradigm or from a completely different paradigm. This kind of copying of paradigm patterns is part of a general type of language change called **analogy**. Analogy was introduced in Section 14.3 for sound change, but it is also a significant driving force in morphological change.

Recall from Section 14.3 the following sound change from Old English to Middle English that explains why words like *sword* are pronounced with [s] rather than [sw]:

- [sw] > [s] / _ back vowel

For the verb *swear*, the root and most other forms have a front vowel, so these forms did not change [sw], which still remains in Modern English: *swear*, *swear*, and *swearing*. However, *swear* had the same paradigm as *speak*, so it had a back vowel in the past tense and past participle forms: *swore* and *sworn*, just like *spoke* and *spoken.* If the [sw] > [s] change had affected *swore* and *sworn* as expected, then we would now pronounce them with [s], just like we do for *sword*. However, by analogy with the rest of the *swear* paradigm, the [sw] in all of *swear*'s forms was retained, blocking the sound change from applying to *swore* and *sworn*, which keeps the paradigm more consistent.

Analogy commonly results in a reduction in the total number of allomorphs a root has in its paradigm (see Section 5.4 for discussion of allomorphy). This type of analogy that reduces the number of allomorphs is called **analogical levelling**. Many verbs in English have undergone analogical levelling by changing from a paradigm with multiple root allomorphs to just one allomorph. For example *help* used to have three root allomorphs in Middle English *(help*, *halp*, *holp),* but these underwent analogical levelling in Modern English so that there is now only one root allomorph (*help*), by analogy with many other verbs, like *float* and *hope*, as shown in Table 14.5.

Table 14.5. Analogical levelling in the paradigm for *help* in English

Middle English	Modern English		
help	*help*	*float*	*hope*
halp	*helped*	*floated*	*hoped*
holpen	*helped*	*floated*	*hoped*

More rarely, analogy can result in increasing the number of root allomorphs by **analogical extension** of some other paradigm. For example, the Old English verb *hring* 'ring' had a paradigm with only one root allomorph (*hring*), but it shifted throughout Middle English and into Modern English to have three root allomorphs (*ring*, *rang*, *rung*), following the paradigm of verbs like *begin* and *sing*, as shown in Table 14.6.

Table 14.6. Analogical extension in the paradigm for *ring* in English

Old English	Modern English		
hringe	*ring*	*begin*	*sing*
hringde	*rang*	*began*	*sang*
hringed	*rung*	*begun*	*sung*

Analogy can change the inflectional affixes in a paradigm instead of the root morpheme. For example, some nouns in Middle English could form their plural by adding *–n*. This *–n* is still retained in a few modern words like *oxen* and *children*, but it was replaced in Modern English with *–s* for nearly all other nouns: *eyen* > *eyes*, *schon* > *shoes*, *treen* > *trees*, etc. This change was due to analogy with the plural pattern with *–s* that other Middle English nouns followed: *cloudes* 'clouds', *foxes*, *heedes* 'heads', etc.

8.6.2: Structural change

The morphological structure of individual words or expressions can also undergo change. One type of change to morphological structure is **reanalysis** or **rebracketing**, where an existing morphological boundary shifts across one or more phones. The result is that the word or expression still contains the same morphemes, but some of the phones have shifted from one morpheme to another.

This happened in the history of the English word *apron*. Middle English *naperon* was borrowed from Old French *naperon* 'tablecloth', and it continued as *napron* into Early Middle English. Like many nouns, *napron* was frequently used with the indefinite article, as *a napron*. However, the definite article *a* has a second form *an* which is used before words that begin with a vowel, as in *an apple*. By reanalysis, the boundary between the article and the noun was shifted. This caused the [n] to be treated as part of the article rather than the noun, that is, *a napron* was reanalyzed as *an apron*. As a result, when the noun was used by itself, it become *apron*. Interestingly, the reverse boundary shift happened for *newt*, which was originally *ewte*, and by reanalysis, *an ewte* changed to *a newte*. See Figure 14.8 for a diagram of how reanalysis affected both *napron* and *ewte*.

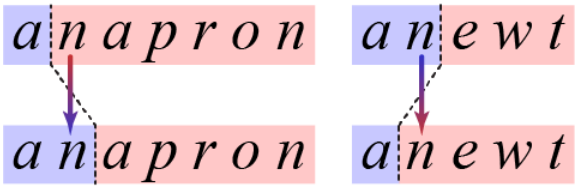


Figure 14.8. Reanalysis of **(n)apron** and **(n)ewt**.

We still see the original [n] in *(n)apron* in related words like *napkin* and *nape*, which did not undergo reanalysis. Similarly, we see the original lack of [n] in *(n)ewt* in the related word *eft*, which is used in the term *red eft*, the name for a juvenile eastern newt (*Notophthalmus viridescens*).

Another way that the morphological structure of a word or expression can change is if new morphemes or a new structure is imposed upon it that it did not have before. This is called **folk etymology** or sometimes **corruption**, in which users of a language treat a word as having an etymology that it does not actually have, and this changes how they interpret its morphological structure. They may even invent completely new morphemes to build the folk etymology, and these morphemes could end up being used to create new words later. The folk etymology normally has some combination of matching phonology and semantics to the original word, though sometimes only the phonology matches.

Folk etymology can be seen in the development of the English word *woodchuck*, which was a late 1600s borrowing from an Algonquian language. The exact source is not known, but a likely candidate is the word [ʊˈt͡ʃeːk] ᐅᒉᐟ *(ochek)* 'fisher (*Pekania pennanti*)' from Cree, which is a dialect continuum in the Algonquian family, spoken in Canada and the United States.

Since [ʊˈt͡ʃeːk] contains phones used in Enlgish, it could have just been straightforwardly adapted into English with little change. However, its lack of transparent morphology lead to it being reinterpreted as a compound of *wood* and *chuck* 'throw', giving a possible etymology (an animal that throws wood around, perhaps) with a similar pronunciation: [ˈwʊdˌt͡ʃʌk] versus [ʊˈt͡ʃeːk]. Real woodchucks do not in fact do anything special with wood, let alone throw it, but the phonological similarity and vague semantics were enough to reinforce this folk etymology. Other examples of folk etymology in English include the following:

- Old English *angnægl* 'hangnail' was originally a compound of *ange* 'tight; painful' and *nægl* 'nail', but it was eventually reanalyzed through folk etymology as *hangnail*, through influence from both phonological and semantic similarity to *hang*, since hangnails are pieces of torn flesh that "hang" next to the nail
- Spanish *cucaracha* 'cockroach' was borrowed into English and reanalyzed as *cockroach*, a folk etymology influenced by phonological similarity to the existing words *cock* 'rooster; male chicken' and *roach* 'fish in the genera *Hesperoleucus* or *Rutilus'*, which also refer to animals, though very different, so there is only weak semantic similarity; *cockroach* is now often clipped to just *roach*
- Old French *meisseron* 'mushroom' was borrowed into Middle English and reanalyzed as *mushroom*, a folk etymology influenced by phonological similarity to the existing words *mush* and *room*, with no notable semantic influence

Folk etymology likely begins at an individual level, often due to a misperception of the real word, when it is sometimes called an **eggcorn** (Liberman 2003). The term *eggcorn* itself is also an eggcorn, in this case, a misinterpretation of *acorn*. Examples of eggcorns include the following, some of which are more commonly used and accepted than others:

- *chomping at the bit* < *champing at the bit*
- *cold slaw* < *coleslaw*
- *for all intensive purposes* < *for all intents and purposes*
- *hone in* < *home in*
- *wet your appetite* < *whet your appetite*

Many eggcorns are only obvious in spelling, because the replacement is pronounced the same as the original, as in the following:

- *deep-seeded* < *deep-seated*
- *free reign* < *free reign*
- *of* < *-'ve* (as in *could of*, *should of*, etc.)
- *peak my interest* < *pique my interest*
- *tow the line* < *toe the line*

Importantly, folk etymology and eggcorns are fundamentally the same process, just with different levels of acceptance: eggcorns are used by individuals, folk etymology are used by an entire language community. A person is not less intelligent or less competent at English for using *cold slaw* or *could of* instead of *coleslaw* and *could've*. Indeed, they are demonstrating the same creative insight into English that speakers used centuries ago for words like *woodchuck* and *hangnail*. As with any case of variation, their version of the language may be mocked now, but some day, it could eventually become the accepted version used by everyone, transitioning from an eggcorn into a folk etymology.

A similar concept is a **mondegreen** (Wright 1954), which is like an eggcorn in that it is also an idiosyncratic misperception by individual language users. The difference between an eggcorn and a mondegreen is their different effects on the meaning. With an eggcorn, the fundamental meaning is still the same: *eggcorn* still refers to an acorn, *cold slaw* still refers to coleslaw, etc. But with a mondegreen, the semantics change, too.

The original example of a mondegreen (and the name of the phenomenon) comes from a 1954 article by Sylvia Wright. In her article, Wright discusses her own childhood misunderstanding of the lyrics of "The Bonny Earl of Murray" (a.k.a. "The Bonnie Earl O' Moray"), an old Scottish ballad from a collection of songs, poems, and ballads published by Thomas Percy in 1765. The first stanza of the original as published by Percy (1765: 211) is on the left in Table 14.7, with a modernized version on the right:

Table 14.7. First stanza of "The Bonny Earl of Murray"

Ye highlands, and ye lawlands, Oh ! whair hae ye been ? They hae slaine the Earl of Murray, And hae layd him on the green.	You highlands, and you lowlands, Oh, where have you been? They have slain the Earl of Murray, And have laid him on the green.

Wright misheard the final line as *and Lady Mondegreen*, imaging that Lady Mondegreen was perhaps the Earl of Murray's wife, and both had been killed. This changes not only the pronunciation and morphology, but also the meaning. Wright's mondegreen includes someone who did not even exist in the original!

Mondegreens are often the result of mishearing lyrics from a song or poem. Perhaps one of the most famous mondegreens is *scuse me while I kiss this guy* as a mishearing of *scuse me while I kiss the sky* from the 1967 song "Purple Haze" by the Jimi Hendrix Experience. Jimi Hendrix singing the relevant lyric can be heard starting at 0:45 in the video linked here: https://youtu.be/WGoDaYjdfSg?t=45. Note that the mondegreen changes the meaning of the lyric to something that is more physically plausible (kissing a guy versus kissing the sky), which is why it so easily arises.

Just as an eggcorn may become frequent enough for everyone to adopt it as part of the language as a folk etymology (as happened with *woodchuck*), a mondegreen may become so common that the standard version of the song changes to match the new misheard lyrics. For example, in the first published version of "The Twelve Days of Christmas" (in a children's book of unknown authorship from around 1780), the fourth present given to the singer was *four colly birds*, where *colly* is an older word for 'black' related to *coal*. However, by the 1909 version arranged by Frederic Austin, *colly* had become an obsolete word, and the lyric had shifted to

the mondegreen *four calling birds*, no longer referencing their colour at all. Unlike with an eggcorn becoming a folk etymology, there is no special name for a mondegreen like this that becomes standardized.

Folk etymology can also result in **back formation**, which is a special type of neologism that creates a new morpheme from the false morphological structure, in which the new morpheme is used beyond the original word it was created for. The new morpheme could be a free morpheme or a bound morpheme, depending on the situation.

For example, English borrowed the word *emotion* from French, but because there are many English nouns having the structure of verb plus the suffix *–(t)ion*, *emotion* was incorrectly analyzed as having the same structure: *emote–ion*. This resulted in the creation of the new free morpheme *emote* in English. Many other verbs were created in English the same way: *donate*, *resurrect*, *secrete*, etc.

Back formation can also create new bound morphemes, like the English suffix *–holic* (or *–oholic* or *–aholic*), which is back-formed by treating the word *alcoholic* as if it had the structure *alco-holic* or *alc-oholic*, even though it has no such structure (it is actually structured as the Arabic loanword *alcohol* plus the adjective suffix *-ic*). This invented morpheme *-holic* is treated as meaning 'addict', and it can be used fairly productively to create new words, like *chocoholic* 'chocolate addict', *shopaholic* 'shopping addict', *sugarholic*, 'sugar addict', *workaholic* 'work addict', etc.

A word that uses a back-formed bound morpheme like *–holic* looks a lot like a blend; that is, we might think of *shopaholic* as being a blend of *shop* and *alcoholic*, rather than being *shop* plus the back-formed suffix *–holic*. However, blending usually results in only a single neologism, while a morpheme created through back formation could be used to create many new words. Language is flexible though, and it could be difficult in some cases to draw a clear boundary between blending and back formation.

Other examples of back formation in English include the following:

- some verbs like *babysit* and *edit* were back-formed from nouns (*babysitter* and *editor*) which are similar to other nouns that are built from a verb plus the suffix *–er* or *–or*, like *baker* and *sailor*
- some singular nouns like *bicep* and *pea* were back-formed from nouns (*biceps* and *pease*) which were originally already singular, but they seemed like regular plurals ending in *–s*, so they were misinterpreted as plurals, requiring new singulars to be created
- the prefix *cyber–* was back-formed from the word *cybernetics* and can now be used quite productively to derive new words having to do online activities, like *cyberbullying*, *cybercafe*, *cyberspace*, etc.

8.6.3: Morphosyntactic change

Morphology and syntax are intimately related, especially in the realm of grammatical functions, like verb tense and noun case (see Section 5.7 for many others). Some languages may express a particular grammatical function **synthetically** (as a bound morpheme within the same word as the root), while others may express it **analytically** (that is, as a free morpheme separate from the root). Some languages can even differ within themselves, expressing some grammatical functions synthetically and some analytically.

For example, in English, the past tense is ordinarily formed synthetically with a suffix, while the future tense is formed analytically with a separate word. Contrast this with Malagasy (a Greater Barito language of the Austronesian family, spoken in Madagascar), in which both the past and future tenses are synthetic (with the tense morphemes being prefixes), and with Māori (a Tahitic language of the Austronesian family, spoken in New Zealand), in which both tenses are analytic (with the tense words preceding the verb). The different patterns for these three languages are demonstrated in Table 14.8, with data adapted from Richardson 1885 (for Malagasy) and from Williams 1917 (for Māori).

Table 14.8. Comparison of tense in English, Malagasy, and Māori

language	**past tense**	**future tense**	**type**
English	[ple**d**]	[**wɪl** ple]	**synthetic** / **analytic**
Malagasy	[**ni**lalao]	[**hi**lalao]	**synthetic**
Māori	[**i** taːkaro]	[**ka** taːkaro]	**analytic**
	'played'	'will play'	

Over time, languages can change from synthetic to analytic and vice versa, because of the connection between morphology and syntax. Morphology and syntax essentially behave as two aspects of the same underlying concept, called **morphosyntax**.

Diachronic changes to the morphosyntax of a language, as well as changes to just the syntax, are discussed in Section 14.5.

8.6.4: **Check your understanding**

8.6.5: **References**

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8.6.6: Morphological Stages, from Sarah Harmon



8.6.6.1: Video Script

Okay, folks, it's not just phonology that changes over time. In this section, we'll talk a little bit about morphological changes, and then in the next section we'll talk about semantic and lexical changes. It is important to note that at this level, talking about each of these types of changes gets pretty complicated, and I don't want to go too far into this. But I will give you some examples and showcase what happens. Again, I'm going to be using Indo-European and especially the Romance languages as examples. This is in part, again, because they are so well documented over the history of these changes. That's not to say we don't have similar documentation elsewhere; it's just to focus a little bit on something that everybody seems familiar with. You all speak English, so looking at the history of English for some of these changes make sense; you can see how things have changed over time in a language you all speak. So many of you speak a Romance language, whether it's Spanish, French, Italian, Portuguese, Catalan, Romanian or any of the Romance languages. So many of you either natively or learnedly speak a Romance language, so by showing you the history of how these languages have happened, you can start applying it to other languages.

As we start going into morphology and morphological changes, one of the big ones when we're talking about Indo-European languages and many other major language families, has to do with **case marking**. What is case? Remember, we talked about it with respect to morphosyntax when you are using some kind of inflection to show the role that the noun phrase or propositional phrase may have, whether it's a subject, a direct object, etc. We see here Old English versus Late Modern English, so what we speak today. In Old English, you had four main cases: nominative, genitive, dative, and accusative. **Nominative** case is always the subject; **genitive** is always possession. **Dative** is always what we like to term the indirect object, so the person or entity that benefits from the action. But dative also can imply other roles that involve propositional phrases, like *to* or *towards*, like if we have the sentence, *I throw the rock at the building*, the noun phrase *the building* might be marked with a dative. **Accusative** usually is what we call the direct object, so the person or thing that is undergoing the action, but it also can imply some kind of direction away.

In a lot of languages, and certainly in old English, we had different forms of the noun—singular versus plural—according to different case, so that whatever role it had grammatically in the sentence was marked with the inflection. There wasn't just a 'stān' or stone; *stān* was the nominative singular, as well as the accusative singular. But if you wanted to say, *the stone's color*, you couldn't say *stān*; you had to say *stāne* because it was the color of the stone. If it was plural, you had different forms.

This is old English, and I chose to show you this instead of say Latin because Latin was a lot more complicated. There was something here in this data set that you don't see as much in Latin. Compare everything in this data set, notice how many forms are similar, and I mean very similar. This is written in modernized English writing, which is based off of IPA. Notice that the nominative singular and accusative singular are the exact same form, so whether it's the subject or the direct object, you don't know. Notice that this is true just not in singular, but in plural. Also, notice that *stāne* versus *stāna* are very similar; just that one little vowel is different. When we see something like this, historically one of two things typically happens: either there is a merger of the roles, so the morphosyntax, specifically the case system, collapses and goes away. Or you start dissimilating every individual piece. In the case of English, we clearly see that case is being deleted, so that now we really only have genitive and non-genitive. By the way, genitive is that apostrophe-s (-'*s*) that we have as the possessive. Everything else is a different form, and then we have singular and plural accordingly. Also, notice that this plural genitive is starting to go away; more and more folks do not use this form, so there is further evidence of the case system further eroding.

As I said, this is all in English, but we see this in almost all Indo-European languages, where the case system has modified over time. Some languages, like English like the Romance languages for the most part, and in certain other cases, you see either severe reduction or a deletion of the case system. Other examples, like the Slavic languages and the Baltic languages, or the Aryan languages like Farsi/Persian, we see a dissimilation. We start seeing strengthening of those case markers in some way.

Remember that when you have a reduction in case marking, that isn't the only thing that's affected. Everything in the entire language is affected, which means you're going to affect the phonology, the morphology, the syntax, and the semantics; it's a big circle.

There are other examples that I wish to show you, and analogy is kind of the big one. **Analogy** is what we start seeing when there are mergers or combinations, and roles gets shifted. Phonology has a great impact on what happens; if the sounds start blending and sounding the same in a given environment, then you're going to have a whole slew of other effects in the rest of the aspects of the language. For example, if you talk about a *cow*, it used to be that the plural of *cow* was *kine*. Now it's really only *cows*; we have we have used analogy to apply the standard pluralization. The same is true with the present tense and the past tense. We saw that there are dialects that still showcase older forms, older pronunciations and older relics. When we talked about umlaut or vowels changing to either pluralize or make something past tense. We see it in Appalachian English, we have seen it in other dialects of English that are more remote.

Reanalysis part of this as well; when we're talking about reanalysis, we're also talking about how the morphology is affecting the syntax. If you have a reduction in case system, meaning you don't separate out the parts of speech, you have to start relying on word order. That change is going to affect the syntax and everything else with respect to the language. We see this with Latin and the Romance languages; we see this with the old English to Late Modern English—actually see it in Early Modern English. There's some interesting with versions of adpositions—prepositions or postpositions, depending on where they are with respect to the root. They can get reanalyzed case markers, and case markers can get realized as adpositions. With respect to the case markers that we see in Russian, some of them started off as adpositions, I believe prepositions. We see this from Traditional Japanese to Modern Japanese, as well. We also see the reverse; some of those case markers in Latin turned into prepositional phrases, for the most part course, although if we talked about Romanian that language has postpositional phrase.

When we talk about these changes, we aren't just talking about a change in one area. Language is not in a vacuum; it is going to affect everything else. So, I started off talking about phonological change, but notice that it impacts the morphology, and then in the

next section we'll see how it impacts the syntax and lexicon.

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8.7: Syntactic and Lexical Changes

8.7.1: 8.6.1 Syntactic and Lexical Changes, from Sarah Harmon



8.7.1.1: Video Script

Syntactic change and lexical change. Again, everything impacting everything else. Now that we've already explored phonological change and we've explored morphological change, let's look at how the syntax and the lexicon can also change. I'm mostly going to focus on English and the Germanic languages, as well as Spanish and other Romance languages, because these are languages that most all of you either have constant contact with natively or you have learned at least one of them, if not multiple.

One of the big things that happens when you have morphological change is that it impacts word order in some way. Either it becomes more loose, or it tightens up and becomes more strict. Certainly, when we talk about the loss of the case system like we see in English, and we see in the Romance languages as a whole, you're going to rely more on word order. To be fair, it's not to say that we cannot mess with the word order at all. If you are a poet, especially one that really focuses on meter, then you know that you are going to play with that word order to get the meter right for your lines; you know that's going to happen and certainly when we're talking not just about poetry, but song lyrics, you're going to play with the word order a little bit. But even within that, English has a set of rules; you cannot really mess with the word order too much, otherwise you break grammaticality. The same is true with the Romance languages to a varying degree. French has more strict word order because of the phonology; if you speak French or have tried to learn French, you know that the phonology of French is such that a lot of lexicons sound like one another. That means you're going to need more word order to keep everything straight, versus a language like Spanish, Italian or even Portuguese. You have a little bit more play sometimes because of other syntactic and morphologic rules in place, so that you can sometimes put the subject after the verb—which is not something you would think you can do, but in truth, you can.

All of those changes with respect to English, as well as the Romance languages, are very early. When we talk about these early changes, we're really saying that they became established, not a few generations ago but several hundred years ago. Honestly, with respect to the Romance languages, this change happened about 1500 years ago, at the fall of the Roman Empire. By that point, Vulgar Latin was already changing a lot with respect to case and word order, so that by the time you get the earliest forms of the Romance languages—Old French, that's around 850 CE, Old Spanish is around 900 CE, Old Italian is around 900 CE and so on—you really only have a period of about 400 years where things are in flux. By the time we get to the early Romance period, the word order is set as Subject-Verb-Object almost always; yes, there were some tricks that you could do then. By and large, that word order has not changed in about 1000-1200 years.

We see also with respect to syntactic change—and this is where Creoles come into play—we can see borrowing of grammatical constructions, although not as often. This frequently is in very isolated cases; we see more of it with respect to Creoles, of course, but as we talked about with creolization in the sociolinguistics chapter, if you have a creole that has been spoken for 300-400 years, you have a lot more stabilization then. Typically, there is some borrowing early on, but it doesn't tend to happen after a certain

point. There is reanalysis of grammatical structures, which we saw with the previous section on morphosyntactic changes; the loss of case usually happens at the same time as other types of analysis. Reanalysis happens throughout the entire language: phonology, morphology, syntax, semantics, pragmatics, everywhere.

We also have **extension of grammatical structure**. I like giving this example of the passive in Spanish. Native Spanish speakers, you probably don't even think about that pronoun *se* very often as to how many different ways, you use it. Those who learned Spanish, you think about this a lot, because it turns out this thing has a litany of uses. Let me just show you a little bit. When we get to Old Spanish—that's up until about 1400 CE, roughly when the Renaissance is a big change for a number of European languages. Both Indo European and Finno-Ugric languages, we see a big change once we get to the Renaissance for a variety of reasons, and we can talk about that at another time. But Old Spanish used *se* as a reflexive—that is still true in Modern Spanish: 'Johnny dressed himself', *Juanito se vistió*. This is the same now as it was then. But that pronoun *se* can be used to do different things, and it's in the Middle Spanish period in that 1300-1400 CE through about 1700 or so CE where we start seeing it being used as a passive. Spanish speakers, you know that you can say, *Se captaron casi 2.000 personas*. This is the Middle Spanish version: *Cautiváron-se quasi 2.000 personas*. Notice I changed my pronunciation a little bit, and certain terms like *quasi* instead of *casi*, *cautivaron* instead of *captaron*. Things have changed a little bit over time, but you can see that *se* being used as not a reflexive, but as a passive. This is something we can still do in Spanish, in fact, most of the Romance languages use *se* or whatever version of that pronoun for a passive construction where you're not mentioning who did the action. Notice the translation is, 'almost 2000 people were captured'; we didn't say by whom. We just said they were captured. In English, that's just implied knowledge; we don't think anything more of it. We use context clues to get more insight. In the Romance languages, that's not the case; you have to somehow include the subject, and this is how they frequently do it, by using this reflexive pronoun. Not all Romance languages do it this way, but a vast majority of them do, and there are ties to Latin; again, I'll explain it in a different time.

When we talk about semantic change or lexical change, there's some pretty big, obvious pieces. Clearly, adding or losing lexicon to a language is going to be part of any historical process, and that makes sense, right? Notice that we have **loss of lexicon**; these are just three of a slew of different terms that have been lost in most English dialects. I will say that a couple of these still exist in other dialects of English, specifically Scottish and Irish English. *Hie* is a really great example; this still exists in Scottish English, especially out in the highlands. *Wight*, the Isle of Wight, still exists; it's an island off of the Scottish coast, which is a pretty important island for a number of historical reasons. *Leman* as a sweetheart doesn't really exist anymore, but it could. Certainly, the **addition of lexicon**, whether it's through **coinage** or **eponyms**, and these are all ways that we create new terms. A lot of these terms, we saw them when we talked about morphology. I do want to expand on a word coinage; it has to do with brand names, or inventions, that is a little bit more specific. With respect to **borrowing**, I wanted to tease this out a little bit more. It's actually a really interesting process, and languages tend to rely more heavily on one process versus the other, although both can exist. **Calquing** is when you translate the word; I remember very distinctly being in high school learning Spanish, and hearing that a 'hot dog' in Spanish, was a *perro caliente*—literally 'dog hot' so they've just translated 'hot dog'. I thought that was hilarious. You can just borrow a **loanword**, so you've just taken the term wholesale, pronunciation at all—at least, to the best of your ability. Spanish has a tendency to calque; Italian, by the way, has a tendency to do loanwords. Here are some examples that we have brought into English: *joie de vivre*, *coup d'état*, *pizza*. We may not say these terms exactly as they are pronounced in their original languages, but we get pretty close. As I said, Italian likes loanwords: a 'weekend' in Spanish is *el fin de semana*, 'the end of the week'. In Italian, you could say, *il fine di settimana*, which is the same thing, but most people haven't said that in about 75 years; they say *il weekend*. Literally, that's what they say. Spanish says *deportes* for 'sports', *los deportes*. In Italian, it's *lo sport*. Different languages are going to choose one or the other, either more calquing or more loanwords. It's not the same language does not do both; clearly, if you are a speak fluent speaker of Spanish, you know the various terms have just been straight borrowed, pronunciation and all. My absolute favorite example of this is there is a textbook or two out there for Spanish, and students who are learning Spanish the term for 'jeans' as *los blue jeans*. No, nobody says that; you either say *los vaqueros*—*vaquero*, for those who don't know, is a 'cowboy', so *los vaqueros* implying that these pants that cowboys wear—or you say *los jeans*.

There are also, of course, a number of meaning changes. We talked earlier in semantics about **broadening** and **narrowing**. You have pretty good examples here of that. Broadening, of course, meaning the term has expanded; narrowing, that the term has contracted. You also have **shifts**, which again makes sense, because we no longer use the term for *knight* as a 'youth'; it is a specific designation. *Fond* does not mean 'foolish'; it means that you care about somebody. Within the meaning changes, there's actually more nuance: pejoration and amelioration. If you know a Romance language, those might look a little familiar. **Pejoration** is worsening, meaning the term has become a term that is not used for negative reasons; **amelioration** is to improve, that the meaning has improved over time. A *mistress*, a *hussy*, a *slut*, a *moron*, a *madame* (sometimes), these all have some kind of negative connotation to them—some more than others. But that wasn't the case even 200 years ago, even 100 years ago in the case of

mistress and *madame*, they had no negative connotation whatsoever. In fact, you were the *master of the house* or the *mistress of the house*, meaning you were the lady of the house—nothing negative about that. *Fond*, *knight*, those are actually amelioration. Hyperbole and understatement: **hyperbole**, of course, meaning bigger or grander, **understatement** mean lesser. *Terribly, horrible, starve, quell*, these are all terms that have augmented their meaning—they have gotten to encompass much more than previously. *Terribly* was not something that was not an adverb that was used to mean anything more than *terrorizing* in some way. Now, that's taking on a much greater role; *terribly* can be either catastrophic, and in some dialects, it can mean 'very': "*Oh, it's terribly important*," 'it's very important'. Understatement is when we make the meaning less than it was before. *Kill*, of course, means literally to take the life of another animal, human or otherwise, but you could also say *I could kill for some chocolate right now*. Clearly, when we say that, we are not planning to commit a murder, which of course is also under become an understatement.

It really is the case that in language, we change meaning all the time, it affects everything that we do. The phonology effects the morphology and the syntax and semantics; the morphology effects the syntax and semantics; the syntax effects morphology, syntax, and semantics. They all interchange and they all work together as language changes over time.

14.2: Lexical change

8.7.2: **Sporadic change**

Many internal language changes are **sporadic**, which means that they affect only one, or maybe a few, individual words or expressions. For example, the shortened form *app* for *application* in English is a sporadic change, because most other similar words, like *complication*, *implication*, and *multiplication*, are not shortened to **comp*, **imp*, or **multip*.

Furthermore, the shortened form *app* is not used for all possible meanings of *application*. We can use *app* when referring to computer programs, but we would not normally shorten an expression like *daily application of ointment* to **daily app of ointment*, because this use of *application* refers to a different meaning, the addition of a substance to the exterior surface of some object.

Another example of sporadic change is the shift from two-handed to one-handed signs in American Sign Language (ASL). Some two-handed signs, such as COW, have changed over time to use just one hand (Frishberg 1975). However, this change did not affect all two-handed signs, like BOOK or HALLOWEEN.

COW (older): https://www.signingsavvy.com/sign/cow/3217/2
COW (newer): https://www.signingsavvy.com/sign/cow/3217/1
BOOK: https://www.signingsavvy.com/sign/book/9549/2
HALLOWEEN: https://www.signingsavvy.com/sign/halloween/1448/1

An important kind of sporadic change is **lexical change**, which is a change to a language's lexicon, especially through the addition of new words. See Sections 1.1, 7.4, and 7.5 for further discussion of the lexicon.

8.7.3: **Root creation**

When a new word is created entirely within a language without direct influence from another language, the new word is called a **neologism**. We often say that the act of creating a neologism is **coining** it, especially when we know who first did so. The most basic type of neologism is **root creation**, where the new word is not derived from any other existing word. Root creation is relatively rare, as it is difficult for humans to coin completely new words without some influence from other words.

Root creation often gets its influence from being **imitative** or **echoic**, so that the articulation of the word mirrors its meaning in some way. An example of imitative root creation is the English word *zap*, which was coined in 1929 for Phillip Francis Nowlan and Dick Calkins's newspaper comic strip adaptation of Nowlan's 1928 and 1929 novellas starring pulp science fiction hero Buck Rogers. The buzzing [z] at the beginning of the word and the short sudden end with a voiceless plosive work together to evoke the sound of a short energetic burst, used by Nowlan as the sound of a laser pistol. There are many examples of imitative root creation in English, such as *glug*, *cuckoo*, and other instances of onomatopoeia.

Imitative root creation is very common in signed languages, because much more of the world is visible than it is audible. Lots of signs in ASL are clearly imitative, and that imitation may even change if the nature of the object itself changes. A notable example is PHONE, which was originally signed with two hands to match how a user handled original two-handed telephones in the early 1900s. Over time, telephones changed to a different shape that required only one hand, so the ASL sign changed as well, this time with one hand imitating the new shape of the phone rather than how it was handled. But as smartphones replaced corded phones in the early 2000s, a new version of the ASL sign emerged, with one hand imitating how the phone is handled (just a bit too late to be

included in Sternberg's 1998 dictionary of ASL). The changes in the ASL sign for PHONE can be seen in the links below, matching the evolution of telephones depicted in Figure 14.3.

PHONE (original): https://www.signingsavvy.com/media2/mp4-ld/33/33587.mp4
PHONE (newer): https://www.signingsavvy.com/media2/mp4-ld/33/33586.mp4
PHONE (newest): https://www.signingsavvy.com/media2/mp4-ld/27/27823.mp4

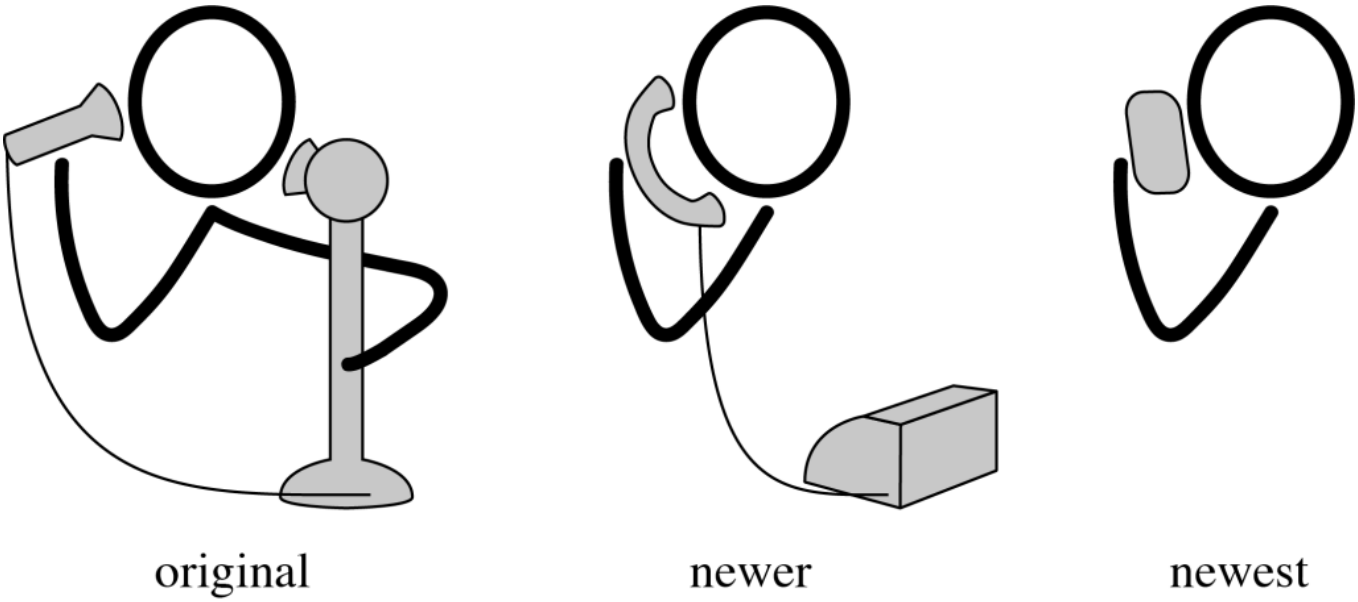


Figure 14.3. Evolution of the shape and handling of the telephone: original two-handed telephones (left), newer one-handed telephones with a large receiver (centre), and the newest small smartphones (right).

Other examples of root creation have no obvious imitative origin and are sometimes said to have been coined **ex nihilo**. An example of ex nihilo root creation in English is the word *googol*, which was coined in 1938 when Edward Kasner asked his nine-year-old nephew, Milton Sirotta, to invent a new word for the number 10^{100}, which is equivalent to the number expressed as the digit 1 followed by one hundred zeroes (Kasner and Newman 1940). Other examples of ex nihilo root creation in English include the following:

- *yahoo* 'brute' > 'uncultured or unintelligent person' (coined by Swift 1726)
- *blurb* 'short summary or description' (coined by Matthews 1906)
- *grok* 'understand' (coined by Heinlein 1961)

8.7.4: Derived neologisms

More frequently, neologisms are derived from other words that already exist in the language. Proper names are a particularly rich source of neologisms, and some come about in surprising ways.

The Canary Islands are a group of islands off the coast of Morocco. They are home to a particular species of bird called *canary* in English, which is named after the islands. Interestingly, the English name *Canary Islands* itself is derived from the Latin name for the islands, *Canariæ Insulæ*, which means 'Islands of the Dogs'. The Latin name was given to the islands by Pliny the Elder in his encyclopedia *Naturalis Historia* (AD 77) due to the presence of large dogs on one of the main islands. Thus, canaries are indirectly named after dogs, by way of a Latin proper name for a group of islands they are both native to.

Sometimes, a brand name for a specific product is the source of a neologism. If the neologism shifts the meaning of the brand name to refer to any similar product regardless of brand, this is called **genericization**. This has happened with English words such as *dry ice*, *dumpster*, *escalator*, *heroin*, and *zipper*, all of which were originally trademarked brand names that referred to specific products. But now, any dumpster is called *dumpster*, regardless of which company manufactured it.

In some cases of genericization, the trademark still exists. This is the case for *chapstick*, *frisbee*, *realtor*, *thermos*, and *velcro*. So there is technically a legal difference between true ChapStick (which is manufactured by the company Haleon) and generic lip balm (which can be manufactured by any company), but few people bother to make this distinction.

There are many other ways that new words can be created from existing words. One important type is a **compound**, which is a neologism derived from putting two or more individual words together, often with a resulting meaning that is **non-compositional** or **idiomatic**. That is, the meaning of the compound is not predictable as a transparent combination of the meanings of the component words. See Sections 5.8 and 7.4 for further discussion of compounds.

Clipping (a.k.a. **compression** or **truncation**) is a neologism derived by shortening a longer word. The creation of the neologism *app* from *application* is clipping, and there are many other examples from English. Clippings can come from the front of a word, as in English *exam* < *examination*, or from the end of a word, as in English *burger* < *hamburger*. In some very rare cases, clippings can even come from the middle of a word, as in *flu* < *influenza*. Other examples of clippings in English include the following:

- *gym* < *gymnasium*
- *lab* < *laboratory*
- *phone* < *telephone*
- *bot* < *robot*
- *fridge* < *refrigerator*
- *rona* < *coronavirus*

A **blend** (sometimes called a **portmanteau**) is a neologism derived by putting together pieces of two or more words to create a new word that shares pronunciation and meaning with the original words. This is like a combination of clipping and compounding. For example, the English word *brunch* is a blend of *breakfast* and *lunch*, with [br-] and [-ʌn͡tʃ] as the clipped forms that are put together as [brʌn͡tʃ], and with a meaning that combines the meanings of *breakfast* and *lunch*: a breakfast-style meal served around lunchtime. Other examples of blends in English include the following:

- *blog* < *web* + *log*
- *frenemy* < *friend* + *enemy*
- *guesstimate* < *guess* + *estimate*
- *mansplain* < *man* + *explain*
- *podcast* < *iPod* + *broadcast*
- *romcom* < *romantic* + *comedy*
- *smog* < *smoke* + *fog*
- *soylent* < *soy* + *lentils* (coined by Harrison 1966)

In some blends, all of the original words may be clipped (*podcast*, *romcom*, etc.), but in other blends, some of the original words may remain whole (*blog*, *frenemy*, etc.). In addition, sometimes there is overlap between the original words (*frenemy*, *guesstimate*, etc.), but not always (*blog*, *podcast*, etc.). If none of the original words are clipped, and if there is no overlap between the original words, then the resulting neologism is a compound rather than a blend.

Acronyms are neologisms derived from pieces of the spelling of a word or phrase rather than from its pronunciation. Acronyms may be pronounced as a normal word based on the derived spelling, as with the English acronym *scuba* < *self-contained underwater breathing apparatus*, which is pronounced [skubə].

Acronyms may instead be pronounced letter by letter, in which case, they are sometimes called **initialisms.** An example of initialism in English is the word *SO* < *significant other*, which is pronounced [ɛs o], letter by letter, rather than *[so], like the ordinary word *so*. An initialism may even be respelled to better match the pronunciation, as with *MC* < *master of ceremonies*, which is pronounced [ɛm si] and so is sometimes spelled with the alternate spelling *emcee*.

Some acronyms may be pronounced either way, as with *ASAP* < *as soon as possible*, which can be pronounced either [esæp] or [e ɛs e pi]. Finally, some acronyms may be pronounced as a mixture of the two methods, as with *HVAC* < *heating, ventilation, and air-conditioning*, which is pronounced [aɪ͡tʃ væk], not *[aɪ͡tʃ vi e si]. Other examples of acronyms and initialisms in English include the following:

- *fomo* < *fear of missing out*
- *laser* < *light amplification by stimulated emission of radiation*
- *snafu* < *situation normal, all fucked up*
- *ASL* < *American Sign Language*
- *BLT* < *bacon, lettuce, and tomato*
- *POV* < *point of view*

Acronyms are relatively modern phenomena, and nearly all claims about acronym-based etymologies for words before the mid-20th century are usually false. For example, *coma* is sometimes claimed to be an acronym for *cessation of motor activity*, but it actually comes from the Greek word *κῶμα (kôma)* 'deep sleep'. One of the few possible early English acronyms is *OK*, which was coined in the early 1800s and might have been an acronym for *oll korrect*, a joking misspelling of *all correct*. But the actual etymology of *OK* is unknown!

As discussed in Section 2.2, **taboo avoidance** is another way that the lexicon can change. Taboo words can be replaced with existing words (as with *sugar* and *shoot* for English *shit*), which effectively adds a new meaning to the replacement, a type of semantic change (see Section 14.6 for further discussion). However, taboo avoidance may be accomplished by creating a neologism rather than using an existing word. This is how the neologisms *dang* and *gosh* entered English, as they were coined as alternatives to *damn* and *God*, respectively.

8.7.5: Other lexical changes

In this section, we have focused on internal neologisms. However, words and morphemes that already exist in the lexicon can also undergo various other kinds of internal change that affect their pronunciation, structure, position, or meaning. These changes are discussed in Sections 14.3, 14.4, 14.5, and 14.6. In addition, there are many ways that the lexicon can be affected by external change, which is covered in Section 14.7.

8.7.6: Check your understanding

8.7.7: References

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8.8: Typology

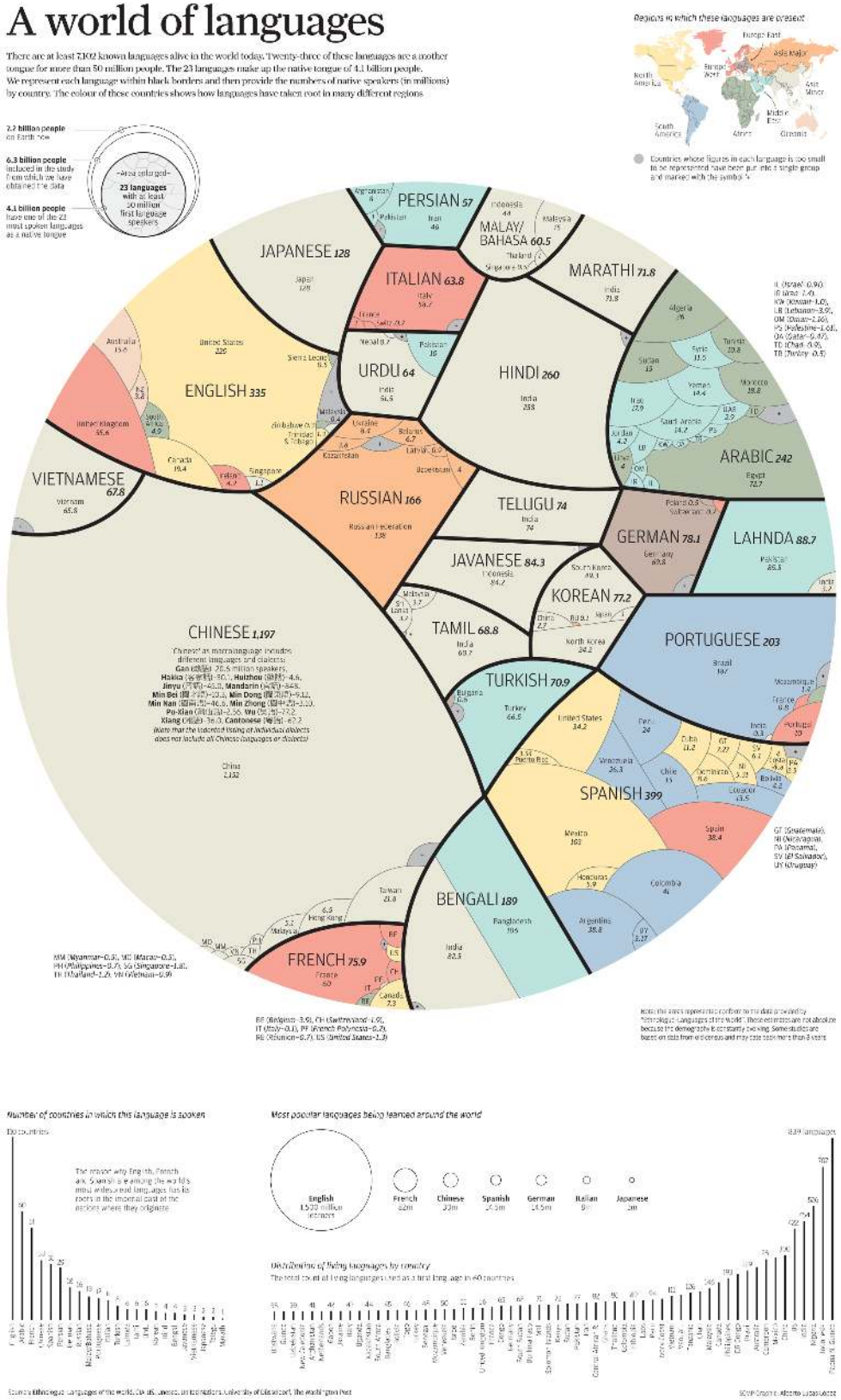
8.8.1: 8.7.1 Typology, from Sarah Harmon



8.8.1.1: Video Script

Now that we've talked a little bit about how language change affects every aspect of language, let's go back to that concept of language families and how we know language families come together. More importantly, those aspects of language that seem to exist in more than one family. This is an area called **typology**; it is loosely connected in some ways, strongly connected in other ways, to historical linguistics. As an historical linguist, you have to know some patterns with respect to human language, especially within a given family, and how we know those patterns to exist is through the study of typology. Let's take a closer look.

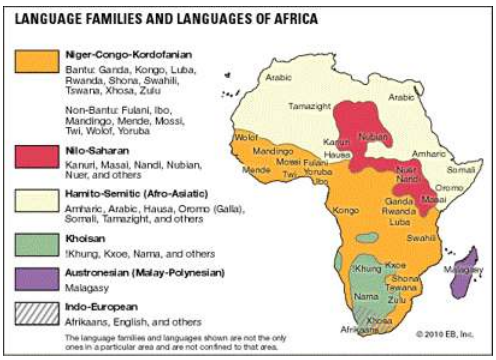
I like starting off with this infographic:



This is a way to view world languages by number of native speakers. These data were based off of data that was collected in 2015. You read the graphic by following the pieces: the bigger the piece of that circle, the more native speakers that language has. Notice

that the biggest number is Chinese, although remember that's Mandarin, at over 1 billion people; what you see here in the numbers is the number of millions, so one almost 1.2 billion as of 2010. It gives you some of the countries where the language is spoken. After Mandarin, of course, the other big players that you see are English, Hindi, Bengali, Portuguese, and Spanish. When we're talking about these languages, we're not just talking about the actual whole language; we're also talking about major dialects. Notice that, in English, you have a number of dialects that are represented here. The same with Spanish and Portuguese; you got a few Arabic, of course, too.

When we talk about world languages and we talk about tendencies, this is not just straight observation, for the sake of observation; this is also looking across the world and noticing different patterns. When we talk about these patterns within the language family or in most languages, this is typology. If we're going to talk typology, we have to talk about this person: Joseph Greenberg. He was a long-time professor at Stanford; I'm not just bringing him up because the college I teach at is overlooking Stanford, but because this is a very important individual. Joseph Greenberg started his research in the 1960s, with respect to patterns and really focusing on the number of patterns we can see within a family or within language is a whole. One of his biggest claims to fame, and I think one of the biggest reasons we need to remember him, is that until him, it was just thought that there were maybe two language families with respect to Africa: The North African languages or the Maghrebi group along the northern coast of Africa, and then everything else. He wasn't having it; he was not thrilled with that concept at all. It comes out of colonialism; it does not actually take into account anything with respect to the languages of the African communities. Greenberg basically used a type of comparative analysis, recording all of these terms for numbers 1-10, nuclear family, basic terms for flora and fauna. He threw out anything that was borrowed, especially from an Indo-European language or from Arabic because, clearly, there was some coloring there. He did take note of these borrowings, but not for the main classification. The main classification was on native terms; if a term was borrowed, it was borrowed locally. What he came up with is in this infographic:



This infographic shows there aren't two language families, by any stretch of the imagination. The top third, if you will, of Africa, often called Saharan Africa, you have Arabic as a main player, although there are a number of indigenous languages that are spoken in that in those areas. You also have Afro-Asiatic languages being the main player; we think of Arabic and Hebrew, but we have to include Somali, Amharic, Oromo, the languages of the Cape of Good Hope. We're talking about languages spoken in Somalia, Ethiopia, Eritrea, that area of Eastern Africa. There's also the Nilo-Saharan group, which is related to Afro-Asiatic but seems to be its own language family. These are the languages of the Upper Nile, as it were, and interior parts of Eastern Africa; we're talking Nubian, Massai, and many others. You have Niger-Congo, which is a very dominant group, but it is not the only group there are realistically, potentially two language families. These Khoisan languages, which are also called Bantu languages, are a separate language family. They may be part of Niger-Congo; when he was researching, but even to this day, that is still under contention. Then you have Malagasy, which is an Austronesian or Australio-Pacific language; it's very close to the languages of indigenous Australia, especially the western half of Australia. Down in South Africa, you have Afrikaans, English, and other Indo-European languages, but if we just talk about the native languages, you have, at the very least four sizable language families.

Even with that the sheer variety of languages, this was what Joseph Greenberg brought to the table: not just creating typology, as we know it, but in analyzing through objective, descriptive processes: describe what you see, not what you want to see. It was his work, specifically with the languages of Africa and the various language families of Africa, that launched a huge movement within linguistics. It helps us to really analyze linguistic isolates. He was one of the very first to pair linguistic genetics to actual biological genetics, as he started teaming up with leading geneticists from around the world. He started doing DNA tests, especially once we started understanding and decoding DNA, and combining the genetic DNA history with the linguistic history. It was an amazing experience to learn from him; I took a couple seminar courses at Stanford from him exactly so I could learn more about this, and it is his work that has continued on through the generations. There is an entire collection of his work at Stanford, and if you are

interested at all, I suggest going to check it out. It really encapsulates a big pivotal moment for linguistics, when we start saying that language is not in a vacuum. Rather, language is about the human experience, and unless we start understanding that human experience and how we different cultures and speech communities interact with one another, you never really understand what humanity is about. He's one of those people, and I do take his work very seriously.

That's Jospeh Greenberg, and what did he in creating typology. One of the main areas with respect to typology is this concept of **absolute versus non absolute universals**. When we say something is an absolute universal, we say this pattern we're talking about exists in all languages, period and end of story; we have yet to find a human language that does not follow this pattern. A non-absolute universal is that there's a tendency to follow that pattern. As you will probably guess, there's more non-absolute universals than there are universals, and that makes sense; languages have been spoken for who knows how long truthfully, maybe 100,000-200,000 years. They have been spoken not just by *homo sapiens sapiens*; we're pretty sure that our Neanderthal cousins also had a language and potentially other hominids as well. When we talk about a universal, it's really important to tease that distinction out: an absolute versus a non-absolute universal. Let me show you some examples.

- Absolutely universals all languages have syllables that have consonants and vowels. That does not mean that all syllables have a vowel; it just means that there's a phonological component in that nucleus that exists in all languages.
- Every single human language that has been observed or recorded has at least one stop; other options are optional, but at least one stop.
- When we're talking about lexical elements, there's always some kind of lexical content, and there's always distributional content: think open class and closed class systems.
- All languages have a concept of a word or a lexicon. It may be phrases and maybe clauses, but these things exist in all human languages.

Those of universals. When we're talking about tendencies, with respect to universals, these are the patterns that we tend to see:

- Languages tend to have syllables that have an onset and a nucleus. Codas are frequently optional. In most languages, you have a constraint as to what that coda can be; it is not a universal. It is a tendency, but it's a strong tendency.
- There's a tendency for languages to have nasals, and it's not just a regular tendency, it is a very strong tendency. There are a few languages that have been recorded over time, and including are still spoken today, that do not have a nasal sound, either as a nasal stop or as a nasal vowel. But it's exceedingly rare.
- Alveolar stops also seem to be there, whether it's [t] or [d] or some version of it.
- There seem to be high front vowels, the [i, e, y, ø]. That sound tends to be somewhere in every single language, generally speaking. It is possible to get through life and not have one of those vowels but it doesn't tend to be the case.

Now there are universals and there are **implications**, meaning if you have this, you will also have that. As you can figure, there are some absolutes and non-absolutes and there's many more non-absolutes or tendencies than absolutes. Absolute implications include:

- If a language has a mid vowel, it also will have a high vowel. We see this in every single language. It doesn't mean high front or high back.
- If you have a voiceless nasal, then you will have a voiced nasal. The voice nasal is the default form and some languages, Myanmar or Burmese comes to mind, you might have a voiceless nasal as well.
- If you have a dual, then you also have a plural. Indo-European speakers, we tend to think only of singular and plural, but many languages also have a dual, which is an inflection that says that there are two of something, not just one or more.

Those are the universal implications, the absolute implications; they if you have one, you will have the other. Then you have the non-absolute implications, which again are tendencies; there are languages that exist without them, but not many. Some examples include:

- With respect to front round vowels—think French and German—there's a number of languages that have [y, ø], then those languages also have both front spread vowels, like [i, e] and back round vowels, like [u, o]. There's a tendency; it’s not always the case, but it frequently is the case.
- If the language has a nominal affix, it tends to be that it will have a plural. Nominal in this case just means on a noun. If a language is going to have any kind of affixation on nouns, at the very least it will be a plural affix of some kind. Not always, but almost always.
- Again, if a language has bound morphemes, and it has case, then the case either goes at the beginning, or at the end, not in between the root and the number. That's really interesting; there seems to be an order for how human beings like to put their

derivational and inflectional affixation.

With respect to morphology, we talked about affixation and it's ordered; there are patterns that we see. With respect to syntax, we actually have talked a little bit about how word order seems coincide with certain other patterns: whether you have prepositions or postpositions, with the head first or head last, what kinds of phrases, does a language have agglutinating or fusional or polysynthetic phraseology. In phonology, there are also typological patterns that we can see with respect to the phonemic inventory. In fact, there's a really interesting one that involves tones. What you learned a little bit about in phonology and phonetics, and I want to go into a little bit more, is one of the great contributions that Joseph Greenberg gave to linguistics with respect to typology. He noticed that certain patterns only happen in certain language families. When we talked about tone and pitch and certain other aspects, you only see it in certain language families; contour tones—think the Sino-Tibetan languages or the various languages of Southeast Asia—they all have contour tones. This is the Vietnamese vowel system; notice that you have strong and weak syllables, and you have different tones for different things. This only exists in one part of the world: in East and Southeast Asia. Nowhere else have we observed contour tones in human language. With respect to register, high tone versus low tone, this is something you see in the Niger-Congo languages—most but not all—and that does include some of the Bantu languages. But only in those areas nowhere else in the world.

As for the reasons why we have these patterns, this is where topology divorces itself from historical linguistics. Typology is all about recognizing patterns; it doesn't normally go into the history of the language or language family, and certainly with the case of contour tones and register we don't really know. We're not really sure why these languages have them, but nowhere in the world who else do we see that. What we do know is that we see these two phenomena only in these regions, and nowhere else.

We do have the aspect of pitch. I'm giving you Japanese here; Korean and Japanese are related languages and Korean also has this. We really only see this in a couple other languages modernly; there is one language in Papua New Guinea called Una, and it's a Trans-Guinean language, and it seems to have this phenomenon. Ancient Greek seemed to have it, but then died out completely, not long after the Macedonian period—think of Alexander the Great. Here we have Japanese. All syllables are said with the same amount of stress, or you have the first or second syllable being stressed. That term that is spelled in Romanji, which is the Japanese writing system using Latin or Roman characters. The set of sticks that we use to eat are called *há-shi* so notice, I stress the first syllable *ha*: *há-shi*. If I say *ha-shí*, then that is a ‘bridge. If I say *ha-shi*, with the same amount of stress on both syllables, a flat pronunciation, that's an ‘edge’. The one I love bringing up is when you go out to your favorite Japanese restaurant, there is a difference between *sá-ke* and *sa-ke*. The second one is flat and it's the one you drink; the first one is one of my favorite sushi or sashimi. Even the term for the country itself—Japan and versions of that is an anglicization of Nihon and it's *ni-hón;* you stress the second syllable. If you stress the first syllable, you're saying ‘two sticks of…’, like ‘two sticks of dynamite’, ‘two sticks of gum’; it's *ni-hón*. This is a pitch language, and there are a few of these around; Japanese and Korean tend to get the most attention, there are a few others.

Let's start talking about broader picture with respect to typology. These are your dinner facts, as it were, about language. I love this one: 40% of the human population speaks at least one of these languages natively and they are in order of number of native speakers:

1. Mandarin
2. Spanish
3. English
4. Hindi
5. Arabic
6. Portuguese
7. Bengali
8. Russian
9. Japanese

Forty percent of the human population speaks one of those languages. It’s not a coincidence that a number of those languages are languages of powers that have colonized a lot of places; Mandarin, Spanish, Hindi, English, Arabic, and Portuguese are certainly among those. Why all of those languages in that list? Some of it has to do with where they are globally; the highest concentration of different languages is in the equatorial regions around the world. That's where there is the most diversity of languages, and the most languages spoken overall. You also have a story of human migration; as humans have migrated around the world, they bring their language with them, so when we talk about the number of people who speak one of these languages natively, we're talking

about migration. Colonization is part of that, but colonization is a subset of migration as a whole; as human beings move around the world, they bring their language with them.

In the next section, we'll talk about different language families, and this is to give you a bit of an idea of how these languages interact and how they are unique.

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8.9: Language Families

8.9.1: 8.8.1 Language Families, from Sarah Harmon



8.9.1.1: Video Script

Let's talk a little bit about those language families. When we talked about typology and historical linguistics, even throughout the entire course, I kept referring to these language families. So, what are they and what kinds of things do we know about what they do? It's really interesting to see how all of this plays out.

This is a map of the world, and you will notice how many different colors there are all of those colors referred to major language families.



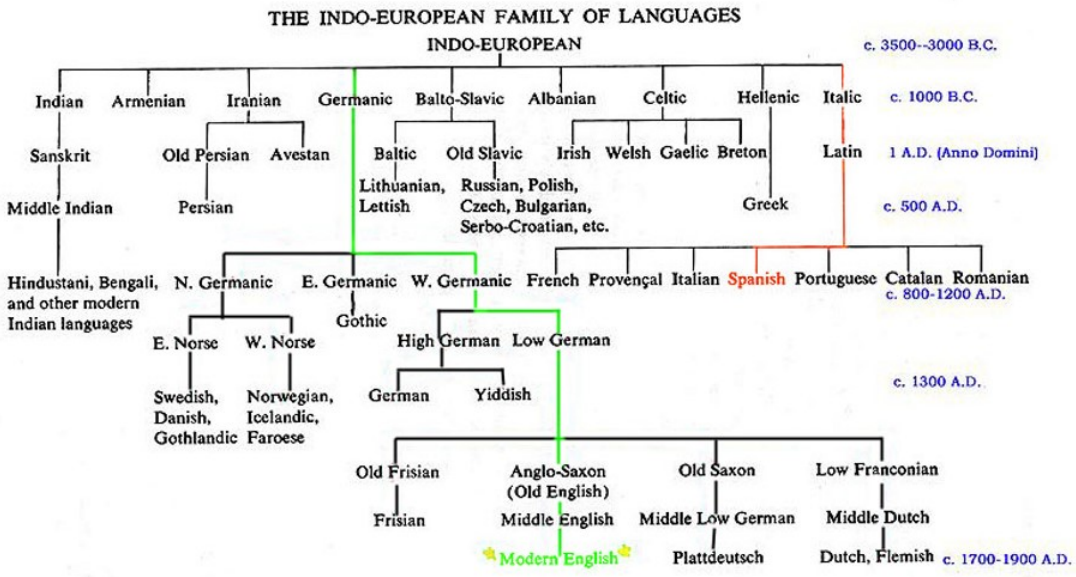
In a couple of cases, specifically the ones that you see listed out over here on the left—Indo-European, Sino-Tibetan, Afro-Asiatic and Altaic, we've broken them down a little bit more into specific languages. Even if you consider all of this list in the right side, look at the sheer number of colors that you have. It is unreal when we think about human migration; that stat that I ended in the previous section, with about 40% of the human population speaks Mandarin, Spanish, English, Bengali, Arabic, Portuguese, Russian, and Japanese. You see how widespread these languages are, this is an amazing graphic. It really speaks to the human existence, that we go all over the place, and as we go and create more isolation, those initial dialects that we speak eventually

evolved into different languages. Then those languages are part of a language family; those language families have certain characteristics.

Alright, let's get started.

8.9.1.2: Indo-European

The language family I have probably brought up the most, and the one you're probably most familiar with, is the Indo-European language family.

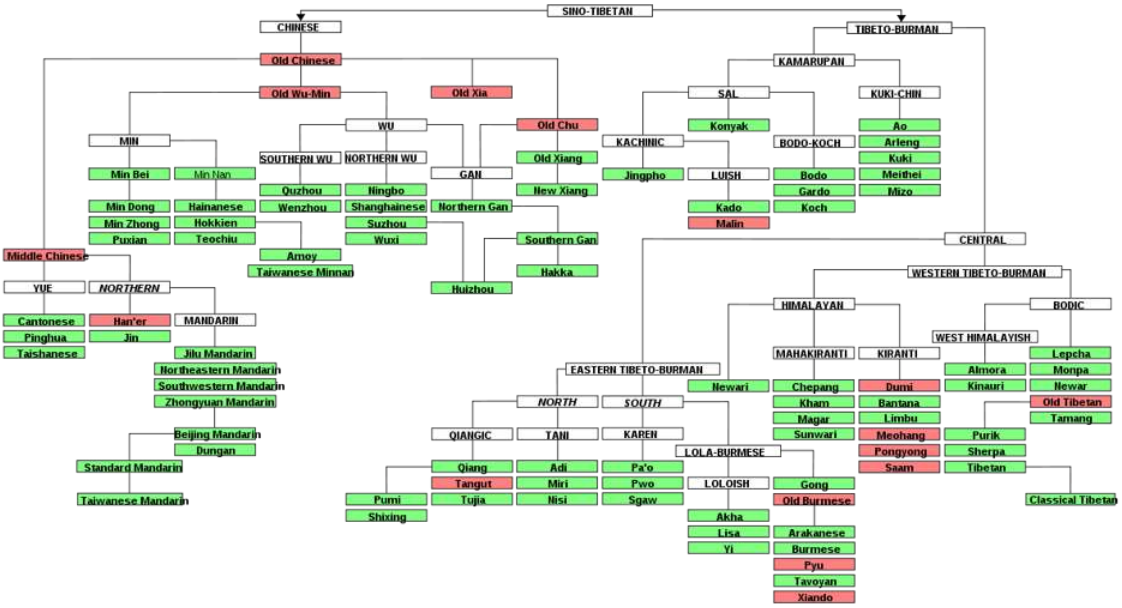


This map shows you where modern English is, and I'm just highlighting Spanish right here, but you get the point. This is pretty much most of the Indo-European languages, at least the major players. We believe that Proto-Indo-European was spoken around 3500 to 3000 BCE. It might be a little older than that; we honestly are starting to lean more towards 4000BCE. Even still, it is most probably the case that it took about 2000 years of migration to get to these major language families within Indo-European. We have Indian or Indic, Armenian, Iranian or Vedic, Germanic, Balto-Slavic, Albanian, Celtic, Hellenic, and Italic. Those are the main language families within Indo-European. It is interesting to note a few things

- Albanian and Armenian are linguistic isolates with in the Indo-European family. To our best understanding they seemed they seem to be independent migrations that just self-isolated, and we don't know why.
- Everything else shows a period of migration. For example, in the Indic group, we have Sanskrit as the main ancient language that you probably have heard of. When we talk about the modern languages of Hindi, Bengali, Gujarati, and Urdu, these are all Indic languages of some kind, and they have all come about, certainly in the Common Era.
- Iranian or Vedic is also part of this subfamiliy. This is also called Aryan. We have Avestan, which is a sibling language to Old Persian/Old Farsi.
- Balto-Slavic seem to have split up very early. I love it when Slavic speakers of some kind, say, “Lithuanian and Latvian looks totally different sounds totally different; it can't be the same family as Slavic.” Keep in mind that it split off very early; we do know that Latvian and Lithuanian in particular are very similar but have some very big differences.
- Celtic seems to have been split up between Insular Celtic and Continental Celtic. Breton is part of Continental Celtic and Welsh seems to be pretty closely related to that, although it tends to split the difference. Irish and Scots Gaelic seem to have more in common with each other.
- From the Hellenic branch, we only have Greek anymore, although there were other languages in this group.
- The Italic group, which is what I brought up earlier with respect to Latin. Latin had sibling languages; Oscan and Umbrian are two of them. If you go into the history of the early Roman society, before the Empire and before the Republic; we're talking about the Roman kings, and then even before that.
- Of course, the Germanic branch has a wide range as well.

8.9.1.3: Sino-Tibetan

We cannot talk only about Indo-European languages. One of the other big groups that I've talked about quite often is the Sino-Tibetan family. Again we're talking about a giant enormous group. The bulk of the attention goes to Mandarin and the other languages of China. But there are so many, as you can see.



One of my absolute favorite things to point out is that if you go from Old Chinese, you have four major branches, you have Middle Chinese, old Wu-Min, Old Xia, and Old Chu. This explains so much of what modern languages are in this part of the world. When you talk about Hakka, which is a language that is spoken throughout a lot of places, including Taiwan, parts of southern China and going into the diaspora in Indonesia, Singapore, Thailand, and Burma. That is a radically different language than even Mandarin or Cantonese. Cantonese, it should be pointed out, is very different than Mandarin, and Mandarin has had multiple versions; not just the dialect of Beijing, but you have Mandarin this book and in Taiwan, that is infected with indigenous Taiwanese you have the Mandarin spoken in the diaspora as well. Old Wu-Min, you have languages like Teochew with and Hokkien and Hainanese, these are very represented in again Indonesia, Singapore, and throughout Southeast Asia, as various peoples have left what we consider to be China and gone south or East and Taiwan. Hakka is over here, and Huizhou is over here as well. Don't forget the Tibeto-Burman side; in fact, it is hypothesized that this language family got its start in the area known as Tibet, not what we consider to be the rest of China. It is actually in the mountains of Tibet that we believe this language family to have started. Of course, Tibetan is part of this branch, and while you probably have never heard of many of these languages before, but most of these that you see here, of course, Tibetan and Classical Tibetan is here. Burmese is right there; Arakanese is right there as well. You have a number of languages from Southeast Asia, but you'll notice that there are no languages from Vietnam, Thailand, Laos and these areas; those are coming up.

8.9.1.4: Languages of the African Continent

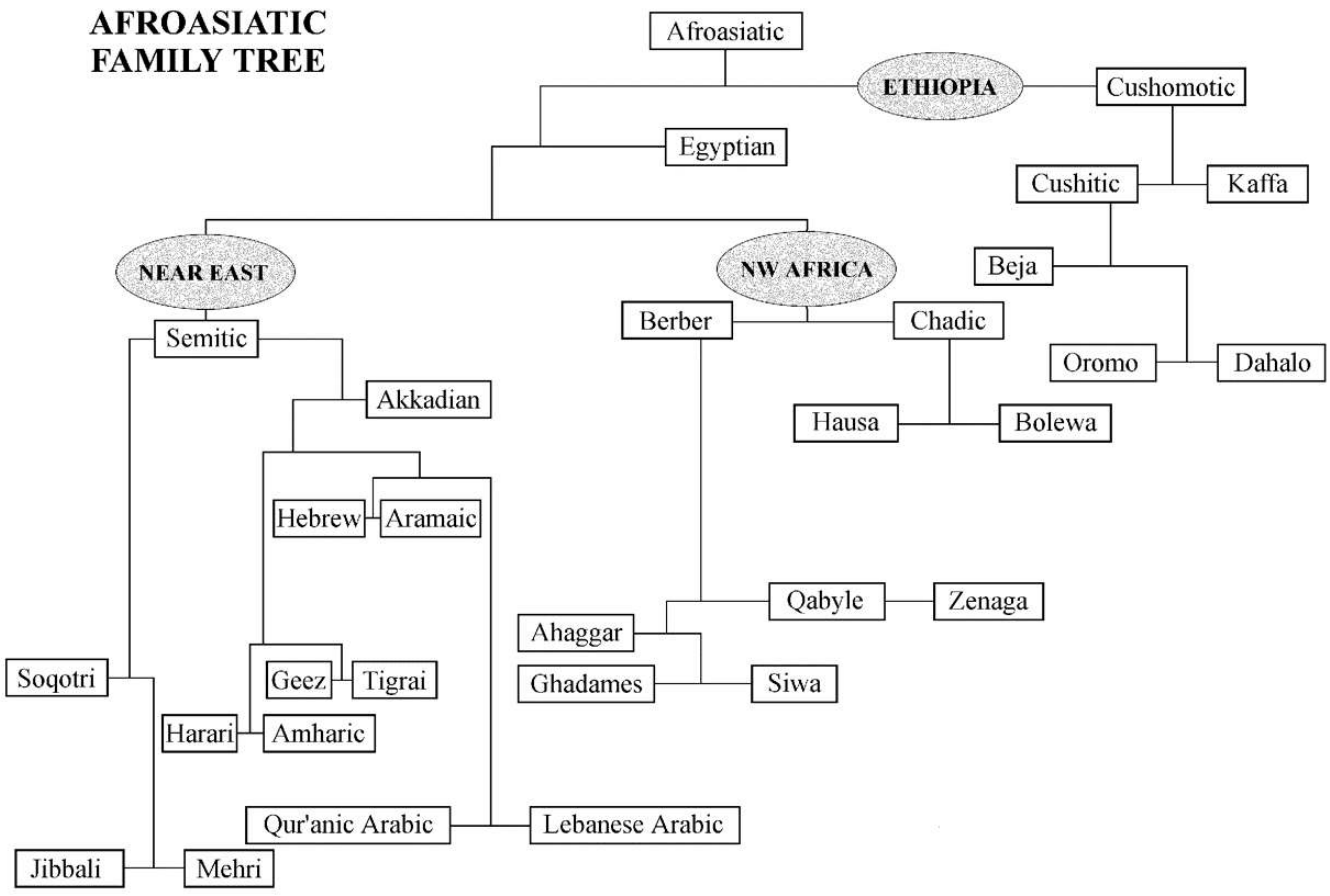
We talked a little bit earlier about the various African languages.



We see the Afro-Asiatic family in the northern Saharan area. In Sub-Saharan Africa we see the Niger-Congo family, for the most part, Nilo-Saharan kind of in the middle. Whether Khosian is a part of Niger Congo or not, that is something that's still being debated; I'm not going to go into the debate, but suffice it to say that it seems to act very differently. The Bantu languages are part of this area; they are connected to the Khosian, but they're different. They're a Niger-Congo language, but they're different and this area is still being worked on.

8.9.1.5: Afro-Asiatic

I brought up also many times the Afro Asiatic family.

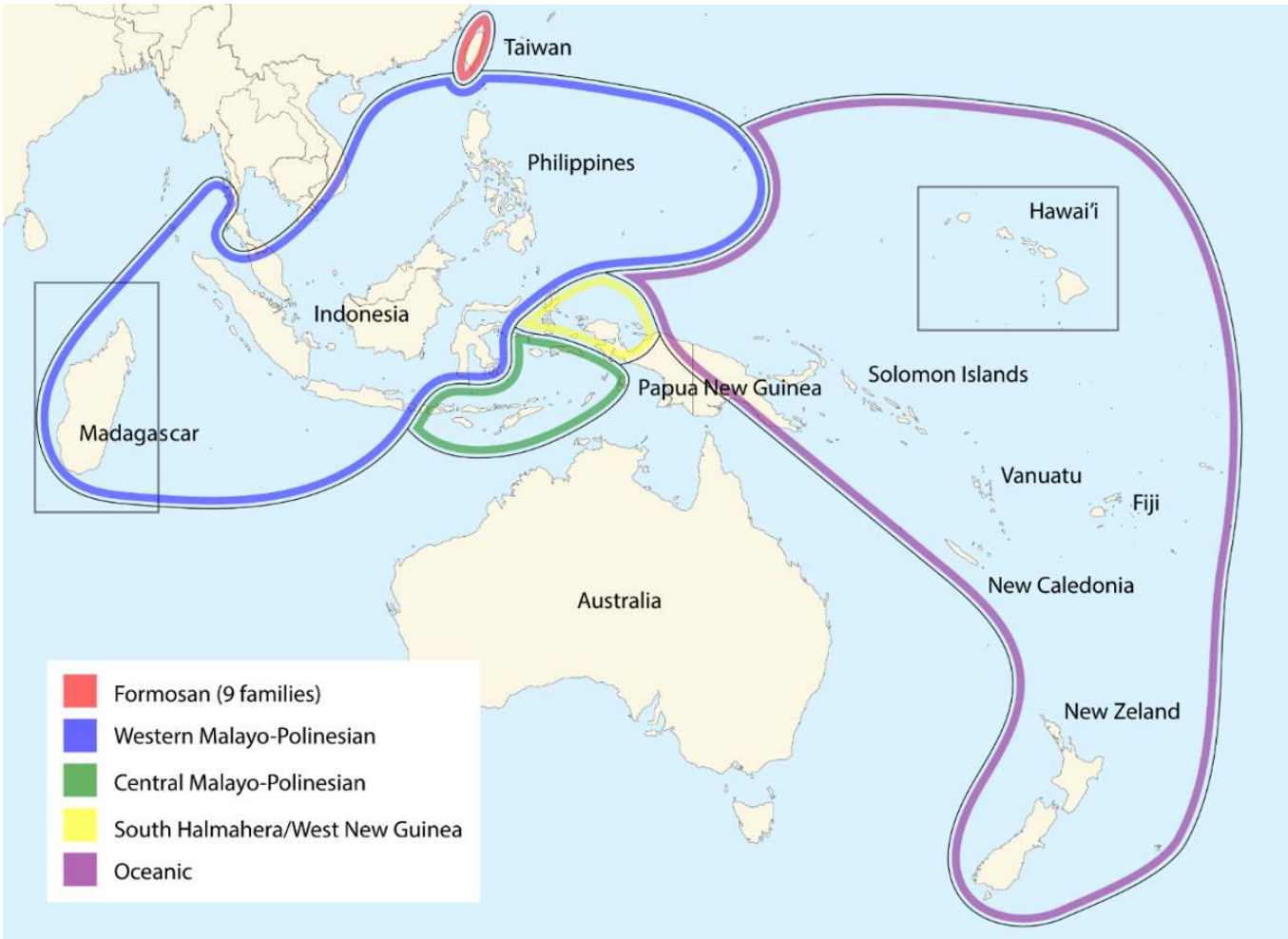


One of the very big hallmarks of this family are those continental roots. For example, [ktb] is the root for 'to write' in both Arabic and Hebrew, and I believe Amharic also, and that the vowels get stuck in as part of the morphology—the derivation and the inflection is through the vowels. This family also includes ancient Egyptian; it's important to understand that it was an Afro-Asiatic

language. Cushitic languages, now we have Oromo, but we had others as well, and they are historic languages of that North-East African quadrant. When we talk about the languages of a number of the southern part of the –Hausa, in particular, this is a Northwest African Saharan language. We have the Semitic languages of Akkadian, Hebrew, and Aramaic—if you are into a number of Old Jewish or Old Testament readings, you know that Aramaic is what was frequently spoken. Of course, Arabic is one of them, and it should be noted, there is an optional lesson just on Arabic languages—yes, I said Arabic languages, I didn't say Arabic, and there's a reason for that.

8.9.1.6: Austronesian/Australio-Pacific

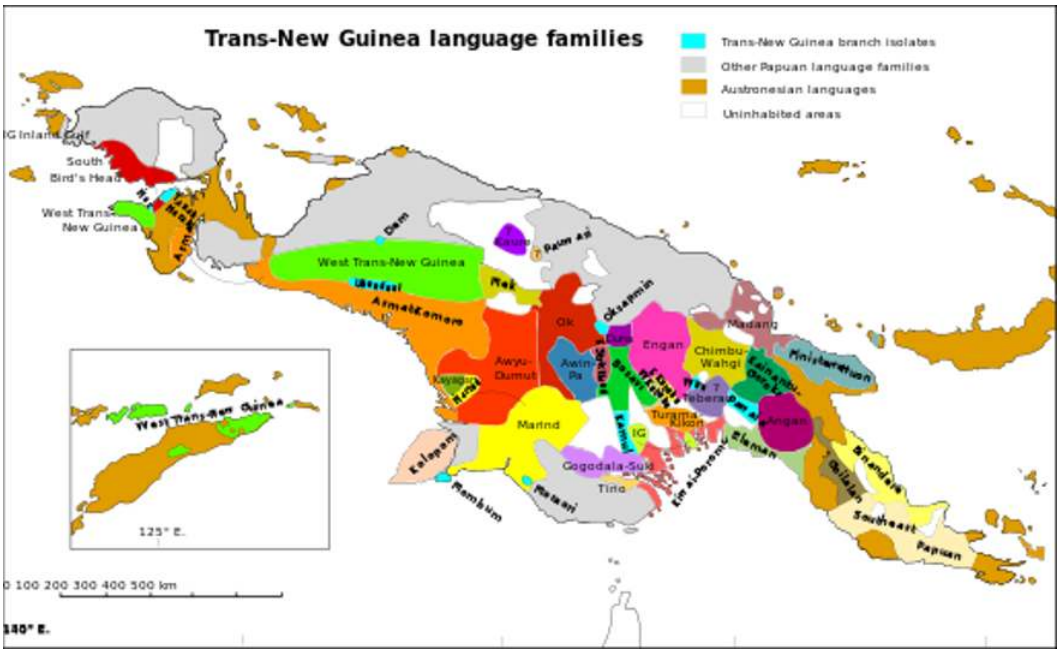
I brought up many times Austronesian or Australio-Pacific; those terms are used interchangeably.



It is a very fascinating language family; this is the language family that has infixation and tons of duplication. It has so many amazing aspects to it. The only one that you do not see here is the language of the Rapa Nui, which is the indigenous name for Easter Island and that area kind of off the coast of Chile, although, to be honest, it's well into the Pacific. What is absolutely fascinating is that this language family starts in Taiwan. When we think of Taiwan, we think of Mandarin for the most part. But the indigenous language is Austronesian or Australio-Pacific. It is from there from that little island that we get nearly all of the cultures and languages throughout the Pacific; there's very few places that that are not home to an Austronesian language. This fascinating group liked migrating, which they did spectacularly, and we know this from the similarity within each of these regions. For example, the Western Malaya Polynesian, we're talking the languages of the Philippines, Indonesia, and includes Malagasy in Madagascar. You have a lot of similarity here within the Oceanic languages, and then within the Indonesian and Papuan New Guinea regions; you have a couple other smaller groups, as well.

8.9.1.7: Trans New Guinea/Trans-Guinean

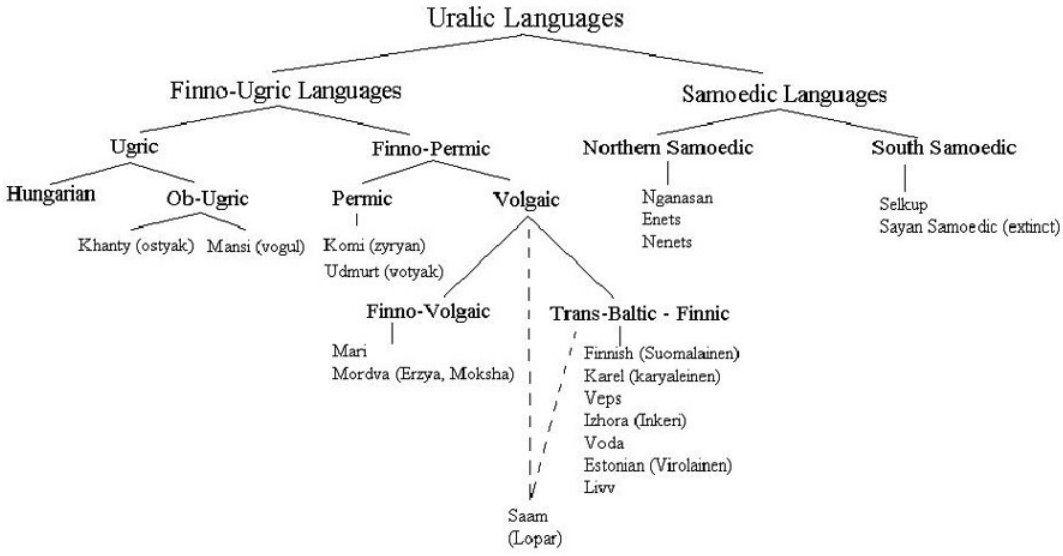
New Guinea, though, is not home just to Austronesian languages; it is also home to Trans New Guinea or the Trans-Guinean languages.



At this point, we think it is a separate language family, that it is not Austronesian nor Australian; it is something in between. We do know that the languages of the northern portion of Australia are very similar to this to these languages. It is absolutely mind boggling to think that an entire archipelago has this many different languages, but it is the case. If you know a little bit about the geography of this region, you know how incredibly remote these places are. Not surprisingly, a group of folks would go to a region and be completely cut off from everybody else; it's the story of human existence in many ways.

8.9.1.8: Uralic

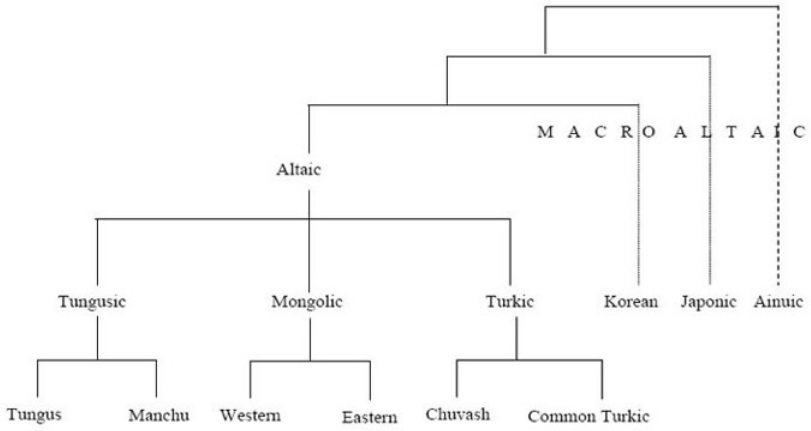
Within the Uralic family, I've talked frequently about the Finno-Ugric languages, but really it's part of the larger subset of our larger family called Uralic.



The bulk of the Uralic languages, though, are the Finno-Ugric group. When we're talking about Hungarian, Estonian, and Finnish, this is the Finno-Ugric family. We also have to include the Samoyed languages, which are spoken in the Arctic regions of both Scandinavia and Russia. This is a series of languages of indigenous languages that are very endangered. Estonian is technically considered endangered, although it is increasing in native speakers. Finnish and Hungarian are not endangered at this point, but pretty much everything else you see here, if it is still in existence, and that's a big if, it's highly endangered.

8.9.1.9: Macro-Altaic

As I said, there are some language families that are controversial, and Macro-Altaic is one of them.



Altaic take itself is not controversial; we pretty clearly can trace the history of the Turkic languages. Turkish, of course, is one of them, and a number of the languages that are spoken in the western part of Asia. Mongolic languages, Mongolian is one of them, of course, and then there are others, like some of the languages of Western China, these are all related. We have them pretty well documented for at least 2000 years, if not longer in the case of Mongolian. They seem to take up the old Chinese writing systems fairly early on, modified them to what they wanted, and then went from there. In some cases, when Islam came into those areas, they started writing the languages down in the Arabic writing system. As such, we have a lot of old documentation.

As I said, Altaic is not the problem; the problem is over here on the right, when we're talking about the native languages of Japan. Ainu is one of them; it's about the only one that is still in existence. All of the languages that existed of the peoples who lived in Japan before a group of Koreans decided to hop over the Korean Sea. Japanese and Korean are very closely related, and it all has to do with a group who got kicked out of the Korean court about 1200 years ago. They hopped over to what we now call Japan and became the group the Yamato people; they pretty much conquered the rest of the islands. Those three groups, the Korean groups—there are a couple other Korean languages, historically—the Japonica groups—that's Traditional Japanese, as well as Modern Japanese and Okinawan—and then languages that are Ainuic—Ainu and the other indigenous languages of Japan. We aren't sure of their origins. This was an area that Joseph Greenberg was interested in; he never really got to explore too much, not as much as the languages of Africa, the languages of the Americas and Basque. Many of us have been trying to figure out where these three groups come from. We know that the Japanese and Korean languages are pretty much the same group; we know that part. We suspect that the indigenous languages of Japan might have come out of Siberia, but we aren't sure. Was there a connection with the Uralic languages? Maybe. The closest seems to be with this Altaic group.

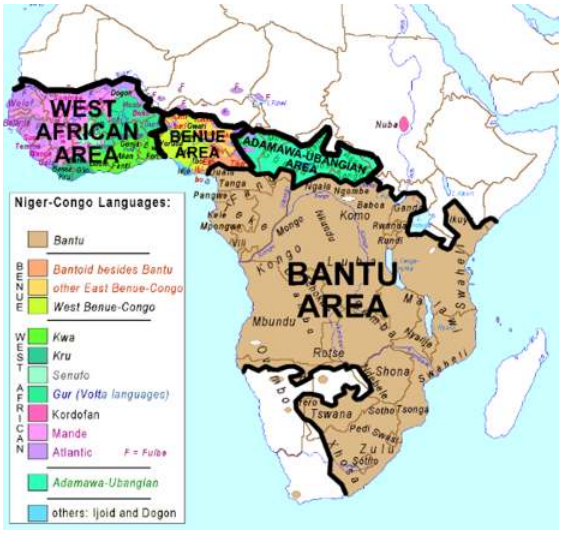
But there are things that the Altaic languages do that these other groups don't, and so we don't really know yet. More work is being done on genetic analysis, as in DNA analysis, and combining it with historic analysis of these languages. In the case of Japanese and Korean, we have a long written history of over 2000 years; in fact, the Old Korean writing system is based off of an earlier Chinese writing system, so we have a pretty good length of documentation. But it's really difficult to decipher this one. If you were to look up Japanese or Korean or Ainu in a reputable linguistic database to find out what language family they are in, we don't have a good answer, and no two databases will be necessarily alike. As an historical linguist, I tend to say they are Macro-Altaic, knowing the controversy that is involved with that and understanding that I have many times also called them isolates. I will use both terms, because we are right now really not sure.

8.9.1.10: Linguistic Supergroups

Before we leave this topic of language families, it's incredibly important to talk about super groups. This is where we have mass migration over several thousands of years, all mixed up such that we see certain trends that exist in those areas and nowhere else. In fact, we've already talked about two of these groups: Southeast Asia and the Bantu languages.



When we talked about Southeast Asia, we talked about specifically the fact that they have contour tones and that nowhere else in the world do we see anything similar. Contour tones, we believe, may have originated in the Sino-Tibetan languages—remember we're talking about Tibet, which is kind of over here—and the Sino-Tibetan languages seem to have come out of that area and spread over what we now call China and what we call Burma, or Myanmar. We noticed that the various language families that we see in Southeast Asia—there are at least two, maybe three, depending on how you qualify it. They all have these contour tones…so where did this come from? Did this come from Sino-Tibetan, or did it come from these other languages and they got pulled into Sino-Tibetan? We're pretty sure it comes from Sino-Tibetan initially, and then moved south and east. But we aren't entirely sure. All of these languages are highly isolating; there is little to no inflection. Certainly, Sino-Tibetan languages have no inflection, but even the languages of Southeast Asia—we're talking about the various languages spoken in Vietnam, Cambodia and Laos, as well as northern Myanmar/northern Burma. There are some languages that have a couple of inflections, but for the most part there's none. Where did that come from? What is more, they are so isolating compared to any other language family on the planet. They also use sentence particles and numerical classifiers; we saw an example of classifiers in semantics with Mandarin. The extent to which those elements are used is staggering in this region.



We talked about the Bantu languages, including some of the Khosian languages along with some of the Niger-Congo languages. We call them Bantoid for now because we're not entirely sure if they are a separate group. In some ways, they are similar; in some ways, they are different to Niger-Congo. This is where we have those register tones, those high-low tones. we have clicks in these areas. The Bantu area or Bantoid languages all have clicks, but the languages of Western Africa or the Banue area do not have clicks. Why is that the case? You have a high level duplication in these Bantu languages that you do not see in the other Niger-Congo languages or some of the other Khosian languages. You see nominal classes—we saw that with Swahili, in particular—that

we do not see another Niger-Congo languages, and the sheer number of them is staggering at times. This is very clearly the Bantu area, a very clear linguistic supergroup it covers multiple language families.



There's a third supergroup, one that was a little closer to my world as far as an historical Romance linguistics, and it's the Balkan area. Frequently, we use the German term, *Balkansprach*, so ‘Balkan speak’, but it includes the languages of Hungarian, Romanian, Bulgarian, Greek, Serbo-Croatian—yes, I'm going to combine them—Bosnian, Slovenian, Slovakian, Czech, Austrian-German (not all German, but Austrian-German), and even includes a bit of Turkish ,although Turkish is an Altaic language and certainly has its own thing. There are certain aspects to Turkish that you don't see in the other Altaic languages, and they are aspects that are very similar to this other Balkan area. In these cases, we have a reduced case system; they all have a case system, but less so compared to their other languages in their language families. For example, Austrian-German has fewer cases then Standard German or Swiss German. Romanian actually has case, which is different than the other Romance languages, but the Slavic languages in this area have way fewer cases than, say, Russian, Ukrainian or Polish. Even when we compare Hungarian to Finnish or Estonian, there are way fewer case markings, they have a post article; instead of saying ‘the cat’, that is an inflection and it is a suffix: ‘cat-the’. They are also highly analytical languages; they're not very synthetic. We're going to have more isolation, but there is still some synthesis, some inflection, but there's just less of it. There are loanwords that you find in this region, but you don't find elsewhere; Romanian, a great example of that, as there are a ton of Slavic and Turkic words that are brought into that language that you don't see in any other Romance language. As I said, most of this has to do with migration, conquering, wars, and the like. One of the classic statements we say in Romance linguistics is, we really need that time machine. So, one of you, please, set up that time machine, so that we can find out what happened to Romanian. We have an almost 800-year period where there's no documentation whatsoever, from the time that the Romans left, which is in the third century CE (around 400) until about 1400; we have about 1000 years where we have very little documentation. We don't really know how Romanian came to be versus the other Romance languages. The same is true for all of these languages; we have documentation, but it's later in its history. If you look into the history of that region, the sheer number of wars, conquering, language suppression, all of it that happened in that region, well, it makes sense as to why this is a supergroup. The same can be said for the Bantoid area and for Southeast Asia.

Therefore, when we talk about languages and language families, always there are patterns. It's just a matter of finding it.

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8.10: Writing Systems

8.10.1: 8.9.1 Writing Systems, from Sarah Harmon



8.10.1.1: Video Script

Let's talk writing systems! We can't talk about the history of language without talking about writing systems, and, yes, part of this is going to cover historic writing systems or writing systems that have been used across the history of human language. But we can't do this without also bringing in the modern writing systems, especially having to do with the smart phone.

Let's start off by talking about the hierarchy, if you will, of certain reading systems. When we say hierarchy, we're not saying one is better over another, or that one is preferred one over another. Frequently, what we're saying is something is more iconic versus more alphabetic; we're creating a spectrum. It is interesting to know that, with a couple of exceptions, you are talking about a historic evolution of writing over human language history.

When we talk about, for example, **ideograms** or specifically cave drawings or **petrographs**, we're talking about the earliest instance of humans trying to put something about what they want to say in a written format. From there, these **pictographs** evolve frequently into **iconographs**, where an icon doesn't just represent the thing that obviously it represents—that it maybe represents a sound or a syllable or versions thereof. The two best examples are Egyptian Hieroglyphics and Mayan Hieroglyphics. There are a slew of videos on YouTube, recent documentaries and examples of hieroglyphics, both in Egyptian and Mayan languages. These documentaries showcase how they have evolved over time, where you saw a picture of a bull that literally only meant 'bull'—a little bit more pictographic—to what it turned out to be—the term for 'bull' in Egyptian, whatever that sound was, that symbol started representing the sound, not just the meaning. It was really cool.

From there we get **cuneiform**, which is what we see with Sumerian, and then that gets borrowed by a few other generations and few other cultures, principally the Akkadian culture and the Hittite culture. Cuneiform is really the first instance of a written language with non-representational characters. If you think about a hieroglyph, they represent the thing; if you see a picture of a bowl, it's going to represent a bowl, along with other items. When we think about cave drawings or ideograms or even emoticons, these are pictures that represent a concept. When you get to cuneiform—and specifically Sumerian cuneiform—they are literal wedges. Those combinations of wedges represent a sound; at that point, you're getting to a writing system that represents sound and less meaning.

From there we go into a **syllabary** and then frequently an **alphabet**. There are a number of not just historic languages, but modern languages, that use either a syllabary or an alphabet. We have some ancient examples, like Phoenician, Ancient Greek and Latin—Old Latin along with later Classical and Vulgar Latin. When we talk about Japanese or Korean, or we start talking about Hindi or Cyrillic or Pinyin or Abjads, now we're talking about modern language and modern writing. It has changed over time. For example, abjads have a connection to the writing system for Sanskrit, which itself has been the basis of a number of writing systems for

various languages, not just the Indo-Aryan languages, but also a number of the Afro-Asiatic languages. Chinese is listed here is a syllabary, but not the way you think; the Chinese characters themselves are representations of syllables. The way we think about the Chinese writing system now it is technically a syllabary, and then Pinyin is the Latin-based representation that's more alphabetic. Korean has an interesting combination; it's technically an alphabet, but it acts like a syllabary. so there's ways to play with this.

There are variations to writing systems. We talked about **abjads** earlier; these are a writing system where the main symbol is a consonant, and then you have certain diacritics being vowels. We mostly think of the Semitic languages—Arabic and Hebrew as the two principal languages—using abjad syllabaries. It is based off of the writing systems that you see with Sanskrit and some of the other Indo-European languages of South and Central Asia. They have a fascinating history, and if you want to learn more just let me know, and I can send you some references.

Then you have Japanese, which can be seen as a bit confusing if you are not Japanese. There is not one nor two, but four different writing systems. In fact, I didn't put one of them up here; it's actually five. **Kanji** is the one that probably you know about; kanji are based off of Chinese characters that are very similar to traditional Chinese characters. They were in use from the earliest stages of Japanese; in fact, if you can read kanji, you have a pretty good idea of what the Chinese writing system says. It is still very formal, and there are, to my knowledge, very few if any new kanji being created. It is more a reference to certain characters that are word-based, and they frequently have to do with something very similar that you hear in Mandarin or one of the Chinese languages. Then you have the **kana**. The kana are the syllabary; there's two different versions of it: **hiragana** and **katakana**. Hiragana are always the native Japanese terms, and it's more formal; katakana are loan words. If you pick up anything that is written in Japanese, and you see a mix of characters, it's almost always going to be one of these two kana. It will be a mix, depending on whether the lexicon is a native Japanese word or if it's a borrowed word. The one I forgot to put up here is **romanji**, which is Latin alphabet spelling of everything.

Korean technically has an alphabet but it's written out as clusters or syllables, so it's almost like a syllabary.

When we talk about diacritics, this is also an interesting important piece, especially to the Latin writing system—many of the languages that you use and know of use a Latin writing system, like English. Most of the Indo-European languages of Europe, though not all, use the Latin rating system. A number of them use Cyrillic., and there is a separate writing system for Armenian and Greek.

Digraphs: This might be a term you've heard before. Digraphs are two symbols that combine; think about a couple of those sibilants that we have an English: [ʃ, ʧ]. While we write the sound using two different symbols in the writing system ‘sh’ or ‘ch’. The same thing with that velarized nasal, that [ŋ] sound frequently spelled with two letters; the combination of them we know to represent a specific sound. We do this with vowels, as well.

8.10.1.2: Examples of Writing Systems

Let's take a look at some of these writing systems. I'm going to show you combined Cyrillic and Ancient Greek; you might find that to be confusing, but there's a reason

Α α	Β β	Γ γ	Δ δ	Ε ε	Ζ ζ	Η η	Θ θ
ἄλ.φα	βῆτα	γάμμα	δέλ.τα	ἒψιλ.όν	ζῆτα	ἦτα	θῆτα
alpha	beta	gamma	delta	epsilon	zeta	eta	theta
a	b	g	d	e	z	ē	th
[a/aː]	[b]	[g]	[d]	[e]	[zd/dz]	[ɛː]	[tʰ]
Ι ι	Κ κ	Λ λ	Μ μ	Ν ν	Ξ ξ	Ο ο	Π π
ἰῶτα	κάππα	λ.άμβδα	μῦ	νῦ	ξεῖ	ὄμικρόν	πεῖ
iota	kappa	lambda	mu	nu	xi	omikron	pi
i	k	l	m	n	ks/x	o	p
[i/iː]	[k]	[l]	[m]	[n]	[ks]	[o]	[p]
Ρ ρ	Σ σ/ς	Τ τ	Υ υ	Φ φ	Χ χ	Ψ ψ	Ω ω
ῥῶ	σῖγμα	ταῦ	ὗψιλ.όν	φεῖ	χεῖ	ψεῖ	ὦμέ.γα
rho	sigma	tau	upsilon	phi	chi	psi	omega
r/rh	s	t	u/y	ph	kh/ch	ps	ō
[r]	[s/z]	[t]	[y/yː]	[pʰ]	[kʰ]	[ps]	[ɔː]

On the right side is Ancient Greek, and Modern Greek is a variety of this.

А	Б	В	Г	Ґ	Д	Ђ	Ѓ	Е	Ё
A	Be	Ve	Ge	Ge upturn	De	Dje	Gje	Ye	Yo
Є	Ж	З	Ѕ	S	И	І	Ї	Й	Ј
Yest	Zhe	Ze	Zje	Dze	I	Dotted I	Yi	Short I	Je
К	Л	Љ	М	Н	Њ	О	П	Р	С
Ka	El	Lje	Em	En	Nje	O	Pe	Er	Es
Ć	Т	Ћ	Ќ	У	Ў	Ф	Х	Ц	Ч
[ć]	Te	Tshe	Kje	U	Short U	Ef	Kha	Tse	Che
Џ	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я	
Dzhe	Sha	Shcha	Hard sign (Yer)	Yery	Soft sign (Yeri)	E	Yu	Ya	

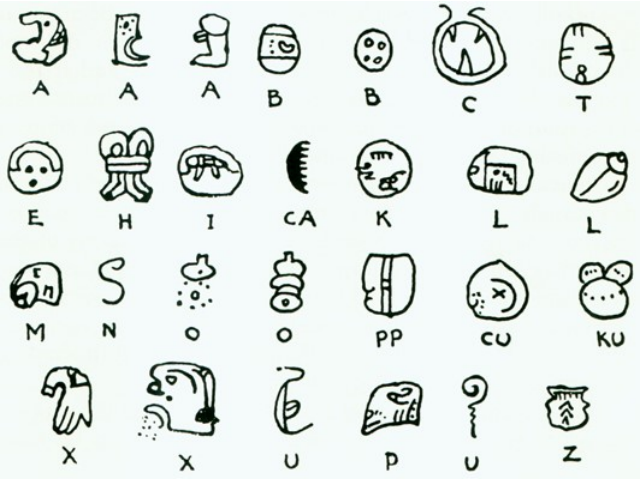
Cyrillic non-Slavic letters

Ӏ	Ә	Ғ	Ӌ	Ҫ	Ҡ	Ҟ	Ң	Ө
Palochka	Cyrillic Schwa	Ayn	Bashkir Dhe	Bashkir The	Bashkir Qa	Ka with descender	Ng	Barred O
Ү	Ұ	Һ						
Straight U	Straight U with stroke	He						

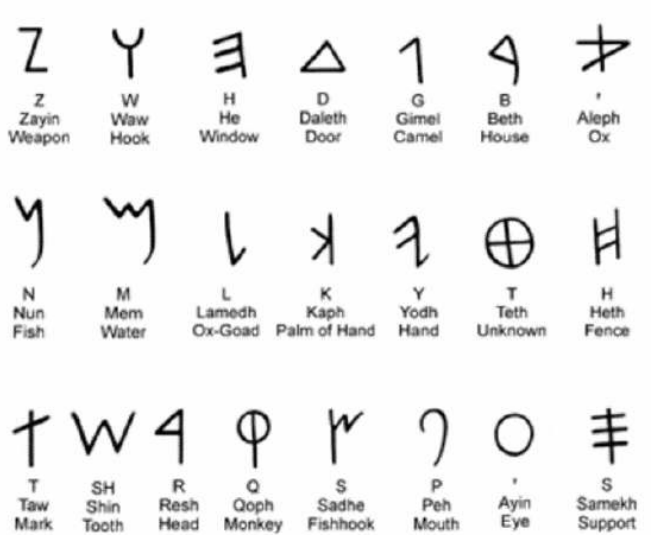
Cyrillic letters used in the past

Ѣ	Ѥ	Ѧ	Ѫ	Ѩ	Ѭ	Ѯ	Ѱ
A iotified	E iotified	Yus small	Yus big	Yus small iotified	Yus big iotified	Ksi	Psi
Ѳ	Ѵ	Ѷ	Ҁ	Ꙋy	Ꙍ	Ꙋ	Ѣ
Fita	Izhitsa	Izhitsa okovy	Koppa	Uk	Omega	Ot	Yat

Cyrillic is based off of a more modernized Middle Greek. If you notice the letter for that ‘a’, it's just like alpha. The B and V sounds are based off of beta. There are specific symbols that you see that came out of the Ukrainian or Russian branch of the Slavic language family. I phrase it that way because Ukrainians say they came up with Cyrillic first, and the Russian say they came up with it first; I am going to split the difference and say, Ukraine or Russian area of Slavic. We have a number of Slavic letters that get borrowed throughout the Slavic languages. It is interesting to note that some Slavic languages have moved away from Cyrillic, especially given the fall of the Soviet Union.



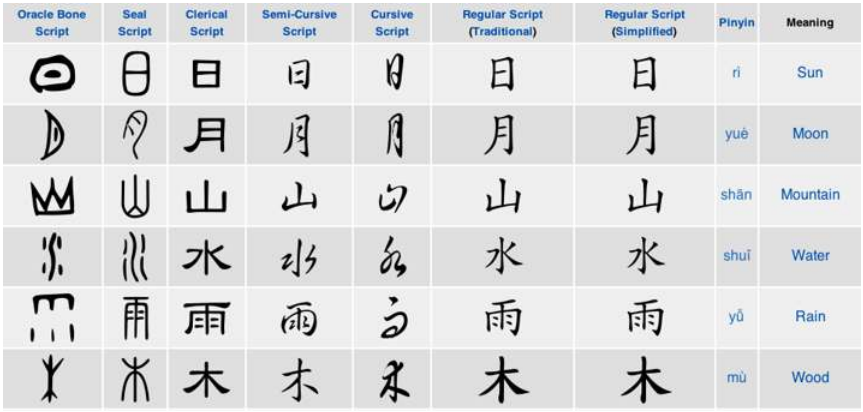
It is important to show hieroglyphics; you have seen Egyptian hieroglyphics many times; these are the Mayan ones. We're still trying to decipher these; what you see here are the ones that we have deciphered. There are so many more to come, and many, many more that we're still trying to work on.



I love showing folks Phoenician because in many ways it's an example of taking a later version of Egyptian hieroglyphs and changing them. There was a really fascinating documentary that was released in about how the ancient Egyptian hieroglyphs morphed, and the late hieroglyphs was almost identical to the Phoenician alphabet. Phoenician, to be fair, was a syllabary; it combined these symbols into syllable combinations. However, this is the basis for the Greek alphabet, so we frequently say that it is an alphabet, even though technically it's more of a syllabary. Notice that it is also a symbol that represents a concept. I brought up the concept of bull for a hieroglyph meaning not just an actual bull but the sound that that might also represent. If you turn your head to the side, as it were, or spin that icon for 'aleph' so that the point is down, it looks kind of like a bull; not surprisingly, the term 'aleph' in Phoenician meant 'ox'. There's a real connection to this; as I said, there's a full documentary on this.

خ	ح	ج	ث	ت	ب	ا
kha	haa	jiim	thaa	taa	baa	alif
ص	ش	س	ز	ر	ذ	د
saad	shiin	siin	zaay	raa	thaal	daal
ق	ف	غ	ع	ظ	ط	ض
qaaf	faa	ghayn	ayn	thaa	taa	daad
ي	و	ه	ن	م	ل	ك
yaa	waaw	ha	nuun	miim	laam	kaaf

I brought up abjads before; this is Arabic in the graphic. Arabic symbols are not just the actual main symbol; it is the diacritic that goes with it—the little dots or dashes. The abjad system has many more symbols. Abjads are syllabaries, because it is not just a consonant or a vowel; it's a combination, an entire syllable. Notice that most of these are onset and nucleus, not as many codas on here.



Oracle Bone Script	Seal Script	Clerical Script	Semi-Cursive Script	Cursive Script	Regular Script (Traditional)	Regular Script (Simplified)	Pinyin	Meaning
					日	日	rì	Sun
					月	月	yuè	Moon
					山	山	shān	Mountain
					水	水	shuǐ	Water
					雨	雨	yǔ	Rain
					木	木	mù	Wood

I love this graphic; I have no idea where I got it, but I love it. It is a history of the Chinese writing system. These symbols on the right are the earliest forms, and they go back about 4,000 years. From the Oracle Bone Script and Seal Script, and then when you start getting into Clerical Script, you're talking about old Chinese. Starting with Clerical Script, you see more systematic representations, going on to Regular Simplified Script that is used today in most of China and many, many parts of the diaspora. In Taiwan and a few other places, you tend to use Traditional Script, but you can start seeing the similarities from Clerical Script onwards, and to a lesser extent with the Seal Script. But they get less and less iconic; Oracle Bone Script is very highly iconic at this stage, and start getting more and more abstract, with more and more of a syllabary-type concept. Over here on the left, by the way, is the Pinyin, the Latin writing system that represents the sounds.



Thinking back to the Chinese Traditional and Cursive Scripts, compare those with kanji. Now you can see the connection between kanji and either Cursive or Regular Script; Depending on the country depends on which one is a little bit closer. You can see the very straight connections between kanji and the Chinese writing system. It is very straightforward, to the point that, like I said, if you can read kanji, you can get a pretty good idea of what is being said in the Chinese writing system just based on that connection.

https://socialsci.libretexts.org/@go/page/199989

Hiragana

あ a	い i	う u	え e	お o
か ka	き ki	く ku	け ke	こ ko
さ sa	し shi	す su	せ se	そ so
た ta	ち chi	つ tsu	て te	と to
な na	に ni	ぬ nu	ね ne	の no
は ha	ひ hi	ふ fu	へ he	ほ ho
ま ma	み mi	む mu	め me	も mo
や ya		ゆ yu		よ yo
ら ra	り ri	る ru	れ re	ろ ro
わ wa				を wo
ん n				

Katakana

ア a	イ i	ウ u	エ e	オ o
カ ka	キ ki	ク ku	ケ ke	コ ko
サ sa	シ shi	ス su	セ se	ソ so
タ ta	チ chi	ツ tsu	テ te	ト to
ナ na	ニ ni	ヌ nu	ネ ne	ノ no
ハ ha	ヒ hi	フ fu	ヘ he	ホ ho
マ ma	ミ mi	ム mu	メ me	モ mo
ヤ ya		ユ yu		ヨ yo
ラ ra	リ ri	ル ru	レ re	ロ ro
ワ wa				ヲ wo
ン n				

Compare kanji to kana. We have hiragana, which is for traditional and native Japanese terms, and then katakana, which is for borrowed terms.

A quick story: One of my very good friends from childhood is Japanese, and after college she moved back to Japan. She's very Japanese, and when I got married to my Japanese-American husband, who's half Japanese and half American, his last name is Smith. Jokingly my friend Mika sent me a gave me a new name: ‘sumisu-sama’. ‘Sama’ is, if you don't know in Japanese it is ‘ma'am’ or ‘madame’; it's very high-ranking term, and is frequently used for married women, especially if your family is from a higher echelon of Japanese society. ‘San’ is the one you're probably more familiar with, and that can be used as well, but ‘sama’ is a little bit higher still. So, she called me ‘sumisu-sama’, which just bowled me to see how she wrote it: in katakana, because Smith is not native Japanese. She also called me 'Maehara-sama'; 'Maehara' is hiragana, because it would be traditional, an old Japanese last name. It's one of the last names of my mother-in-law. (She actually should have used the kanji for Maehara, but she didn’t know it.)

As you can see, it’s not exactly kanji; it is very different. The kana are much more simplified; they are based off of kanji originally, but severely simplified.

The Korean Alphabet

Vowels / Consonants	ㅏ [a]	ㅑ [ya]	ㅓ [ŏ]	ㅕ [yŏ]	ㅗ [o]	ㅛ [yo]	ㅜ [u]	ㅠ [yu]	ㅡ [ŭ]	ㅣ [i]
ㄱ [k,g]	가	갸	거	겨	고	교	구	규	그	기
ㄴ [n]	나	냐	너	녀	노	뇨	누	뉴	느	니
ㄷ [t,d]	다	댜	더	뎌	도	됴	두	듀	드	디
ㄹ [r,l]	라	랴	러	려	로	료	루	류	르	리
ㅁ [m]	마	먀	머	며	모	묘	무	뮤	므	미
ㅂ [p,b]	바	뱌	버	벼	보	뵤	부	뷰	브	비
ㅅ [s,sh]	사	샤	서	셔	소	쇼	수	슈	스	시
ㅇ (silent)	아	야	어	여	오	요	우	유	으	어
ㅈ [ch,j]	자	쟈	저	져	조	죠	주	쥬	즈	지
ㅊ [ch']	차	챠	처	쳐	초	쵸	추	츄	츠	치
ㅋ [k']	카	캬	커	켜	코	쿄	쿠	큐	크	키
ㅌ [t']	타	탸	터	텨	토	툐	투	튜	트	티
ㅍ [p']	파	퍄	퍼	펴	포	표	푸	퓨	프	피
ㅎ [h]	하	햐	허	혀	호	효	후	휴	흐	히

This is an example of the Korean alphabet. We say it is an alphabet but it's also a syllabary, because it's always a combination of a consonant and a vowel. For example, this is the symbol for [k, g], and you combine it with the vowel that goes with it, and you see those vowels here. The Korean alphabet, or *hangul* as it's called, is only about 100 years old; less than 150 years ago they switched to this writing system; before that they had a different writing system that was based off of the Chinese writing system.

अ a	आ ā	इ i	ई ī	उ u	ऊ ū
ऋ ṛ	ॠ ṝ	ऌ ḷ	ॡ ḹ		
ए e	ऐ ai	ओ o	औ au	अं aṃ	अः aḥ
क ka	ख kha	ग ga	घ gha	ङ ṅa	
च ca	छ cha	ज ja	झ jha	ञ ña	
ट ṭa	ठ ṭha	ड ḍa	ढ ḍha	ण ṇa	
त ta	थ tha	द da	ध dha	न na	
प pa	फ pha	ब ba	भ bha	म ma	
य ya	र ra	ल la	व va		
श śa	ष ṣa	स sa	ह ha		

When we talked about Arabic abjads, I said that there's a connection to Sanskrit. Hopefully, you can see a little bit of a here; this is the Hindi alphabet. A number of the Indic languages use a version that was originally based off the Sanskrit. (I couldn't find a really good graphic that I liked for Sanskrit so that's why I don't have it here.) With Hindi, you can see some similarities, where there is a main character along with certain diacritics. But it is evolved, so while this is not an object, you can see the connections, and there's a stronger still connection to ancient Sanskrit.

8.10.1.3: Punctuation

This is to write sounds and letters, but that's not the only part of a writing system. Clearly, we have to also include punctuation. In modern written languages, we have to include punctuation; you need to know when we stop and when we start. It's one of the frequent frustrations of the transcripts from these videos is there's bad or no punctuation.

Punctuation is a modern concept; it is not ancient. In fact, one of the challenges when you read a script or a document that is more than a couple hundred years old, is the punctuation is either not there or it's inconsistent; there isn't much in the way of standardization.

Writing in general is archaic, meaning that we always keep an older pronunciation with respect to how we write a term. English is not the only example of this, and you saw with the Great Vowel Shift a strong example of this, but it's not the only one. We also have **reform spelling**, which happens in a number of writing systems, English included. Reform spelling is when a linguistic society reverts back to a supposed previous pronunciation or spelling. In the case of *debt*, at no point in the English language was it [dɛbt]; there was no [bt] spoken in the history of English language with respect to that lexicon.

8.10.1.4: Text-speak

Speaking of punctuation and writing, let's do text speak. It is probably the bane of most English teachers' and professors' existence. Most feel that it's only been around for about 20 years; in fact, it's been around for longer than that. The use of acronyms, for example, is thousands of years old; as long as we have had an alphabet, we have had acronyms. In most languages, there's always acronyms of some kind. Once we started having instant communication, like on smartphones, computers and the like, this is changed rapidly to the point that I remember when FML l didn't just stand for 'fuck my life', it also was 'fuck my luck', getting that rhyming in there.

Sometimes we are using acronyms to create a euphemism—WTF being a great example of that. I'll give you an example with LOL: I remember when we started using these text-speak acronyms, I used to use LOL a lot, and I used to 'loller' a lot . My mom did not for the longest time have the same concept of LOL; it wasn't 'laugh out loud', because for her it stood for 'little old lady'. Acronyms will change from speech community to speech community and across generations. There were several artists in the late 70s and early 80s that frequently used numbers or truncation to express the same thing in written language. For example, instead of saying *ate*, they wrote the number *8*. Whether it was the *four* or *for*, it was always written with the numeral 4. Again, this is not new; humans have been doing this as long as we have had a written language, and certainly alphabets, in particular, seem to lend themselves to this truncation more easily.

Emoji! Let's talk about emoji and all these various things that we love about texting.

When we talk about text speak, we cannot be prescriptive, we have to remain objective and descriptive. There have been a number of complaints that text speak is ruining our lives, that we don't know how to write anymore, because we only think about life in however many characters we have in our text box. No, this isn't the case. Prescriptivists will do this; they will say, "Raaaaaar my God there totes is an effect!!! What the fuck-Oh my gawd-BBQ!!" (Sorry folks, I've been doing text speak for a long time.) The truth of the matter is that isn't the case; linguists, remember, describe what happens, and we can describe a number of things. When you work on your term paper, if you choose the language and tech option, one of the papers you're going to read is by Hawley Turner, who in 2009 had a very important study. She showed that if you teach writing and texting as different registers, much like we do with different dialects and different registers different modes of communication. If you teach students in that same way, they absolutely can split out that difference of when you have to use formal writing, and when you can use text speak, emojis, etc. It's an important reminder.

Language changes all the time. All aspects of language change all the time, and that includes the writing system. How generations from now will not only speak the language, but write the language that you're fluent in, that will change.

Are you willing to change?

8.10.2: 8.9.2 More on Lost (?) Writing Systems (optional)

Watch this TedEd video in which Susan Lupack discusses the race to decode what (we think) is Linear B, the ancient written language that the Minoans may have used. (The video is captioned.)



Next, watch this TedEd video in which Jesse Byock explains what we know about Viking runestones. (The video is captioned.)



Next, watch this YouTube video in which Cecilia Pardo of the British Museum explains the khipu system that the Incan Empire (and their predecessors) used as both a record keeping device...and a writing system? Really interesting! (The video is captioned.)



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8.11: Arabic and Romance- A Comparison (Optional)

8.11.1: 8.10.1 Arabic and Romance: A Comparison (Optional)



8.11.1.1: Video Script

The last piece on historical linguistics—and this is purely optional; if you're not interested at all in this, you can skip watching or reading this, and it will not be on the historical linguistics quiz. I really want to go into this concept of Arabic and the fact that it is not a single monolithic language. Actually, if you look at the history of Arabic, and if you look at the modern usage of it, it's a lot more like the Romance family. So, we can talk about the Arabic family or the Arabic languages, and there's actually a good amount of comparison.

When you go to study Arabic, usually what you're learning is **Modern Standard Arabic (MSA)**; it is the Arabic that is used in writing, broadcasting, speechmaking, education, and many regions have adopted it as its official language. I phrased myself very purposefully; MSA is not necessarily what people speak on a day-to-day basis. Many of you who speak 'Arabic', the truth is you probably speak an Arabic that is specific to the region or speech community based on where you and your family come from.

Let's go back to that sociolinguistic definition of a language versus a dialect, and talk about mutual intelligibility. Is Arabic a single language with many dialects? Or, are they many related languages? Or are they something in between, something in progress? That's the main question.

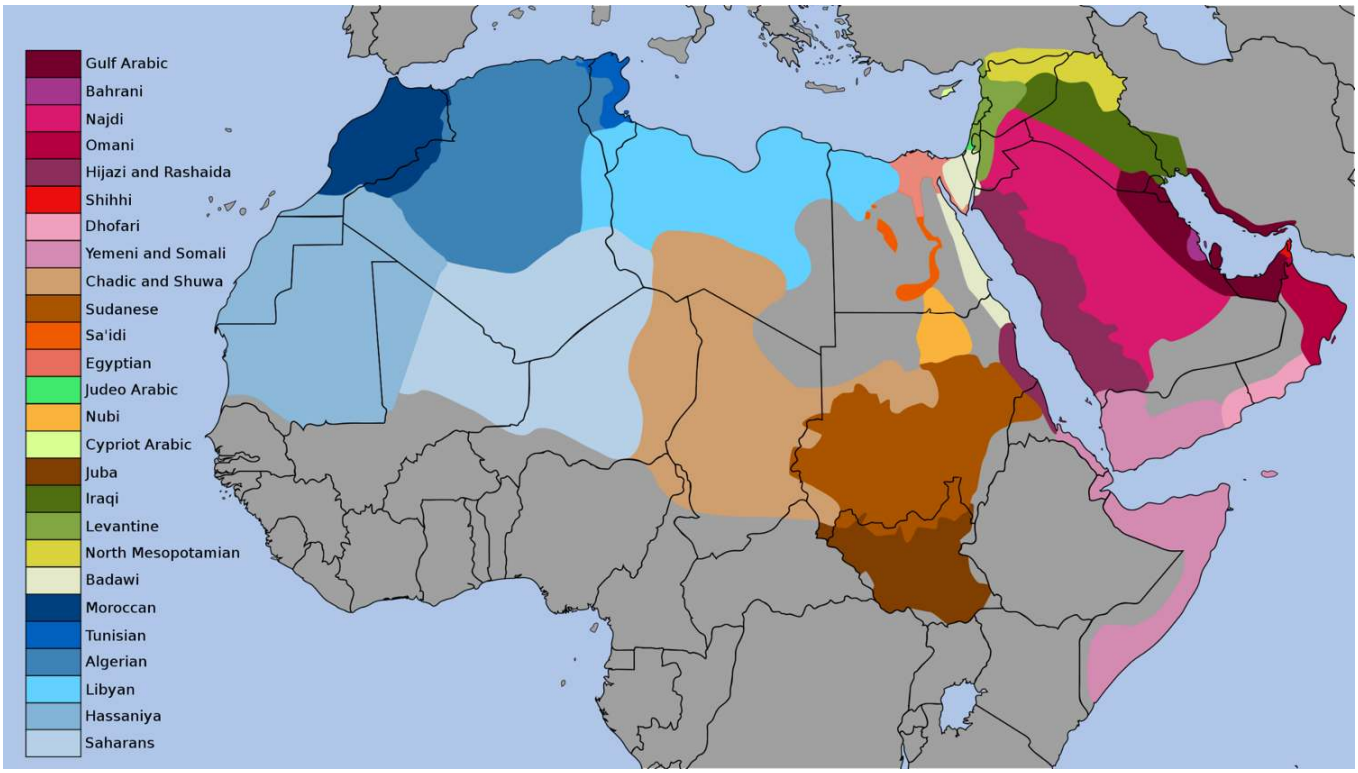
This wasn't my initial question; this wasn't an initial thought that I had. This question and topic came from a student from fall of 2020 who wanted to know more about Arabic and why, for example, his mother spoke one version and his father spoke a different version; they were very different.

Here's the reality when we're talking about Arabic: there are multiple versions of this. Classical Arabic is the language of the Quran, the holy book of Islam. It is also the language of Islam, as far as anything liturgical or anything having to do with religion; it is almost always in Classical Arabic. The old writings are in Classical Arabic. Modern Standard Arabic is what you learn in a classroom; it is what you hear in mass media, as I said. I lingua franca, if you will, of the Arabic-speaking world. It is the one that everybody learns. It is a modernization of Classical Arabic, but a specific component of it is the fact that it is not of one place or one region. It is kind of like the overarching language that people will use in an international setting, or in an official government setting. But then in their day-to-day lives, they have their colloquial Arabic. In many cases, it's written down, although not always; when you see written Arabic, it is Modern Standard Arabic almost always, especially in a textbook or something like that.

It is also important when we're talking about the speech communities, if you know anything about the cultures associated with them, you know that there is a big difference between a **sedentary speech community** and a **Bedouin speech community**. The Bedouin in some cases, especially anthropologically, refers to a specific culture. But I'm going to use it in its more macro concept, which is a group of people, a speech community, that do not stay in one place. They move around; it is part of their pattern, to be

migratory. In northern Africa, in parts of Arabia and the Levant, even Central Asia, you have Bedouin societies. These are all migratory societies; that's going to come into play with respect to any language family, but certainly when we're talking about Arabic. The sedentary speech communities are the ones that are established in a city or region; they don't move around, they don't migrate.

Let's talk about Arabic. When we say ‘Arabic’, let's focus on Colloquial Arabic.



The major regions of Colloquial Arabic are as follows:

- Saharan Africa;
- A little bit of Sub-Saharan Africa
- Parts of the Levant
- Parts of Arabia
- A little bit of the Persian Gulf

Keep in mind: we're not going to include any of the Arabic that spoken outside of this region, because that is more having to do with immigration patterns going out, the diaspora.

Notice some holes: we've got the Nilo-Saharan languages in this region, also Aramaic, and a number of the other languages of eastern Africa. In the Arabian Peninsula, we have a few more Afro-Asiatic languages. What is not marked in here is Hebrew; where modern Hebrew is spoken, we also have Arabic, specifically Levantine Arabic. You can see the different colors in the representation here

To give you a more concrete example, let me show you how to say a straightforward sentence

Examples of various Arabic versions of the same four sentences. Taken from https://en.Wikipedia.org/wiki/Variet...al_differences

Variety	I love reading a lot.	When I went to the library,	I only found this old book.	I wanted to read a book about the history of women in France.

Variety	I love reading a lot.	When I went to the library,	I only found this old book.	I wanted to read a book about the history of women in France.
Modern Standard Arabic	أَنَا أُحِبُّ القِرَاءَةَ كَثِيرًا ʾana ʾuḥibbu‿l-qirāʾata kaṯīrā ʔana: ʔuħib:u‿lqiraːʔata kaθiːraː	عِنْدَمَا ذَهَبْتُ إِلَى المَكْتَبَة ʿindamā ḏahabtu ʾila‿l-maktabah ʕindama: ðahabtu ʔila‿lmaktabah	لَمْ أَجِد سِوَى هٰذَا الكِتَابِ القَدِيم lam ʾaǧid siwā hāḏa‿l-kitābi‿l-qadīm lam ʔaʤid siwa: haːða‿lkitaː bi‿lqadiːm	كُنْتُ أُرِيدُ أَنْ أَقْرَأَ كِتَابًا عَن تَارِيخِ المَرأَةِ فِي فَرَنسَا kuntu ʾurīdu an ʾaqraʾa kitāban ʿan tārīḫi‿l-marʾati fī faransā kuntu ʔuriːdu ʔan ʔaqraʔa kitaːban ʕan taːriːχi‿lmarʔati fiː faransaː
Maltese	jien inħobb naqra ħafna	meta mort il-librerija	sibt biss dan il-ktieb il-qadim	ridt naqra ktieb dwar il-ġrajja tan-nisa fi Franza.
Tunisian (Tunis)	nḥəbb năqṛa baṛʃa	wăqtəlli mʃit l-əl-măktba	ma-lqīt kān ha-lə-ktēb lə-qdīm	kənt nḥəbb năqṛa ktēb ʕla tērīḵ lə-mṛa fi fṛānsa
Algerian (Algiers)	ʔāna nḥəbb nəqṛa b-ez-zaf	ki rŭht l-əl-măktaba	ma-lqīt ḡīr hād lə-ktāb lə-qdīm	kŭnt ḥayəb nəqṛa ktāb ʕla t-tārīḵ təʕ lə-mṛa fi fṛānsa
Moroccan (Casablanca)	ʔāna kanebɣi naqra b-ez-zāf	melli mʃīt el-maktaba	ma-lqīt ḡīr hād le-ktāb le-qdīm	kunt bāḡi naqra ktāb ʕla tārīḵ le-mra fe-fransa
Egyptian (Cairo)	ʔana baḥebb el-ʔerāya awi	lamma roḥt el-maktaba	ma-lʔet-ʃ ʔella l-ketāb el-ʔadīm da	kont ʕāyez ʔaʔra ketāb ʕan tarīḵ es-settāt fe faransa
Northern Jordanian (Irbid)	ʔana/ʔani kṯīr baḥebb il-qirāʔa	lamma ruḥt ʕal-mektebe	ma lagēteʃ ʔilla ha-l-ktāb l-gadīm	kān baddi ʔagra ktāb ʕan tārīḵ l-mara b-faransa
Jordanian (Amman)	ʔana ktīr baḥebb il-qirāʔa	lamma ruḥt ʕal-mektebe	ma lagēt ʔilla hal-ktāb l-gadīm	kan beddi ʔaqraʔ ktāb ʕan tārīḵ l-mara b-faransa
Lebanese (Beirut)	ʔana ktīr bḥebb l-ʔ(i)rēye	lamma reḥt ʕal-makt(a)be	ma l(a)ʔēt ʔilla ha-le-ktēb l-ʔ(a)dīm	kēn badde ʔeʔra ktēb ʕan tērīḵ l-mara b-f(a)ransa
Syrian (Damascus)	ʔana ktīr bḥebb l-ʔirēye	lamma reḥt ʕal-maktbe	ma lʔēt ʔilla ha-l-ktēb l-ʔdīm	kān biddi ʔra ktāb ʕan tārīḵ l-mara b-fransa

Variety	I love reading a lot.	When I went to the library,	I only found this old book.	I wanted to read a book about the history of women in France.
Gulf (Kuwait)	ʔāna wāyid ʔaḥibb il-qirāʾa	lamman riḥt il-maktaba	ma ligēt ʔilla ha-l-kitāb il-qadīm	kint ʔabī ʔagra kitāb ʕan tarīḵ il-ḥarīm b-faransa
Hejazi (Jeddah)	ʔana marra ʔaḥubb al-girāya	lamma ruḥt al-maktaba	ma ligīt ḡēr hāda l-kitāb al-gadīm	kunt ʔabḡa ʔagra kitāb ʕan tārīḵ al-ḥarīm fi faransa
Sanaani Arabic (Sanaa)	ʔana bajn ʔaḥibb el-gerāje gawi	ḥīn sert salā el-maktabe	ma legēt-ʃ ḏajje l-ketāb l-gadīm	kont aʃti ʔagra ketāb ʕan tarīḵ l-mare wasṭ farānsa
Mesopotamian (Baghdad)	ʔāni kulliš ʔaḥebb lu-qrāya	min reḥit lil-maktaba	ma ligēt ḡīr hāḏa l-ketab el-ʕatīg	redet ʔaqra ketāb ʕan tārīḵ l-imrayyāt eb-fransa

I have Modern Standard Arabic as the top, so that you can see how it is set up, this is the script, this is the, shall we say, Latin alphabet version of it, and then you have the IPA is the third. In the rest of the column is all IPA. You also see Maltese, Tunisian, Algerian, Casablanca-based Moroccan, Cairo-based Egyptian, northern Jordanian, Amman-based Jordanian, Beirut-based Lebanese, Damascene Syrian, Gulf Kuwaiti, Hejazi in Saudi Arabia, Sanaani Arabic from a different part of Arabian Peninsula, and then Baghdadi or Mesopotamian Arabic. There are lot of differences! Notice a few things:

- There's a case system that you see in Modern Standard Arabic, that may or may not exist in the other versions.
- You will also see word order changes; look at *I love reading a lot*, at the order of the second and third lexicon. Sometimes there's a fourth, by the way; if you look down this column, sometimes it's three and sometimes it's four, and there's a different order.
- Although you don't see it in here, there's a passive voice that is different; it's set up different in all these different regions.
- Some of these varieties of Colloquial Arabic have singular versus plural, and some have added a dual.
- There is a shift in the vowels.
- There are consonant cluster differences.

If you go back to the map, it kind of clusters; Realistically, you have six main regions.

- In northern Africa, this is called Maghrebi. There is more influence from the indigenous languages of that region, Berber in particular. You have also a little bit of Romance languages because notice it's right on the Mediterranean; it's going to have contact with Spanish, a little bit of Portuguese, it's going to have contact with French, especially given that in this region French is an official language. These were some of the last territories that France gave up, so the French connection is very strong. Because of that, you're going to have more borrowings, especially from French, but maybe even from Spanish or Italian. You also have Punic languages as an influence—that would be Phoenician, or more specifically Carthaginian—historically derived languages from those regions.
- Sudanese: you have more contact with Nubian languages from the Nilo-Nubian languages in particular. Sudanese and Chadian are the two main colloquial Arabics from that region, but there's some others.
- Egyptian Arabic: there's going to be more influence from Coptic languages and other Afro-Asiatic languages that are indigenous to that region.
- Mesopotamian: think Mesopotamia, the Tigris and Euphrates rivers. This area is going to have influence from the languages from eastern Turkey—some of them are Turkic and some of them are Anatolian, based off the Hittites—as well as influence from Iranian languages, especially Farsi. The Arabic spoken in Baghdad, for example, is going to be different than the Arabic spoken to the south.
- The Levant: This is frequently the area that we considered to be Israel, Lebanon, Syria, a bit of Jordan, and parts of the southern and central areas of Iraq. In those cases, you've got some Turkish and some Greek; that makes sense, historically. There is some

influence from the indigenous languages from that area. Aramaic comes in, so another Afro-Asiatic language that's historically been in that region for some time.

- Peninsular Arabic: The big obvious one would be Saudi Arabia as a country, but you've got a little bit of the southern edge of Iraq and of the eastern half of Jordan. The indigenous languages of the Arabian Peninsula filter in here.

What does this mean?

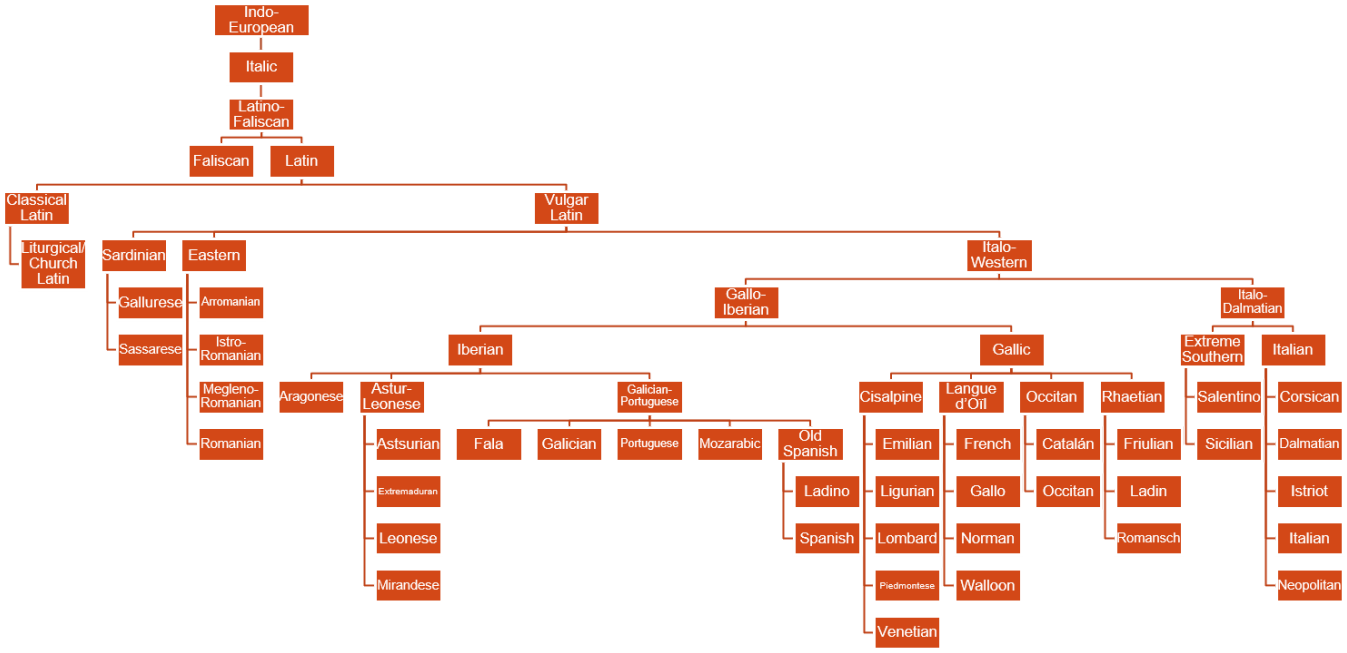
If you have somebody from Morocco trying to some talk to somebody from Syria, those are two different Arabics, and they can be radically different. In fact, Tunisian, Algerian, Moroccan, even Maltese, they're pretty close. Compare this to Lebanese or Syrian, which are both very different to the Maghrebi Arabics. There are entire combinations of sounds that you don't see in the other section.

Why bring this up?

Historically, folks like to think of Arabic as a monolithic concept that just has multiple dialects. Remember when we talked about a language versus a dialect, and we were talking about mutual intelligibility. I don't know about you, I certainly am not an expert in Arabic, I do not speak Arabic and anyway, I don't speak any Afro-Asiatic language…but I can look at these data, and I can compare and contrast. Even if I don't have the glosses, the morpheme, or lexicon-by-lexicon, morpheme-by-morpheme translation of what these concepts are, I can just see that Levantine is very different from Modern Standard Arabic, or from Maghrebi, or from Mesopotamian. I can use my eyes and ears, and see and hear that. This is not just in the minor intelligibility difficulties; this is not like saying, “It's kind of hard to hear and understand somebody from Australia or Scotland.” If they slow down and they speak clearly, we can understand them as Americans. But somebody from Casa Blanca in Morocco cannot necessarily understand somebody from Damascus, Syria. That's a question about mutual intelligibility.

What does this have to do with the Romance languages?

Here is the full Indo European tree.



Remember that when we're talking about the Romance family, we're talking about the languages that derived from Latin—Latin is not a Romance language, rather it's the parent of the Romance languages. If you take somebody from Madrid, Spain and you plop them into Rome, Italy, there are some things that are in common, but there's a lot that's different. Some of the sounds might be the same, but the some of the morphology isn't; the syntax might be generally the same, but there might be some differences. If you take that same person from Madrid and put them in Sardinia, now you got something totally different; Sardinian is a very distinct language. (Unfortunately, it is dying out; I wish it weren't, because it's a very beautiful language.) It encapsulates, it keeps so many of the archaic elements that we see in Vulgar Latin. Therefore, if you're going from Madrid, Spain, to Sardinia, that's really difficult, linguistically. If you take that same person from Madrid and put them into Paris, now you're talking big changes. Granted, most all of them are phonological, but there are morpho-syntactic changes there are semantic changes. You can't just go by the cognates, because sometimes they are radically different. Now, take that same person, and put them in to Bucharest, Romania. That is a radically different linguistic landscape, even more different than anything else they've heard before. Yes, these are all Romance languages and, believe it or not, if you can read one Romance language, you've got a pretty good idea of what's going to happen in the other Romance language. It may not be exact, but it's pretty good. I'm fluent in Spanish and Italian, and I speak a little bit of Portuguese. I can look at French and get 70% of what's there; I can look a Romanian and get about 65% of what's there. When French and Rumanian have been spoken to me, I get a chunk of it; some of it sounds familiar, but a lot of it doesn't.

Why is this a good comparison to Arabic?

Because it's a lot of the same concepts.

For the Romance languages, we have no problem at all saying that those are different languages, that the two dialects of Sardinian, Romanian, the various Spanish dialects, Italian and its various dialects, Galician, Portuguese, French, Romansch, on and on. We have no problem saying that those are different languages. Why can't we say that for Arabic? By the way, this is not just a European-minded person saying that; even within Arabic scholars, many of them refused to say that those are different languages.

Let me show you another way that we can say that those are different languages in Arabic. If we look at the history of the Romance languages, when we go from Latin to the Early Romance period—remember that Latin as a concept, even Vulgar Latin and Late Latin, more or less end with the fall of the Roman Empire. In total for the Romance languages, we have 2000 years of history. At the end of second century CE, or the end of the 100s CE, that's when we get Vulgar Latin turning into Common Latin. When we say Early Romance, we're talking around 850-900 CE; the fall of the Roman Empire is in the early sixth century, or the early 500s CE. That means that there are about 300 years where we have little bits and pieces, but not books, written in whatever the local languages are—not in Latin. This is the overall timeline for the Romance languages.

Notice the same timeline for the Arabic languages: Old Arabic is in the first century CE, and then Classical Arabic starts around third century CE, and then all the way through to the modernization, which is the 19th century. Pretty similar.

In the earliest of the Romance languages, we already started seeing a reduction in the case system, we see a fixed and changed word order. Although you could play with it, Latin was predominantly a subject-object-verb (SOV) word order; Romance languages early on fix that to SVO because they don't have case anymore. Guess what you see with Arabic? A reduction or loss of case system from Classical to Modern Arabic, and it changed word order. There is a more synthetic morpho-syntax for both groups. See where I’m going?

You have various changes semantically and morpho-semantically. This includes the loss of the middle voice, which is something I can explain in a different time. (If you have active voice and passive voice, Latin used to have a middle voice.) There is a loss of the neuter gender actually in vulgar Latin. There is a different passive construction from Classical Arabic to Modern Arabic, as well as a different number system. There are changes that reflect both the phonology, syntax, and the semantics. There are changes in deixis, different moods; we talked about the energetic that we saw in Modern Arabic, but in most Colloquial Arabics, so you don't have the energetic. The variations in lexicon, influence of the morpho-syntax, influence on the morpho-semantics, they all pattern the same way and across the same amount of time.

Again, I bring up this question: If we can say that the Early Romance languages started separating out and started individualized across 2000 years of history, why can’t we say that for Arabic and the Arabic languages, if you will?

I'll bring up one more point: This use of Classical Arabic and then later on Modern Standard Arabic, these all have to do with formal education and formal governments. The same is true with Latin; first it was Classical Latin and then what was called Late Latin or Medieval Latin. Those were used at very high levels, the educated highest educated people only. Common folks did not use this, and what we're seeing—certainly with Classical Arabic, but even with Modern Standard Arabic—in many places, people are eschewing the use of Modern Standard Arabic. They understand it; if they turn on the radio or TV, or if they pick up a paper, they understand it. But they do not speak it. This really is suggesting that these Colloquial Arabics are different languages.

When I say that linguists have to be objective, we have to pull back, we have to be descriptive of what we see and observe and hear, and we have to document it accordingly, this also means revising our definitions. There isn't an Arabic language. There are many Arabic languages. And this is just Arabic; there are many other languages that we could also revisit with this kind of observation and comparison. We can say, “Okay, we don't have one language; we have several.”

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CHAPTER OVERVIEW

9: Language Acquisition

Learning Objectives

When you've completed this chapter, you'll be able to:

- Identify children's typical language development milestones.
- Interpret data from various experimental methods to draw conclusions about children's mental grammar.
- Explain how development in signed language parallels that of spoken language in an accessible language environment.
- Discuss some of the benefits of acquiring more than one language.

This chapter looks at how children develop the various components of mental grammar: phonetics, phonology, morphology, syntax and semantics. As we'll see, children's minds are equipped to acquire grammar very quickly as long as they have other language users to observe.

9.1: Tiny, powerful language learners
9.2: Phonemic contrast
9.3: Language milestones in the first two years
9.4: Understanding word combinations
9.5: Growing up bilingual (or multilingual!)
9.6: Adults are not children
9.7: Gaining proficiency
9.8: Learning Phonetics and Phonotactics in a Later Language
9.9: Second Language Acquisition Teaching Methods
9.10: Exercise your linguistics skills
9.10.1: Exercise your linguistics skills

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9.1: Tiny, powerful language learners



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If you've ever taken care of a newborn, you'll know that they're so busy growing that they can't do much else. They can sleep, they can eat (as long as their food is in liquid form), they can pee and poop, and they can cry. That's pretty much it. When they're just born, they can't even really focus their eyes or control their limbs! But by the time they start school at age four or five, most of them can walk and run and jump, some can swim and ride bikes, and they can hold fairly sophisticated conversations with complex sentences and multi-syllable words. Here's an example of an utterance by one of my twins when they were about four and a half years old:

> *"Mummy, do you remember that time we made chocolate pudding? Maybe we could make some on Saturday. This Saturday, in the afternoon. I don't need to take a nap. Let's do it together, and maybe then we can eat some!"*

As awesome as my kids are, there's nothing remarkable about their language development. Every typically-developing child who has access to language will become fluent in the language (or languages!) used around them, mostly without explicit teaching. So how do kids' minds get from the newborn stage where the only sounds they make are crying and hiccuping to this stage of being able to bargain about naptime and kitchen projects? There must be an awful lot of learning that happens in those first few years. As we'll see in this chapter, that learning can start even before birth! In this chapter we take a look at some of the elements of grammatical knowledge that children acquire, and we ask what that tells us about mental grammar.

Children's rapid language development can look quite magical from the outside, but it results from immense brain activity in response to the language environment, also known as the ambient language, the language used by the family members, caregivers, adults and older children that a child spends time with. The baby brain tracks the patterns in the language environment and uses them to build up the child's own mental grammar. If the language environment is English, the child develops a mental grammar for English. And obviously, children in a Tamil-speaking environment develop a mental grammar for Tamil, children in a Mandarin-speaking environment develop a mental grammar for Mandarin, and so on. If the ambient language is American Sign Language (ASL), then the child will develop a mental grammar for ASL, regardless of whether they're deaf or hearing. If a child is in an environment where two or more languages are used, they'll develop mental grammars for both those languages.

9.1.0.1: The Language environment and oralist culture

There is one group of children who don't have access to the language environment. About 90-95% of babies who are born deaf or hard of hearing are born into families where the primary language modality is speech (Mitchell & Karchmer, 2004). In some cases,

families who learn that their child is deaf choose to start learning a sign language like ASL. If they use sign in their interactions with their child, then the baby has access to an ambient language in the visual modality and will develop a mental grammar from that input. But some families of deaf children choose not to use signed language, which means that their child does not get access to any ambient language: neither auditory nor visual. Why might a family make that decision? To answer that question, we need to talk a bit about **cochlear implants**.

A cochlear implant (CI) is an electronic prosthetic device that is implanted surgically. It takes sounds from the environment and converts them to electrical signals. Those signals then get transmitted to the brain via the auditory nerve (NIH NIDCD, 2021). In developed countries, it is very common for deaf children to receive a CI between ages one and three years. Even so, most kids with CIs still score well below hearing kids on standard tests of language proficiency, even when they've had the implant for several years – not because of any deficit in the children, but because the electrical signals from a cochlear implant are not a sufficient language environment for typical development (Mauldin, 2019). But in spite of this evidence, there's still a persistent stigma around sign languages and deafness, and many parents, teachers, and medical professionals consider it so important for children to "pass" in a hearing world that they don't offer access to signed language because they fear that it might interfere with the child's eventual acquisition of spoken language. Because of this belief that vocal language is better than sign language, known as **oralism**, many deaf children have no exposure to language before receiving a CI, and after implantation have access only to the atypical electrical signals produced by the device. This language **deprivation** leads to long-term impairments in social and cognitive function and, ironically, to lower scores on tests of vocal language comprehension (M. L. Hall et al., 2019; W. C. Hall, 2017; Humphries et al., 2016; Lillo-Martin & Henner, 2021). In contrast, when deaf children of hearing parents have access to ASL by age six months, their vocabulary develops at a comparable rate to deaf children of deaf signing parents (Caselli et al., 2021).

This evidence from deaf kids shows us just how vital the language environment is, and how important it is that children have access to an ambient language as early as possible. The neural connections that make up mental grammar can only form in response to language input from the environment. Without that input in the first year of life, it's much harder for the brain to build a mental grammar.

A note on notation. When we're talking about very young children, their age in months is often more relevant than their age in years. The convention in this literature is to use a semi-colon between the years and months of a child's age. So a child aged 1;6 is one year and six months old, or one-and-a-half.

9.1.0.1: Check your understanding

9.1.0.1: References

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11.2: When does language learning start?

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We saw earlier that early exposure to language input is super-important because the mind starts building a mental grammar from a very young age. Just how early does language learning start? For hearing babies, it can start even before birth! If we measure the heart rate of a fetus in the uterus, we find that the heart rate increases in response to external sounds at about the seven-month point in pregnancy, so we know that a fetus can hear outside noises even while it's still inside the uterus. Not only can fetuses hear, but they're also remembering some of what they hear: by eight months of pregnancy, a fetus's heart rate increases more in response to their pregnant parent's voice than to a stranger's voice (Kisilevsky et al., 2003). This means they've stored some memory of what their parent's voice sounds like.

Ok, so by looking at fetal heart rates we can conclude that hearing babies have already stored some auditory memories by the time they're born. But that doesn't necessarily mean they have any mental grammar, does it? How can we tell what newborns know about their language? After birth, there are so many more interesting stimuli in their world that measuring heart rate isn't as informative, but they certainly can't tell us what they know. What can we observe that would tell us something about mental grammar?

How to be a linguist: Observing High-Amplitude Sucking



Figure 11.1. A pacifier.

Babies can't do much, but one thing they're very good at is sucking. Using an instrument called a pressure transducer, which is connected to a pacifier, we can measure how powerfully they suck. When a baby is interested in something, like a sound that she's hearing, she starts to suck harder. If you keep playing that same sound, eventually she'll get bored and her sucking strength will decrease. When her sucking strength drops off, we say that the baby has **habituated** to the sound. But if you play a new sound, she gets interested again and starts sucking powerfully again. So we can observe if a baby notices the difference between two sounds by observing whether her sucking strength increases when you switch from one sound to the other.

Using this **high-amplitude sucking** habituation method, researchers have found that newborns whose parents speak French notice the difference between French and Russian sentences spoken by the same person (Mehler et al., 1988). The fact that these newborn infants are sensitive to this difference tells us that they must have some memory of the patterns of French, to be able to tell it apart from Russian. What could these babies with French parents have learned about French before they were born? A lot of the sound information they receive in the uterus is quite muffled, but what they do have access to is the **prosody**. The rhythmic pattern of French depends on syllables of similar length, while that of Russian depends on syllable stress. That prosodic rhythm is audible to a fetus in the uterus, so by the time they're born, babies can tell the difference between the rhythm they've heard before and an unfamiliar rhythm.

In fact, if the pregnant parent speaks more than one language, a newborn can even tell the difference between those two languages! In a high-amplitude sucking study in British Columbia, babies born to Thai-English bilingual parents noticed when the spoken language switched from English to Thai (Byers-Heinlein et al., 2010). This suggests that their minds are already starting to set up two different mental grammars for the two languages they'll be acquiring!

So even when they're just born, hearing babies have not only learned what their parent's voice sounds like, they've also already learned some of the **prosody** of the language (or languages!) spoken in their environment.

I also want us to remember, though, that language acquisition is not a race. In some cultures, parents like to believe that their child is "advanced" in some way: smarter or stronger than other babies. Even though this chapter talks about general patterns of acquisition, remember that there is huge variation across individual children, and learning something earlier isn't necessarily any advantage. The reason I mention that here is there's no evidence that a fetus that doesn't have access to speech sounds in utero, either because the fetus is deaf or the parent uses signed language, is disadvantaged in any way. As soon as they're exposed to language in a modality they can access, they start building their mental grammar.

9.1.0.1: Check your understanding

9.1.0.1: References

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9.2: Phonemic contrast



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There's another part of the mental grammar that hearing babies start to learn well before they can speak. Remember from a previous chapter that the phonology of each language is specific to that language: the patterns of which features and segments contrast with each other and which are simply allophones is different in each language of the world. So, for example, we know from that in English, aspirated [p^h] and unaspirated [p] are both allophones of a single phoneme. But in Thai, these two segments contrast with each other and are two different phonemes. The phonetic difference is the same, but how that difference is organized in the mental grammar is different in the two languages. Phoneme contrasts are a classic example of unconscious linguistic knowledge: in all likelihood, nobody ever had to teach you that [k] and [b] are different sounds and that the words *cat* and *bat* refer to two different animals! But if no one ever taught it to you, how did you learn it? How did the phonology of your first language come to be in your mental grammar? We saw one kind of habituation technique in the previous unit. Researchers use a different habituation method for slightly older babies.

How to be a linguist: Observing conditioned head turns This method works on the same kind of logic as the high-amplitude sucking method, but instead of measuring sucking strength, the researchers observe where the child looks. When the sound first starts to play from a speaker, the baby usually looks towards the speaker. Once they habituate to that sound, they get bored and look away. If the next sound that's played is the same as the first one, they stay habituated. But if the next sound is different and they notice the difference, they look back towards the speaker. So just like with the sucking method, if we observe that head-turn, we conclude that they noticed a difference between the two sounds.

Using this technique, linguists and psychologists have learned that babies are very good at noticing phonetic differences, and they can tell the difference between all kinds of different sounds from many different languages. But this ability changes within the first year of life. Janet Werker, at the University of British Columbia, looked at children and adults' ability to notice the phonetic difference between three different pairs of syllables: the English contrast /ba/ and /da/, the Hindi contrast between a retroflex stop /ʈa/ and a dental stop /t̪a/, and a Nłeʔkepmxcín contrast between glottalized velar /kʼi/ and uvular /qʼi/ stops (Werker & Tees, 1984). Each of these pairs differs in place of articulation, and within each language, each pair is contrastive. The researchers played a series of syllables and asked English-speaking adults to press a button when the syllables switched from one segment to the other. As you might expect, the English-speaking adults were perfect at the English contrast but did extremely poorly on the Hindi and Nłeʔkepmxcín contrasts.

Then Werker tested babies' ability to notice these three phonetic differences, using the head-turn method. These babies were growing up in monolingual English-speaking homes. At age six months, the English-learning babies were about 80-90% successful at noticing the differences in English, in Hindi and in Nłeʔkepmxcín. But by age ten months, their success rate had dropped to

about 50-60%, and by the time they were one year old, they were only about 10-20% successful at hearing the phonetic differences in Hindi and Nɬeʔkepmxcín. So these kids are only one year old, they've been hearing English spoken for only one year, and they're not even really speaking it themselves yet, but already their performance on this task is matching that of English-speaking adults. The difference between retroflex [ʈa] and dental [t̪a] is not contrastive in English, so the mental grammar of the English-learning baby has already categorized both those sounds as just unusual-sounding allophones of English alveolar /ta/. Likewise, the difference between a velar and a uvular stop, which is contrastive in Nɬeʔkepmxcín, is not meaningful in English, so the baby's mind has already learned to treat a uvular stop as an allophone of the velar stop, not as a separate phoneme.

The research on babies acquiring signed language came later, but it showed exactly the same pattern (Baker Palmer et al., 2012). Babies younger than six months noticed the difference between phonemically contrastive ASL handshapes even without any exposure to ASL, just like the babies without Hindi experience noticed the Hindi spoken contrast. By age 14 months, ASL-acquiring babies had retained their ability to recognize phonemically contrastive handshapes, but the English-learning babies without ASL experience had lost that sensitivity.

So for either sign language or vocal language, a child's mind has built up phoneme categories in their mental grammar by about age one, according to the contrasts that they have experience with in their language environment. One thing to note here is that this doesn't mean that it's impossible to learn new phonemic contrasts in a new language, but that later learning will be shaped by the learning that has happened in the first year. More on that in the next chapter!

9.2.0.1: Check your understanding

9.2.0.1: References

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9.2: Child Language Acquisition Theories

9.2.1: 9.2.1 Child Language Acquisition Theories, from Sarah Harmon



9.2.1.1: Video Script

When it comes to theories of how children learn their first language or languages, there has been an evolution in this area. We're going to start off with some very common and old theories of how languages are acquired by children, but we're also going to point out what's wrong with them and how we have evolved in our thinking. It's important to understand that this is an area we are still

trying to figure out; we don't have all the answers yet. We definitely are working with hypotheses and theories, but we don't know for sure. For reasons that are obvious, we don't fully understand how the brain works yet; we're still learning that too. Therefore, what we learn now could change—in fact, probably will change—over the course of your lifetime. It certainly has changed over the course of my lifetime.

To start off, let's talk about some theories that used to be very popular, and that used to be considered 'absolute truth'—as it turns out, it's not the case. These are all old and erroneous, in part, if not in whole.

The big discussion has always been on imitation versus reinforcement versus analogy. **Imitation** refers to the idea that children imitate language that they hear and just spit it back out. Well, yes and no; clearly, we have seen in data over the last 50 years that definitely there is something to the concept: children do hear things and they try to emulate it to the best of their ability. Think of the [fɪs, fɪʃ] scenario, think of [knopf, nop]; they were trying. But that is not the only way that they learn language, because otherwise they wouldn't make mistakes. **Reinforcement** is the theory that when you positively reinforce good behavior, the child will continue doing it, and that negative behavior is chastised or punished somehow. The problem with this theory is that children make all sorts of combinations with respect to their languages, and doubly so if they're in a multilingual environment. It doesn't matter how many times you tell a child that the plural of *foot* is not *foots* and that it's *feet*, because the child is not going to produce until some point in the future. Suffice it to say that it's not just the reinforcement; you can't just reward good language behavior and castigate bad language behavior; it doesn't have an effect. The same is true with **analogy**. Most people used to say that children acquired language and they built everything via analogy; they just made the same mistakes, and then learn to correct them at some point. Again, some of this is true; certainly, some of the errors that are frequently done by children with so called irregular forms in morphology and syntax could be examples of analogy. But there are plenty of examples where that doesn't happen. We come back to what seems to be the issue: analogy doesn't exactly describe most of what happens with respect to child language acquisition. **Conditioned response** is a little bit like reinforcement; it's the BF Skinner version of it. If you've taken psychology, you probably know what this concept is: a reaction to stimulus, reinforcing the positive while chastising or castigating the negative. Again, we know that doesn't work, let alone the ethical issues that come with conditioned responses examples.

We know that none of these explain what happens with respect to children as they learn their first language or languages. The question becomes: What do we know?

These are four theories and hypotheses that we have currently. While they may not cover everything with respect to child language acquisition, it does seem to be the case that they have a lot more in common than not.

The **Innateness Hypothesis** is the first one to talk about, both in general and chronologically. It's also the first one that tapped into Chomsky's Universal Grammar concept, the fact that we have this innate ability to speak a language, and that, so far, we have yet to observe the exact same thing in any other animal on the planet. I'm hedging that hugely for a reason; when we get to the next chapter and talk about animal communication, I'll explain a little bit more, but think about those hallmarks of language, because that's what the Innateness Hypothesis comes back to. It also refers to what we talked about with respect to topology, the fact that there are universals that we see, as well as strong tendencies and non-absolute universals. We see so many trends with respect to languages that are very common, if not ubiquitous, so clearly there's something there.

From the Innateness Hypothesis, we get these other three theories, and they are additions or specifications of this innateness concept, tapping into Universal Grammar and this facility that we have with respect to language.

Active Construction of Grammar Theory is a theory that children actively invent rules as they go along. In other words, they observe and absorb language; they actively and subconsciously create patterns. They think they see and/or hear a pattern, and then they build upon it. It's mostly based off the observation of how children imitate the other children that they're around—not imitating the adults. By the way, this is connected to creolization because, again, we get this concept of peers helping each other out. There have been numerous studies with respect to how children pick up new terms, and most of the time it's not from their adult caregivers. Most of the time is from other children—sometimes siblings or cousins, maybe in the school or daycare situation. It's as if they're taking an input subconsciously, analyzing it subconsciously, hypothesizing what the rule will be, and then apply that to the mental lexicon. We do not have clear evidence of this, like we can't analyze the brain to see that happening. But we definitely do notice that this is part of how children acquire new terminology and new phrasing; they get it mostly from peers. It certainly explains overgeneralization patterns, but frequently people chalked that up to analogy. If you have a child learning a given language—I'll just say English—and they are not around other children, there is a tendency for there to be a slowing of that acquisition. But the more children they're around, the more they acquire and the quicker they acquire it. That being said, it's really hard to observe this actually happening in the brain; this is just based on observation of children in a lab setting and in social settings.

Connectionist Theory is the fact that children learn by creating neural connections and that this is based off of exposure to a variety of stimuli. In this case, that stimulates the new language, and so they basically learn these associations and they build from there—they're making connections. We see this in how they acquire other skills, whether it's walking and moving and motor skills to building with blocks to building a sand castle or anything like that we see them do this with other skills and the thought is okay, maybe they do this with language. There seems to be again some evidence of this; it taps into this overgeneralization aspect, the fact that children are making connections based off of prior knowledge or input or stimulus. That being said, again we have the same problem with active construction, which is we can't observe what's going on between the ears, as it were. It's hard to do that, so we don't really know that that's the case. But we suspect there's something to that.

The last one is **Social Interaction Theory**, which is in some ways a combination of both of the previous two. It's the concept that children acquire language through social interaction; the more they're around peers, in particular—but in this case, you also include the adults—they have more input and they're making more connections. That social interaction also feeds their desire to want to speak more and to communicate in ways that are clear. There's something to be said for this as well, and in a number of cultures, especially European and American cultures, but even in parts of Asia and parts of Africa, we do see that adults will slow down or simplify their language so that it is more comprehensible. The child can interact more because they're not overly intimidated by all these people going a mile a minute with complex phraseology and lexicon. There's something to that, because when you are including people in a dialogue, you want there to be a communication, not just of ideas, but the feeling that you can communicate with me, because I understand you (or want to understand you) and you want to understand me. We slow things down for children, and that's why children can learn from other children a little bit better. Again, we have that same problem of how do you measure that.

There's also the other interesting piece, and I'll use one of my nephews as an example, my older nephew who's now eight. He is fascinated by big words, and has been his entire linguistic life, even as a four-year-old. He did not want to hear so called 'child language' or 'baby language'; he wanted big words. He loved it when Auntie Sarah would start talking; several times, unbeknownst to some of my students, would be sitting here in my room, as I did my online lectures for linguistics, because he wanted to hear the big words. He tried to use the big words—he still tries to use the big words—but it doesn't always work. Now, as an eight-year-old, he's getting stronger with his reading, and he wants the books with big words in them; he wants to try and read them. There seems to be something with respect to this Social Interaction Theory; if you have a child around adults and children, they're going to want to interact with both at as close to level as possible. All three of those theories are built upon the Innateness Hypothesis.

We don't know for sure, and it will probably be some time before we really can understand, how the brain works, especially with children. But there are certain things that we can observe, and that'll be in the next section, when we talk about the different stages of language acquisition. There is plenty that we can observe just by watching, but hopefully someday we can crack this thing and really get to it.



11.4: Early language production

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Figure 11.2. Crying Babies.

We saw in the previous unit that babies are already learning a lot about their language even before they can talk. If they're learning so much so fast, why don't they talk right away? When babies are just born, their bodies just aren't ready yet. Newborns can certainly cry, which uses the lungs and the vocal tract. But a newborn's larynx is higher in the vocal tract than an adult's: it starts lowering around age six months. And newborns just aren't very good at controlling their bodies yet! It takes them a few months to begin to learn how to move their articulators. They begin to gain control of their fingers, hands and forearms first, and their ability to control their jaw, tongue and lips comes a bit later. So in those first few months after birth, their hand movements and vocal productions are kind of random: mostly wiggling and gurgling.

9.2.1.1: Babbling

Once babies start to get their bodies organized, their productions tell us that their mental grammars are starting to get organized, too. Starting around age six months, the sounds babies make begin to have some syllable structure. They start to produce reduplicated consonant-vowel syllables. Usually the vowel in these syllables is the low [a] made with the jaw fully open, and the consonants are usually voiced stops. Why voiced stops? They're still learning to control their vocal tract, so it's easier to alternate between fully open for vowels and fully obstructed for stops than to produce the consonants with partial obstruction like fricatives or approximants. Same thing for the voicing: if they just keep the vocal folds vibrating for vowels and voiced consonants, it's easier than alternating between voiced vowels and voiceless consonants. So the classic baby babbling sound, which linguists call **canonical babbling**, is [babababa] or [dadadada]. As they continue to grow and gain control of their muscles, they start to vary the vowels and consonants, and their babbles might sound more like [badibadi] or [ɡudaɡuda].

Vocal babbling starts at about age six months for both hearing and deaf babies, but deaf babies gradually produce less vocal babbling as they continue to grow. When the language environment is a signed language, babies start to babble using their hands. Both hearing and deaf babies who grow up with sign as an ambient language produce reduplicated syllables using handshapes from the language environment (Petitto et al., 2004; Petitto & Marentette, 1991). Sign-acquiring babies' first productions more often use the **proximal** articulators (the ones closer to the torso, like the elbows and wrists) than the **distal** ones (the articulators farther from the torso like fingers and knuckles) (Chen Pichler, 2012).

So we have some evidence that babbling isn't just random sounds: whether the language environment is vocal or sign, babies start to produce forms that are organized similarly to the language in the environment:

- Their babbles are made up of repeated patterns that have the structure of syllables.
- They alternate between handshape and path movement or between a closed and open vocal tract.
- Their babbles use a subset of the segments/handshapes that appear in the language environment.

So when you see or hear a baby babbling, it might look or sound like random nonsense, but what they're really doing is exercising their mental grammar!

9.2.1.1: First Words



Figure 11.3. Baby Bottle.



Figure 11.4. Balls.

When babies babble, they're practicing making the forms, that is, the signs or sounds of the language they're acquiring. Remember that a word links a form with a meaning. So how can we tell if a child who produces a form has a meaning linked to that form? In other words, how can we tell if they're babbling or producing words? We have to look at the context. If an English-acquiring child says [baba] when they're reaching for their bottle or for a ball then they're probably using that form to refer, so it counts as a word even though it doesn't have the same form that the adult word [bɑɹəl] or [bɑl] does. But if they're producing [baba] just for the fun of making the sounds, then their utterance is non-referential, – it doesn't have meaning, so it counts as babbling.

Babies acquiring sign languages often sign their first words at about age 0;8 or 0;9, while it's usually later than that for babies acquiring a spoken language, closer to age 1;0. This difference might be because babies develop muscle control of their hands and arms earlier than of their tongues and lips. It could also be because sign words more often have iconic forms than spoken words.

When children start to produce and understand words, the first words in their vocabulary are quite similar even when we compare across languages and modalities. Usually the first word meanings they acquire are for referring to things that are common and observable in the immediate environment, like names for their family members and pets, the word *baby*, and words for common objects like *milk*, *ball*, *shoe*. It's also common for their first words to include greetings like *hi* and *bye*, and other expressives like *uh-oh* and *no*. If there are verbs in their set of first words, the verbs are likely to refer to actions like *cry* or *eat*.



Figure 11.5. Pumpkin.

Of course, because one-year-olds don't have a lot of experience with the world yet, they often haven't got adult-like meanings in their mental grammar. For example, I know a toddler who saw a pumpkin for the first time and declared, "Apple!". If the child hasn't yet got a mental representation for pumpkins, gourds and squashes, they might well **overextend** the meaning of *apple* to include many other roundish fruits. It's also common for children's word meanings to be **underextended**, so, for example, the word *elephant* might refer to a particular stuffed animal but not to any other elephants, real ones or toy ones. In short, children develop meanings for words based on their experience of encountering the word in their environment.

Landau and Gleitman (1985) provide some very interesting examples of how children's word meanings are shaped by their experience of the environment, from their research comparing blind children to sighted children. You might guess that a blind child doesn't really have a concept for the verb *look*, since they can't see, but that's not actually the case. In one experiment, the researchers asked children to "look up!". Sighted kids tilted their heads to face the ceiling, even if they were wearing a blindfold. But when they asked a blind child, whom they called Kelli, to "look up", she kept facing forward and put her hands up toward the ceiling! So does that mean that Kelli's meaning for the verb *look* is the same as for the verb *touch*? In the next experiment, the researchers put an object in front of Kelli and said, "You can touch this but don't look at it." She tapped or stroked the object, and then once they told her, "Now you can look at it", she ran her hands all over the object to explore it. So just like sighted children, Kelli's mental grammar had two distinct meanings for the two verbs *look* and *touch*. It's just that her meaning for the verb *look* was different from that of sighted children, since her experience of the world was different.

9.2.1.1: Check your understanding

9.2.1.1: References

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11.5: The Language environment and the so-called word gap

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We've seen all kinds of examples of how important the language environment is for young language learners. Hearing babies start learning the patterns of speech sounds from the environment even before they're born, and deaf babies start learning the patterns of sign language as soon as they get access to it in their environment. On a really simple, obvious level, the particular language that children acquire depends on the language that is in the environment. So it makes sense to wonder whether, for kids who are acquiring the same language, differences in their environments make a difference to their language development.

In the 1990s, Hart & Risley (1995) compared the English-language environments of American kids from different socioeconomic and racial groups, and reported what their book calls "staggering contrasts" between rich and poor families. The most-often quoted finding from their very influential study is the claim that, by the time they're three years old, children in poor families have heard thirty million fewer words than children in middle-class and affluent families. That phrase, the "30 million word gap", is used all over the place, and has led to all kinds of policy decisions and interventions to try to bridge the gap. There's been more research on the factors that lead to disparities in school performance, and more investment in early childhood education programs for low-income families.

But that catchy phrase has also led to a lot of stigma for low-income parents, since it seems to blame them for not talking to their kids enough. (Figueroa, to appear) Calling their reported difference a "gap" reinforces the stereotype of a neglectful parent who ignores their kids and lets them watch tv all day. And a closer look at Hart & Risley's data reveals that what they called a gap might be just a side effect of they way they counted words. In 2018, Sperry and colleagues (Sperry, Sperry & Miller, 2018) conducted a followup to Hart & Risley's study, but they used a different way of counting.

The 1995 analysis only counted words that were spoken by the mother directly to the child. They didn't count words spoken to the child by anyone else, and they didn't count words from conversations that happened nearby but weren't directed at the child. In other words, they used a measure for number-of-words that favours the way that white, middle-class, stay-at-home moms interact with their children. The other factor in their so-called 30-million word gap is that the affluent families they had studied were largely white, while the poor families were almost entirely Black. So in addition to income differences, there would also have been cultural and linguistic differences in the ways adults interact with children, which the analysis didn't account for.

In contrast, the authors of 2018 study argued that children can learn from language they overhear in the environment, not just from what adults speak directly to them, so they included more measures in their analysis. When they counted using the 1995 measure, that is, speech by the primary caregiver to the child, the 2018 researchers found no clear pattern that depended on socioeconomic status. And when they counted speech by all caregivers to the child – parents, grandparents, older siblings, aunties and uncles – they found that the households with the greatest number of words per hour were the poor Black families. The same was true when they considered all the language used in the environment, not just what was directed at the child. Here's what the researchers say about their findings:

> *"Not only did the Word Gap disappear, but also some poor and working-class communities showed an advantage in the number of words children heard, compared with middle-class communities. Our study also revealed a great deal of variation among communities within each socioeconomic stratum." (Sperry et al., 2018, p. 11)*

That last point is important: there's a ton of variation in how parents interact with their children. A recent meta-analysis (Anderson et al., 2021) found that the nature of the language environment does indeed play a big role in children's language development, but concluded that socioeconomic status was not a good predictor of what that language environment is like. In other words, whether you're rich or poor doesn't affect how much you talk to your kids!

This "word gap" controversy is a classic example of how scientists, including language scientists, can reach biased conclusions from supposedly objective quantitative measurements. Both studies used what seems like a pretty objective measure: the number of words spoken per hour. But the choice of whose words to count led the two research teams to quite different findings. So even the decision of what to measure is not purely objective. The other issue here is that, if you're interested in researching the language environment, the number of words spoken per hour is maybe not the most important thing to observe. Language use isn't just about quantity, where more is better. Language is used in conversations, in relationships within communities that have specific cultural practices and expectations. So if we want to get a picture of the factors that support children's language development, it's a good idea to consider those complex relationships and communities too.

9.2.1.1: Check your understanding

9.2.1.1: References

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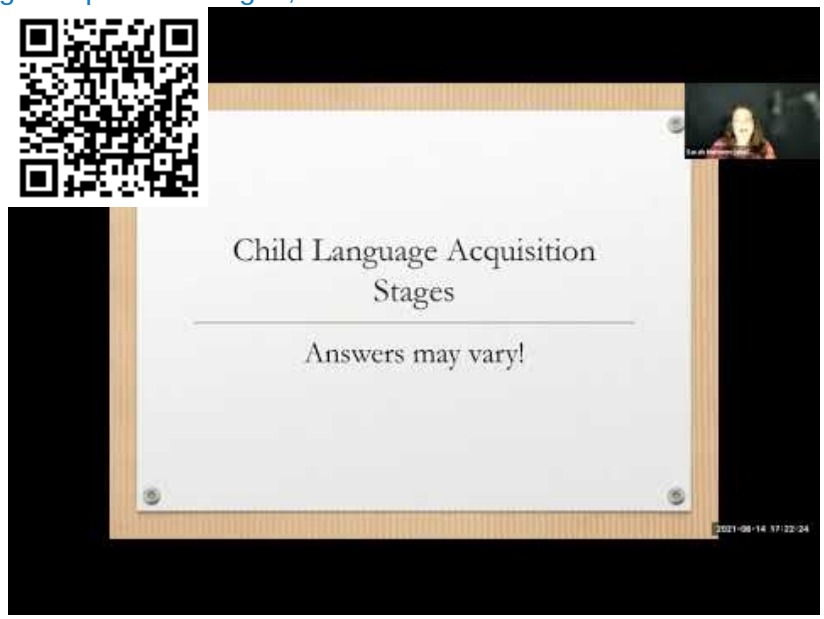
9.3: Language milestones in the first two years

This table summarizes some of the typical language development milestones that children reach in the first two years of life. Remember, though, that language learning is not a race! Children vary immensely from each other, and with appropriate access to other humans using language, nearly every child will develop a mental grammar in due time.

Age	Babies can…
Before birth	respond differently to pregnant parent's voice than other voices (hearing fetuses only).
0;0	respond differently to prosody of pregnant parent's spoken language than to other language (hearing infants only).
0;6	notice differences in handshapes (sighted infants only) and speech segments (hearing infants only).
0;6	begin to produce rhythmic babbling with syllable structure.
0;9	produce first words (sign-acquiring babies).
1;0	categorize phonetically different segments into phoneme categories of the ambient language.
1;0	understand meanings of about ten common words.
1;0	produce first words (speech-acquiring babies).
1;2	interpret novel words differently depending on syntactic category.
1;3	assign compositional meaning depending on syntactic structure.
1;6	produce utterances of two or three words.
1;6	understand meanings of about 50 words.
2;0	interpret meanings for novel verbs depending on syntactic frames.
2;0	ask questions.

9.3: Child Language Acquisitions Stages

9.3.1: Child Language Acquisition Stages, from Sarah Harmon



9.3.1.1: Video Script

We're going to go into the stages of child language acquisition. This is based off of about 50 years' worth of data collection, observation, trials, and studies—all ethically above board. That means that at no point was a child was kept in a room, was never talked to, and then we observed how they developed. That has never happened; no one has done that. Ethically, as a researcher, at least to my knowledge. Rather, this is based off of observation. When we bring a child into observation for language acquisition and other aspects of child development, we see them in a lab. We see them play with each other; we give them specific stimuli and we record what they do with it. That being said, know that everything I'm going to cover in this section has an important caveat: Answers may vary. We're going to talk about these stages with respect to certain ages, but understand that answers may vary. No two children will hit the same milestones in the same way, including within a family. I'll use my two nephews as an example; my older nephew is currently eight-years-old and my younger nephew is coming up on six. The two of them developed very differently with respect to language. The older child was running a mile a minute with respect to the language. This kid could talk in complex sentences by the time he was three and a half; when he started kindergarten, verbally he was leaps and bounds ahead of his classmates. Reading for him came a little bit later, but the speaking-wise, he was out the door and running. My younger nephew wasn't the same; in part, it had to do with certain issues with his hearing and with congestion and allergies. As a result, the hearing in his left ear is mildly compromised. Also, he just has a more introverted, shy nature. If he knows you, he will talk to you, quite a bit. But with other folks, he won't talk with them, especially those outside the family. His linguistic development was slower than that of his brother. That's just two personalities, two children.

Answers may vary. Got it?

Let's start off with the **initial stage**, which is pretty much right after birth, the first couple months. We're talking about **babbling**, the first sounds that an infant makes: cooing, crying, laughing, etc. If you've been around infants, you know that set of sounds. If you are a new parent, you're still learning how to differentiate the different cries, that they mean different things; those who are experienced parents or experienced caregivers recognized the differences more readily. In the first few months of life, infants are reacting to stimuli, of all things, not just language. They're reacting in different ways; there is that magic when you see an infant start to smile, especially when they hear the voice of their regular caregivers; they start cooing and laughing when they're around those folks. It is really amazing to hear and watch. What is interesting is that in the first few months, they just react to everything. That makes sense because they're literally brand new; they're still trying to figure things out.

Somewhere around the six-month mark is when things start to change—this is true with respect to all aspects of development, but in this case, we'll focus on language. Those of you who are around young children and infants, you know that right around six months is when the motor skills start coming into effect: they're starting to hold their head up better, if not completely; they're starting to get this concept of grasping when they want to, not just as a reaction to something hitting their palm. With respect to language, the first aspects of language start to take hold. They're starting to respond to language sounds that they're around regularly. We know this because we we've put infants into rooms with their mother or father or other caregiver, and said caregiver talks in whatever language or languages that are common, and at right around six months the infant is going to start receiving and focusing on those sounds, more so than sounds that are not part of the language at all. We've documented this both with man-made sounds, as far as like machinery, and nature sounds, along with other language sounds. It's really interesting to see this.

I did a minor version of this experiment with my older nephew when he was that young; I would routinely either talk in English to him or Spanish or Italian; my brother and my sister-in-law only speak English and they don't interact much with other languages. Because they saw me work with him and how he would start to react when I spoke in Spanish or Italian, they started exposing him to other languages, both on TV and then in life. This kid, while not multilingual in any sense, constantly wants me to teach him new Spanish and new Italian words. The lingual bug that I put into him at that early stage has stayed with him.

It is also interesting to point out that we even see this in deaf children. This means that it's not just because of what they're hearing, that deaf children right around that six-month point are starting to emit sounds; they are putting things together. How they're doing this, we're still not sure. But we do know that they're trying to make sounds, even if they are in an environment where they cannot hear. The other part of that discussion is CODAs, or Children of Deaf Adults. They do the same thing, even if they are hearing. If one or both of their caregivers is deaf, then primary sign language is going to be used, but the child will also start trying to speak at that six-month mark, and have some of the same patterns that a normal scenario would also include. It's really interesting to see how this plays out.

From here let's talk about the **holophrastic stage**, when we're talking about one word phrasing. That means that one word carries an entire phrase. There is lots of repetition. This stage is right around the one-year mark; if you've been around a one-year-old, you know what I'm talking about. This thing is a bottle, and think of a one-year-old's version of it, probably something close to [baw]

or [baba]. Intonation plays a heavy role, so “[bába]!” (😄) is a different phrase than “[bába]?” (🤔) and different than “[bàba]” (😞). Those are three different phrasings for that child based off of what they're trying to communicate; “[bába]!” ( ) could be something like ‘I want my bottle!’ or ‘where is my bottle?!’, kind of emphatic. “[bába]?” (🤔) is questioning, and might mean ‘where is my bottle?’, ‘is that my bottle?’, something along those lines. “[bàba]” (😞) with the down intonation might imply something like ‘I don't have my bottle’ or ‘I kind of wanted, but I don't know where it is’ or ‘my bottle is empty’. There's usually a lot of gesturing along with holophrastic phrasing. It's not surprising that around this age is where we get the most use out of baby signs, which are home sign languages. This is around the one-year mark, and it doesn't stop at one year; it's a continuum.

From here, we go to the **two-word stage**; we're talking 18 months to two years, somewhere in there. It could be earlier or later; again, my older nephew was out of the two-word stage definitely by two, but my younger nephew continued on into almost three-years of age; different child, different setup. When we're talking about this two-word stage, **pivot words** are crucial; they're the structure upon which the entire phrase pivots. They have a lot of roles, and frequently involved adpositions (preposition in English). Think of phrases like *allgone*: *allgone shoe; allgone milk*, *allgone lettuce*, *allgone outside*. It can mean anything, so *all gone* is the pivot word and then whatever is with it is ‘gone’ or ‘over. Another example is *on*: *blanket on*, *fix on*, *bandage on*, *shoe on*. It may actually work—*shoe on* works, *all gone milk* works—but sometimes it might take a mental leap. For example, *fix on* may not seem like it will work, except what the child is probably saying is, ‘can you fix this’, ‘can you fix this’. Pivot words are crucial, and can range from a few to hundreds. They are frequently saying more than two words, however, the main structure is usually 2-3 words at most.

There was a reason studying about three four years ago, out of the University of Toronto at Mississauga, where Elizabeth Johnson (the main researcher for this project) was looking at 30- to 36-year-olds. They were recognizing adult speech, even when none of their family members were there. This means that they were picking up this concept of by the age of two; they're picking up language from all over. What is really important is that, when they were around other toddlers, if the toddler did not use the same pivot structure, they didn't understand. Let's create an example with ‘Jackie’ and ‘Tracy’. They are with each other in a room. If Jackie uses *allgone* as a pivot, but the Tracy does not, those two children may not always communicate with one another.

Once we get to the two- to three-year range is when we start getting phrases. They are not usually super complex but somewhere in the two- to five-word range. You start to get more syntax and more morphology This is where the creation of different derivations comes into play, where we have correct versions and sometimes incorrect versions. The version I love his *foot* versus *foots* versus *feet* versus *feets*. Every child has some version of that—by the way, not just in English, but this occurs in all languages. The toddlers are going to have more **telegraphic speech,** which is when there is very basic nouns, verbs, and adjectives. They won't have very much else; maybe prepositions sometimes, certain basic prepositions like *on* or *off*. However, they don’t produce embedded clauses or complex derivation. They do produce inflection at a basic level, and it gets better with time.

Speaking of inflection, while English is not a very good example of this, in other Indo-European languages, Niger-Congo languages, and languages around the world, at this telegraphic speech point, the main content words are there. You do get inflection for number—singular versus plural definitely, and if there's a dual sometimes that comes in—and grammatical gender marking, that definitely starts coming into use. Case marking comes later, but it does come. It comes in stages, not all at once. If you have a child, trying to learn Japanese as its first language, that child will produce case marketing eventually, but they will accurately produce plural marking much sooner.

Again, answers may vary. When we talk about these stages, answers may vary; what one child does may not hold true for the other child. These are tendencies, especially the more we understand about autism spectrum disorder and other abilities and issues, we can start diagnosing even in young children. Language production is a part of that diagnosis; we'll come back to that in the next chapter when we talk about the neural processing of language. One of the areas that new parents in particular start freaking out on is whether their child has hit a given benchmark, and language is a really big one, for a number of reasons, and many of them are valid reasons and concerns. I always tell parents who asked about these stages and whether their child is hitting the benchmark, or when they’re worried that their child is behind the benchmark or below the benchmark, I keep reminding parents: Answers may vary. Every child is different, and the more you are around young children, and you see their development, you understand that this is at an individual pace. Every child is going to be different. Even within one family, every child is going to be different; just because at two years of age, your child is still only doing one or two words, at a time does not mean that the child has something wrong. Just give it a little more time; have the child be around more people, both of their own age as well as in general. They will catch on.

Answers may vary.

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9.4: Understanding word combinations



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We've seen that babies start to learn the phonology of their first language very early — as soon as they're born and maybe even earlier than that! And they're starting to learn some lexical semantics before their first birthday. What about syntax? What do babies and young children know about the syntax components of their grammar? And how can we tell? We know that children start to speak or sign their first word around twelve months, and they start to combine two or more words around eighteen to twenty-four months. But if you've ever spent any time with young children, you know that they can understand a lot more than they can say! Their comprehension is often much more advanced than their ability to produce spoken or signed words. But comprehension is much harder to observe. How can we tell what babies and toddlers understand about language?

How to be a linguist: Observing Preferential Looking

One simple technique is called preferential looking. In this kind of experiment, researchers use a large screen or television. The baby or toddler sits strapped into a booster seat, facing the screen. The screen is split so that two different pictures appear, one on each side of the screen. While the pictures or are on the screen, a recorded voice speaks a sentence, maybe something like, "Look! Can you find the bear?" The idea is that if the baby understands the word *bear*, they're going to look at the picture of the bear, not the picture of the bus. The researchers keep track of the direction of the baby's head-turn, or they use eye-tracking to measure the baby's eye movements. This kind of experiment has shown that babies pretty reliably look at the named object by about ten months, and even as young as six months, they're looking at the named object more often than chance would predict. So at the age of six months, babies are already beginning to link up word forms with their meanings.

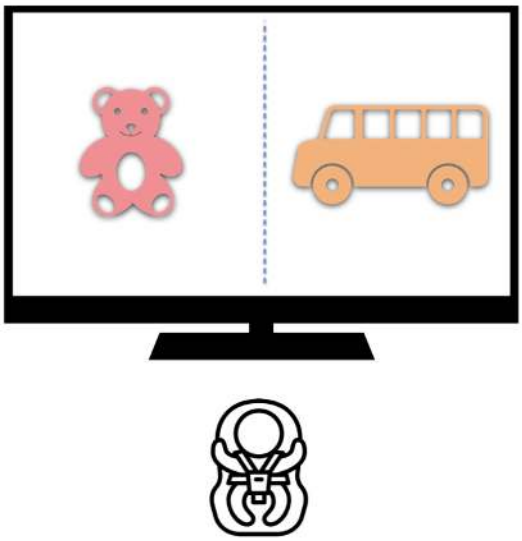


Figure 11.6. Preferential Looking.

We can use this technique to figure out what kids know about syntax if we use the split screen to display two similar scenes instead of pictures of a single items. I've just put a simple picture here, but researchers often use short videos. The two scenes involve the same participants, but in different configurations. In the images here, the one on the left shows the adult chasing the kid, while on the right the kid is chasing the adult. The recorded sentence that plays, "Look! The kid is chasing the woman!" matches only one of the scenes. So if children look towards the matching scene, does that mean they know something about syntax? Or are they just paying attention to the word meanings?



Figure 11.7. Preferential Looking.

Do you remember the idea of compositionality? It says that syntax matters for sentence meanings — the meaning of a sentence comes not just from adding together the meanings of the words, but also from the way those words are combined, that is, from the syntax. As adults, we know that the sentence, “the kid is chasing the woman” can only mean this one, the one on the right. But if kids were understanding the sentence just by paying attention to the meanings of the words, well both scenes would be plausible: after all, both scenes show a kid, both scenes show a chasing event, and both scenes show a woman. It turns out, though, that children as young as 15 months, just a little over one year, look more often towards the correct image or video (Hirsh-Pasek & Golinkoff, 1996). That suggests that they’re not just adding together the meanings of the words in the sentence, but that they’re also sensitive to the way those words are combined, to the syntax, because that’s what distinguishes the kid chasing the woman from the woman chasing the kid. So kids who are just a little older than twelve months are already sensitive to syntactic constituent structure and its relation to meaning.

What else do young children know about syntax? Some experiments with young children don’t involve screens, but actual toy items. In this experiment (Booth & Waxman, 2003), researchers introduced 14-month-old children to novel, made-up words, that the children would not already be familiar with. The experimenter presented small toys to the child and said, “These are blickets. This one is a blicket and this one is a blicket.” So the child has a couple examples of what a blicket is. Then the experimenter presents two new toys, one of which is from the same category as the earlier ones — in this case, the category of animals — but in a different colour, and the other of which is the same colour, but from a different category.

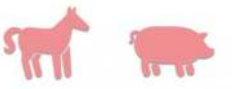


Figure 11.8a. Blickets.



Figure 11.8b. More blickets.

When the experimenter says, “Can you give me the blicket?“, if the child reaches for the new toy of the same category, that tells us they’ve figured that *blicket* means animal. But if they reach for the same colour, they’ve concluded that *blicket* means pink thing. The 14-month-olds reached for the new animal of a different colour more often than they reached for the toy that matched in colour. But the pattern was reversed for children who heard a different syntactic frame. If the toys had been introduced with the new word in an adjective position, “These are blickish. This one is blickish and this one is blickish,” then when the experimenter asked, “Can you give me the blickish one?”, the children were much more likely to choose the one that matched in colour. These results indicate that when one-year-olds hear a new word in a noun position, they conclude that it has a noun-like meaning, and refers to a thing or a category of things. But if it’s in adjective position, then its meaning is probably something more like an attribute or property. In short, one-year-olds seem to be sensitive to the differences between syntactic categories.

There’s so much learning happening in that second year. Kids are learning new words very rapidly, and learning how words pattern in the morphological and syntactic behaviour. In fact, by the time they turn two, kids are sensitive to verb **arguments** and **subcategories** too! In another split-screen experiment (Arunachalam & Waxman, 2010), when experimenters presented the novel verb *mooping* in a transitive frame, like “The lady is mooping my brother,” then two-year-olds looked more often to the scene where one participant is doing something to the other, like pushing. But when the novel verb appeared in an intransitive frame, like “The lady and my brother are mooping,” then the children looked more often to the scene where the two participants are doing the same activity together, like waving.



Figure 11.9. Possible meanings for ‘mooping’

This suggests that, by age two, children are sensitive not only to syntactic categories, but also to subcategories! So to go back to the question we started with, “What do kids know about syntax?” It turns out the answer is that, even before children start combining words to make phrases in their own speech or signing, they already know quite a lot about how words combine in the grammar.

9.4.0.1: Check your understanding

9.4.0.1: References

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11.7: Syntax in early utterances

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Beginning at about age 1;6 to 2;0, most children start to combine words into phrases of two or even three words. At this early stage, their utterances are usually telegraphic[1], containing mostly content words like nouns and verbs, with few function words and few inflectional morphemes. It can be hard to figure out whether these short utterances have any syntactic structure to them. Let's look at some of the evidence.

9.4.0.1: Syntactic Categories

Even children's first short sentences give us evidence that their mental grammar has already grouped words into syntactic categories. In a couple of large **corpus** studies of children's utterances (Cazden, 1968; Maratsos, 1982), researchers looked for examples where the children had used a word in a way that violated its syntactic category, for example, if they had used a noun as if it were a verb. In over 200 hours of recorded speech, the researchers found almost no examples of children producing syntactic category errors. Here are a few of the examples they found:

- Mummy trousers me.
- I'm crackering my soup.
- I want to comfortable you.



Figure 11.10. Crackers.

I suppose these sentences are technically "errors". The word *cracker* is a noun in English but the child in this example has used it as a verb. But the grammar of English often allows verbs to be derived from nouns. For example, *salt* is a noun but there's also a verb form *to salt*, which means to sprinkle salt onto something. So the child who uses the same process to derive the verb *crackering* from the noun *cracker* is maybe not really making a mistake, but is actually using their grammar generatively.

So the evidence from these and other large corpus studies shows that syntactic categories are quite robust in English-acquiring children's grammars, even in their early utterances. They rarely use words in positions that would be ungrammatical in adult English, and their few productions that aren't adult-like give evidence of generativity.

9.4.0.1: Asking Questions

Corpus data (Stromswold, 1995) show that English-acquiring children start to ask questions not long after they begin combining words in their utterances. Simple questions like, "Where kitty?" and "Who crying?" are common in children's speech, with the wh-word moved to the beginning of the sentence just like in adult English. *Why* questions show up a little later, but as any parent of a preschooler will tell you, the *why* stage feels like it lasts forever!

This kind of question is a little harder to observe in sign-acquiring children's productions because there are several different grammatical ways to form them, but a careful analysis found that children produced wh-questions as young as age 1;7 in ASL and in Brazilian Sign Language (LSB) (Lillo-Martin & de Quadros, 2006).

For simple structures that are frequent in children's language, corpora are valuable for providing a large volume of data. But what about more complex structures like embedded clauses and questions? You could record an awful lot of hours of kid speech without ever capturing an example of a question with an embedded clause, but that doesn't necessarily mean that these structures don't exist in kids' mental grammar.

How to be a linguist: Elicitation

Researchers sometimes use puppets and toys to elicit sentences of interest from children, that is, to encourage them to produce a particular kind of sentence. Often this involves asking the child to ask the puppet something. For example, in an experiment about embedded wh-questions, Rosalind Thornton had a bear puppet wearing a blindfold. While the bear was blindfolded, Thornton asked the child to choose small toys to hide inside a set of small boxes. Once each box contained one toy, she removed the bear's blindfold then asked the child to ask the bear to guess what was in each box. There are many different ways that children might form this question, but this elicitation context at least makes it likelier that they'll produce the wh-question of interest, whereas in a free play situation they're relatively unlikely to produce these complex questions.

Crain and Thornton (1991) were interested in whether children's grammars included questions where the wh-word originates was from an embedded clause, like these ones:

- Who do you think ___ will win the election?
- What did Lexi say she wanted ___ for lunch?

In these sentences, notice that the wh-word at the beginning of the sentence logically originates in a position inside the embedded clause: this becomes obvious if we compare the declarative versions of the sentences:

- You think someone will win the election.
- Lexi said she wanted something for lunch.

(If you need a refresher on how wh-questions are formed, look back at the Syntax chapter!)

Crain & Thornton used elicitation to try to get preschoolers aged three to five years to produce complex questions like these. The kids rarely produced adult-like examples questions, but their questions still revealed something interesting about their mental grammar. Some of the children in this study asked the bear puppet questions like these:

- Who do you think who wants to hug Grover?
- What do you think what's in that box?

While these preschoolers hadn't really mastered this complex structure, their utterances suggest that their mental grammar contains a structure that parallels that of adult grammar. They've moved the wh-word to the beginning of the question the way adults do, and they're also pronouncing that wh-word in its original position in the embedded clause.

9.4.0.1: Check your understanding

9.4.0.1: References

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StromswoId, K. (1995). The Acquisition of Subject and Object Wh-Questions. *Language Acquisition*, 4(1 & 2), 5–48.

1. Before the days of email, text messages, long-distance phone calls, if you needed to send an urgent message over a long distance you could send a telegram. You had to pay per word in the message, so you'd use as few words as possible. ↵

9.4: Child Language Acquisition Linguistics

9.4.1: Child Language Acquisition Linguistics, from Sarah Harmon



9.4.1.1: Video Script

Let's break down those stages of child language acquisition a little bit more, and specifically the patterns that we observed of how children learn their first language or languages. I keep phrasing it this way, because not all children grow up in a monolingual society; many children grow up in a at least a bilingual society, if not a multilingual society. What we can say is that, regardless of how many linguistic inputs they are receiving with respect to individual languages, we see the following patterns.

9.4.1.2: Phonology

With phonology, there is a progression on the sounds that children tend to learn first. Whatever the language or languages that they're learning, the progression tends to be the same. When we're talking about manner of articulation, nasal and glides are first, because there's the least amount of control needed to produce those sounds. You don't have to move your articulators so much. Then come stops, then liquids, then fricatives, then affricates.

Let's think about the very young children that you are around. If you think about how they talk at their youngest stages, the first words that they come up with all have lots of nasals, some glides and some stops. If it's a language that's heavy on the fricatives and affricates, those sounds aren't produced very early on. Think of the French-German example that we saw in very first section of this chapter; the child having the worst time with not one, but two different consonant clusters. One of the consonant clusters was an actual affricate, the [pf]; the [kn] is just a consonant cluster. In either case, the child couldn't do it, and simplified everything; he used a basic nasal and a basic stop in their places.

The same is true with place of articulation: labials and velars are the early sounds, and then the sounds in the middle come later, with more precision of the articulators. Palatals are universally the last sounds that the child acquires and articulate well.

I really want to focus on this articulation aspect, that it's the performance that comes late, not the competence. They understand and recognize those sounds, even as early as six months of age. However, producing the sounds that is a different story. The distinction of voiced versus voiceless is an articulation that comes pretty early. Children produce more voiced sounds to start off, and then voiceless sounds come a little bit later.

Think about early words that most children acquire, frequently having to do with mom or dad, because those are the folks that they're mostly around. Those sounds tend to have a lot of nasals and a lot of labials. There early errors in pronunciation, but they're always rule governed. Remember what we said about language change: it's always rule governed. Acquisition is no different.

There is a very strong tendency for children to simplify consonant clusters; we saw this with the French-German example, and you know plenty of other examples. The voicing of final consonants, not just with English, but in general, is also a strong tendency, and it makes sense. When we are trying to articulate the end of a lexicon, getting that pronunciation at the end is very crucial. The more consonants you have in the coda of the last syllable, the harder it gets to articulate them, and young children tend to chop off the end of the lexicon, and especially the last coda. There's always this consistent voicing of initial consonants and consonant harmony; again, creating patterns and using them in the production of the language.

We see these patterns and tendencies in language after language, in child after child; we see this both in monolingual and multilingual situations. For example, if you have a child who grows up in a bilingual house with bilingual parents, they're going to go through this process with both languages. Remember, competence before performance; we know these children, even at six months, are starting to differentiate the sounds of the language or languages around them. By one year of age, they understand the sounds of whatever languages are around them. They may not be able to produce the sounds correctly, but they understand and recognize them.

9.4.1.3: Morphology

With respect to morphology, there are some pretty basic changes that we observe. **Overgeneralization**—we've heard that one before. An example is the *foot*, *foots* or *feet*, *feets*, along those lines. We see this in pluralization and in all aspects of language; anytime there's any kind of irregularity—and every language has irregularity—then there's going to be some overgeneralization always.

We're still trying to understand why it is the case that children pick up and produce standard pluralization very quickly, whatever language. This is also true of other basic inflection and morpho-syntactic structures. Think back to syntax with respect to subject-verb agreement and the Linear Agreement Rule; that's something that's learned very quickly. The same is true with noun-adjective agreement; if the noun has a certain gender and/or number classification, and it gets inflected as well on the adjective, then that is learned very quickly. The basic derivational rules are also learned very early on; that's why children are able to overgeneralize, because they have learned the basic derivational rules.

One of my favorite activities to do with young children, even as young as two or three, once they start putting those two- to five-word sentences together, I have them tell me stories. I love hearing the combinations that they put together with respect to lexicon; they come up with the best ones.

9.4.1.4: Syntax, Semantics and Pragmatics

When we talk about syntax, semantics and pragmatics, let's be clear: syntax is kind of on one end of the learning spectrum, and semantics and pragmatics is the other. Basic syntax is learned pretty early on; as the child acquires more is able to produce more. But semantic elements are harder to measure. It's difficult to measure, outside of asking the child, “What does this?”, “What do you call this thing?” We can do that kind of lexical analysis as to how many words the child can produce, as well as how many they can understand. Studies where you have a child in a lab, and the researcher holds this thing (🍾) up using the incorrect name for the item; the babies and toddlers know it's not the correct name. They just may not be able to say ‘bottle’ or [baba]. For example, if I say, “it's zork,” they're going to say, “No, that's not a zork. It’s a bottle.”

Pragmatic elements are even more difficult to measure. That's true just because of the development of a child's brain; these concepts of politeness, of reading between the lines, of implicature and presupposition, the Maxims of the Cooperation Principles, these are things that a child does not acquire until well into childhood. Most commonly, children don’t understand these concepts well until between the years of seven or six, perhaps not until 9-12, and not until teenage years in some cases. Much of this is culturally simulated, as you would expect, and that's why young children don't understand this. The phrase, “Honesty out of the mouths of babes,” or something along those lines, is seemingly ubiquitous because children don't know when not to say something or how to rephrase it.

That all being said, syntax-semantic relationships, like auxiliaries (like *be*, *have*, *will* or would) and modals (like *could*, *should*, *must*, or *do*) are learned not too early, but not too late; usually somewhere in that three- to four-year range. The more stimulus the babies and toddlers are around, the quicker they pick things up, but also the more complex they become earlier on.

That being said, that doesn't mean all of their input has to be super complex for a number of years. It honestly seems to be cyclical; there have been many times, where the prevailing theory is that you have to surround your children with high level language from the earliest of times. That's not necessarily going to ensure that your child understands, let alone produces, those terms. It is important to understand, though, that just because they hear Cookie Monster all the time, that doesn't mean they're going to talk like Cookie Monster.



This is something that Frank Oz, who created the character of Cookie Monster, as well as voiced him for many decades. I love this; I guess this has happened throughout his career, that the parents were concerned about Cookie Monster's vocabulary and syntax. Somebody asked him if he thought that Cookie’s way of speaking could corrupt the children that were watching *Sesame Street*. He said that he didn't foresee a child growing up to become a lawyer and saying, “Me want to represent you.”

I think Frank is on to something.

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9.5: Growing up bilingual (or multilingual!)



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There's a bias in the literature on children's language acquisition: a lot of it focuses on kids who are acquiring just one language, but monolingual kids are not the norm around the world. It is just as common for children to grow up with more than one language in the environment. Some children have one language in the home environment and another at daycare. In some families, one adult speaks one language and another adult speaks a different one. And some kids grow up in an environment where all the adults switch between two or three languages. In Canada and the US, where English has privileged status, it has been common for English-speakers to believe that being bilingual is a disadvantage, or even harmful! Bilingual kids were thought to be less intelligent and at greater risk for developmental delays and so-called "emotional disorders". Even today in Canada it's not unusual for a teacher or a doctor to advise parents who speak another language that they should speak English at home so their child doesn't get confused. This is also the kind of thinking that leads hearing parents of deaf kids to worry that if their child learns a signed language, it'll interfere with their acquisition of a spoken language. So is it risky for kids to be bilingual? Instead of opinions, let's look at the evidence.

Remember that children's mental grammars develop in response to input from the language environment: whatever language is used by the people around them, that's the language that a child learns. The amount of language input plays a role in kids' rate of acquisition. As we saw above, deaf children who don't have access to language input in a vocal language environment can't develop a mental grammar for that vocal language. And on a much smaller scale, an only child who is at home with one adult all day might not get a lot of language input and so might not show much language use until they start going to daycare where they get exposed to lots of language in the environment.

Let's compare the language environments of two hypothetical children. To make this example simple, let's say they're each awake for twelve hours a day, and as long as they're awake, they're exposed to language input. The child in the monolingual environment gets twelve hours of Language A every day. The child in the bilingual environments gets, say, six hours of Language A and six hours of Language B: they just don't get the same quantity of either language as the monolingual child does. So it takes a little longer for them to have encountered enough language to build up the mental grammar for each of their two (or more) systems. In other words, if you measure a bilingual child's language development in one of their two languages, they might be a little delayed relative to a monolingual child's development. Their vocabulary in the one language is a little smaller, and it takes them a little longer to reach the typical milestones in grammatical development (Hoff et al., 2011). But that's only if you compare the one language! If you compare the size of a bilingual child's vocabulary across both their languages, it's the same or even bigger than that of a monolingual at the same age (Hoff et al., 2014). So it's true that there's sometimes a slight delay in bilingual kids'

development in each of their languages, relative to monolingual kids, when measured using the tests that are standardized for monolinguals.

But remember that language acquisition is not a race! Reaching a milestone a few weeks later than other kids needn't be cause for concern. There is a lot of variation between children and between language environments. Some research indicates that the delay is within the normal range of variation for monolingual kids, and some suggests that most bilingual kids catch up to monolingual kids in both their languages by about age ten. In that case, why would there be pressure on parents who have immigrated to Canada to speak English at home? If you think back to previous chapters, it probably has more to do with power and privilege than with children's development. The stigma associated with non-English languages and with so-called "foreign" accents also extends to children, which means that monolingual teachers and doctors sometimes perceive "problems" in bilingual kids that they don't notice in monolinguals.

So the evidence shows us that bilingual kids might have some slight delays in their language development, but these delays aren't harmful and the kids usually catch up with their monolingual peers eventually. The evidence also suggests that there are advantages to acquiring more than one language. A lot of research has looked at **executive function**, the set of mental processes that govern your attention and control your impulses. There is a body of evidence that suggests that bilinguals score higher than monolinguals on measures of executive function (Bialystok, 2009; Byers-Heinlein et al., 2017; Peal & Lambert, 1962). The idea is that, when you're bilingual, your mind is always busy suppressing one language in order to process information in the other language, and this skill transfers to other areas where the mind needs to inhibit irrelevant information to focus on something. I should make it clear that there's a lot of argument among psychologists and linguists about these effects, because there are so many different ways of defining "bilingualism" and because so many other factors besides language contribute to executive function, but it seems to be the case that being bilingual is one of the factors that can support executive function. If you'd like to learn more about this debate, you might be interested in reading Valian (2015) for a useful summary.

Besides the executive function research, there's also evidence that acquiring more than one language shapes kids' expectations about people. Well before age 1;0, children tend to expect other humans to be cooperative: they show surprise (evidenced by longer looking times) when an adult is trying to reach an object and another adult passes them something different (Vouloumanos et al., 2014). If the adults in this scenario speak an unfamiliar language, 14-month-old bilingual children are still surprised: it seems that they expected the adults' speech to be communicating a message so they're surprised at the lack of cooperation. But monolingual children react differently: if the adults speak a language that's unfamiliar to the children, then the children don't show surprise when the adult is uncooperative, which kind of suggests they didn't expect that unfamiliar speech to be conveying any meaningful message (Colomer & Sebastian-Galles, 2020). There's also recent evidence that bilingual toddlers and preschoolers show less racial bias than monolingual kids on tests of implicit bias and of spoken word recognition (Singh, Quinn, et al., 2020; Singh, Tan, et al., 2020).

For families who immigrate, one of the most important benefits to raising kids bilingually is retaining the connection to older relatives. Whether or not bilingualism leads to executive function benefits or slight delays in vocabulary size, it's incredibly valuable for kids to be able to communicate and have a relationship with their grandparents. Overall, there's no evidence that growing up bilingual or multilingual does harm, while there is evidence that it can be beneficial, and it results in you knowing more than one language, which is pretty neat! If you're interested in knowing how to support families in maintaining children's bilingualism, Jürgen Meisel's (2019) book is useful for non-specialists.

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9.5: Child Language Acquisition Bilingualism

9.5.1: Child Language Acquisition Bilingualism, from Sarah Harmon



9.5.1.1: Video Script

I have referenced several times that most children do not grow up in a monolingual society, that they grew up in at least a multilingual society. In many cases, they grow up in a multilingual household where at least two, maybe more, languages are spoken, and that's not even counting the different dialects. I thought it would be important to have a section talking about bilingualism in children.

When we're talking about what is considered to be **native or quasi-native bilingualism**, we're describing a situation where a child is multilingual from birth, that would be native, or within the first 2-3 years for a quasi-native situation. Some of you are native bilinguals; you grew up in households where more than one language was spoken, or in your society more than one language was spoken. Many of you are quasi-native bilinguals, meaning you spoke one language in the house, and then at a certain point—preschool or kindergarten is usually the start—things change, and then you have to speak a different language.

Let's talk about that process, a little bit. Historically, in the last 40 years, there have been two main hypotheses with respect to childhood bilingualism. These hypotheses are meant to describe how the child is constructing these grammars in their head and their mental lexicon. **Unitary System Hypothesis** states that the child initially only constructs one lexicon and one grammar, and then has a word associated with a term from one language or another, but not necessarily both. The evidence for that suggests that young children will only have one term for a given item, so one reference for a given meaning. For example, if a child is a Spanish-English bilingual, and they see this thing (🍼), they're only going to either say 'bottle' or 'botella'; they're not going to say both.

There's some evidence for this. The other hypothesis is **Separate Systems Hypothesis**, which states that the child is constructing one lexicon and one grammar for each language that they're trying to acquire. In this hypothesis, children make the connections along the way. While at times you could argue for either of these hypotheses to explain what happens with native bilingual children, most of the time Separate Systems Hypothesis has more data supporting it.

The real example of this has to do with children when they are producing language, and specifically as they mix their languages. I'll use English and Spanish as the examples. If you take a Spanish-English bilingual child, and you listen to them talk, you'll hear them mix, their languages. There's a system to it; they never use the incorrect syntax. They never try to use morphology from one language on lexicon from a different language. You would hear a child say, "I want to go to la playa." (*La playa* in Spanish means 'the beach'.) They do not say, "I want to voy a la playa." They don't try to mix the morphology and syntax from Spanish in English; they will just use lexicon in the appropriate spaces. If they're talking about 'the brown dog', they will say 'the brown dog'; they will not say 'the dog brown', the order of the noun and the adjective in English is the opposite of what it is in Spanish. The child won't mix the order of the of the noun phrase, they will stay in whatever structure is set up for the given language and they do this early on. Whether it is Unitary or Separate Systems Hypothesis that best describes native childhood bilingualism, that we're still not sure of. We tend to lean more on Separate Systems Hypothesis, but there is evidence for both.

Let's talk about **code-switching**. In many immigrant societies, code-switching is considered horrible and something to be avoided. Prescriptively, when a child or an adult comes into a formal education or formal setting., they're told they can't code-switch; they have to say in one language or the other but they cannot mix. Here's the reality: code-switching is the best thing that a language learner can do, whether we're talking about a child or an adult. This is particularly true for child language acquisition in multilingual situations. Code-switching shows the amount that the child has acquired in both languages.

I'll give you a great example. We have a neighbor growing up that, while the parents spoke English, the parents were teaching their children Mandarin because they were Taiwanese. The mother was also a teacher of Cantonese, so she was fluent in Cantonese as well as Mandarin. She was teaching the children Cantonese and predominantly Mandarin as their first language; English was going to come later and they just accepted that. When their daughter was 2-4 years old, she would come toddling down the hill with her family for visit; she would start talking to us in her language. I say 'her language' because it was a code-switch of Mandarin and Cantonese, with an occasional English word thrown in there for fun. Of course, my parents and I didn't understand the child, because we speak neither Mandarin or Cantonese, so the mother would have to translate. It was so cute to see how she was putting things together, and how the mother, in particular, would have this question mark on her face, when she could not put the pattern together initially.

Children will subconsciously code-switch; they're doing as part of spitting out their thoughts. There's no regard for audience; they haven't learned the contextual clues about not speaking a language in front of somebody if they don't understand. As a result, they just blurt stuff out. There are combinations, but those combinations tell us how much they have learned about the respective languages. Adults are different; adults will consciously code-switch, meaning that they do it with intention. They will only preferably do this with other bilingual because they know the stigma of speaking a language that the other person you're talking to does not understand. it's really interesting to see how code-switching develops in a bilingual child; around the age of eight is when they start understanding when and why to code-switch. If you think about a child's development, that is about that time they're starting to learn social mores and norms. Politeness starts really factoring in around that time, so they're starting to put a lot of pieces together.

The other important aspect to code-switching is consistent input in both languages. If a child has consistent input in both or all of the languages that they speak, they will continue to code-switch and become more proficient at it. But if the input of one of the languages stops, the code-switching also stops, and they start become more monolingual. It can come back, if they go to learn their heritage language. This gets back to contextual knowledge, and this is where semantics and pragmatics come in; a young child isn't going to have that knowledge, because they haven't developed that mentality, nor have they developed neurologically to that point. As they age, things improve. This is all led to the **Contextual Knowledge Hypothesis**, which is really becoming more plausible when we're talking about bilingualism both in children and adults. It states that as a child reaches that age of about eight, they start intentionally code-switching. It explains a bit about how adults switch between languages—because they're using the contextual knowledge, the environmental cues to know when they can switch. It also explains how listeners go between languages; if you are an English-Spanish bilingual, and I say [si], depending on the context and which language I'm using, that will lead you to understand that syllable, that lexicon differently. If I'm speaking English, and/or if I'm referring to the ocean or the sea, then if I say [si], you're going to think of body of water. If I'm not, and especially if I'm speaking Spanish, then you're going to think of it as 'yes', because that is how you say 'yes' in Spanish. (It's also how you say 'if', but that's another story.) You're using the contextual

clues to understand when someone is code-switching; this is both passive and active in its processing, both in receiving/listening to language and when you're producing language. We use **parsing** to help us with this; we'll come back to parsing in neurolinguistics in the next chapter.

It's really important to understand that this is part of what a child acquires if they're in a multilingual environment. It's not just learning the actual lexicon and the morphology and the syntax and everything else. It also ties into the context clues.

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9.6: Adults are not children



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In many Intro Linguistics textbooks, this chapter would be titled *Second Language Acquisition* (SLA), which is also the common name for the subfield of linguistics that studies adult language learning. The label **SLA** encodes an assumption that the typical learner is proficient in exactly one language — the first language, which was acquired "natively" — and that the subsequent language is therefore the second one. That assumption is quite narrow, given that about one-third of people in the world use two different languages regularly, and many of those people use three or more languages (Wei, 2007). A similar assumption is embedded in academic programs that require credit in a "foreign" language: foreign to whom? These terms reveal the Anglocentrism of the field by implicitly assuming that a typical learner speaks English as their first language and learns something other than English, that is, something foreign, as their second language.

The same assumption is contained within in the label *English as a Second Language* (**ESL**), which highlights the otherness of those who learn English in adulthood. Some teachers of English to adults use terms like *additional language* or *other language*, which don't encode quite the same assumptions. And so-called foreign languages are now sometimes referred to as *world languages*. As we learned in Chapter 2, there are few, if any, truly neutral terms for discussing human differences. In this chapter we'll use the terms **L1** or **first language** for any language learned from early childhood, even if the learner acquires more than one at once, and **later language** for any language learned after the first one(s).

In fact, that's one key difference between learning a first language and learning a later one: you already have one mental grammar when you start acquiring another one. In a later unit we'll consider how the grammar of your L1 influences the grammars of your later languages. The other key difference is that adults are different from children.

9.6.0.1: Cognitive and Linguistic Differences

As the previous chapter showed, language learning is not usually difficult or effortful for young children. As long as they're in an environment where they have access to language used by adults, they'll learn it pretty quickly. One reason it's so easy for little ones is because of their **neural plasticity**: their brains are super-keen to make new connections in response to their experiences. The older you get, the harder it is for your brain to grow new neural pathways, so the harder it is to learn new things. It's not impossible by any means, it just takes more effort!

On the other hand, adults have some advantages over children. We have metacognitive skills we can apply consciously to language learning, such as memorizing new vocabulary and morphology, choosing to study a little bit each day, or seeking out books, movies, podcasts or other media in our new language. We also have metalinguistic awareness that we can employ. For example, we

can consciously practice placing our articulators in new positions, or we can compare and contrast the syntactic structures in our new language with those from our L1.

9.6.0.1: Socioemotional Differences

Another factor that can make language learning harder for adults than for children is our self-consciousness. Learning a new language usually involves interacting with other people, including other people who are more proficient than us. If you're adult who's used to being seen as competent, it can be embarrassing to feel like a beginner and to make mistakes.

Like the field of Linguistics as a whole, the subfield of Second Language Acquisition is often narrowly focused on grammar, especially on acquiring phonetics, morphology and syntax. This approach to teaching and learning is related to colonial ways of thinking that treat language as an object or asset that can be acquired in isolation from people, communities, and relationships (Czaykowska-Higgins et al., 2017; Lukaniec & Palakurthy, 2022; MacKenzie et al., 2022).

But as we've been learning throughout this book, language is not just a collection of structural properties! Chapter 2 showed that our language use is interwoven with our emotions and identities. And unlike babies developing an L1, adult language learners bring all kinds of cultural knowledge, traditions, expectations and, yes, emotions to our language learning, which we may or may not be consciously aware of. The next unit will look at these socioemotional factors in more detail .

9.6.0.1: Check your understanding

9.6.1: References

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12.2: Motivations for adult language learners

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It wouldn't make sense to think about the motivations of infant language learners: they can't help learning whatever language they have access to. In contrast, adult language learners may have any number of different reasons to learn a language, and their motivations affect the ways they learn.

9.6.1.1: Migration, Employment, and Education

As we saw in Chapter 2, many employers in Canada expect their employees to be proficient in English. If you immigrate to Canada for work or for school, you have a pretty clear economic motivation to learn English. Unfortunately, the common approaches to teaching English to adult learners are often built on standard language ideologies with racist and colonialist assumptions. Such classes frame English as a fixed asset contained in textbooks. In their analysis of ESL classes, Swift argues, "the language that students saw and heard seemed to be designed to represent prescriptive norms (sometimes to the point of hyper-formality/correction) rather than believable examples of real-life practice." (2022, p. 317). In these contexts, the teacher is the ultimate arbiter of correctness, and as Ramjattan (2019b) shows, white people are perceived as better teachers than people of colour.

Rosa & Flores (2021) point out that a prescriptivist approach to teaching ESL is usually intended benevolently. The underlying reasoning is that adult learners, often people of colour who have immigrated, need to learn standardized forms of English so they can have workplace success and be included in mainstream society. But this logic is flawed: we know from Chapter 2 that listeners' perception of a "foreign" accent in English is influenced by the speaker's appearance as much as by their speech (Babel & Russell, 2015) and Ramjattan (2019a) reminds us that employers disguise their racial discrimination by cloaking it in terms of accent. Rosa & Flores sum it up this way:

> *"even when marginalized people within these contexts engaged in linguistic practices that seemed to correspond to mainstream standards, they continued to be perceived as deficient and in need of remediation." (Rosa & Flores, 2021, p. 1164)*

In other words, even so-called "perfect" English – that is, English that matches the prestige standard – is often not enough to escape raciolinguistic stigma. A growing body of literature considers how ESL teachers might embrace variation in English and resist stigmatizing their students' language practices. If you're interested in language teaching, maybe you'll be interested in working towards social justice in an ESL class!

9.6.1.1: Cultural Enrichment

Rather than employment, your primary motivation for learning a later language might be for intellectual or cultural enrichment. The idea is that your worldview can be expanded by learning about a culture other than your own. There might be the incentive of international travel, an exchange or a semester abroad. The languages taught and learned in this context used to be labelled as *foreign languages*, with the unspoken implication that anything not English is foreign. These days you more often see the terms *international languages* or *world languages* to refer to languages other than English.

Regardless of the label, curriculum and teaching materials for this kind of later language learning tend to assume that the learner is a white speaker of English. Anya (2021) showed that the curriculum for college Spanish in the USA systematically excluded Black learners in several ways: not only were African-American cultural occasions and news stories disregarded, but even the Spanish vocabulary for describing people's appearance did not include appropriate terms for African descendants. Black students in these classes felt that learning Spanish was irrelevant to them.

You can see from the dates of the research I've mentioned here that the field of adult language learning is only recently beginning to grapple with the racist assumptions embedded in its practices. If you're learning a later language, maybe you can challenge some of those assumptions in your own class. Or if you go on from studying linguistics to become a language teacher, maybe you can work to incorporate racial and social justice into world language learning!

9.6.1.1: Community Connection

The languages spoken by Indigenous peoples in North America don't usually fall into the category of "world languages" because of their particular status. As we saw in Chapters 1 and 9, the colonial Canadian government engaged in systematic and often violent efforts to eradicate these languages and assimilate their speakers into the colonizers' white English-speaking society. This is why

learning the languages of their Nations is vitally important for many Indigenous adults who did not have the opportunity to learn their language as children. Learning it as an adult allows them a connection with their Elders' stories and teachings. Many strive to gain enough proficiency so that their children can learn their language at home, in childhood: this is one of the best means of ensuring that the language continues to be used.

Ferguson and Weaselboy (2020) explain eloquently how many Nations' traditional teachings about culture and about the Land are thoroughly embedded within each Nation's language. They argue, "Land must be experienced through Indigenous language in order to fully appreciate those layers of meaning and appreciate the nuances of what sustainable relations are within that Indigenous culture." (2020, p. 3) Jenny Davis discusses the ways that people working to reclaim Indigenous languages embed their work in "the robust geographic, linguistic, spiritual, and social dynamics of languages" (Davis, 2017, p. 49); she describes these strategies as a means of **survivance**, blending survival of the language with resistance to colonial oppression.

One of Wesley Leonard's language reclamation activists expressed this idea of the rich connections between language and community by taking about morphology. In the myaamia language, the verb that means "to speak a language" is a **bound morpheme**. One myaamia speaker pointed out that the verb *–aatawee–* "can't stand alone; we have to attach it to the people" (Leonard, 2017, p. 30)

Because Canadian universities are by and large founded on Euro-Western colonial ideals, a typical university course is not necessarily the most effective or appropriate venue for adult learners of Indigenous languages. Czaykowska-Higgins and her colleagues (2017) describe how the language programme at the University of Victoria strives to be "responsive to the needs and directions expressed by First Nations community partners, and by doing so, to support the empowerment and self-determination of those communities." (2017, p. 142)

One way that adult learning of Indigenous languages might differ from other later language learning is the specific barriers that Indigenous learners may encounter. In Chapter 9, Mary Ann Corbiere and David Kanatawakhon Maracle both talk about the fact that there simply aren't many opportunities for learners to practice their languages, because there are few speakers and few materials like books, reference grammars, and curriculum resources. And McIvor (2020) points out that Indigenous learners often carry multi-generational trauma specifically about their languages, because of their or their relatives' experiences of violence in colonial schools.

On the other hand, some Indigenous language learners also report substantial benefits to their mental and physical health as they gain proficiency in their language. For example, Oster et al. (2014)'s quantitative analysis of 31 First Nations in Alberta showed that the Nations with higher language proficiency had lower rates of diabetes. Similarly, in an analysis of First Nations in British Columbia, Hallett et al. (2007) found that the communities with the highest numbers of speakers of the language had the lowest suicide rates among youth.

Of course, it would be too simple to interpret these results to mean that grammar leads to good health. Instead, these quantitative measurements align with what Indigenous Elders and experts say about the deep connections between their languages and the traditional cultures of their communities. One of the participants in Oster et al.'s interviews of members of the Piikani Blackfoot Nation and Ermineskin Cree Nation explains it this way:

> *"Elders always speak of the importance of our language. Who we are is determined through our language. We speak our language and that determines where you come from, what your culture is, and even how we used to go with the different seasons in terms of following those traditional paths. Regardless of where you go, if you have that language our culture is in there… So once you lose that, what do you have left? Because our beliefs come from that in terms of how we govern ourselves. It comes in terms of how we eat, and in terms of how we educate ourselves and conduct ourselves in that full circle."*
> *(quoted in Oster et al., 2014, pp. 3-4)*

And Gisele Maria Martin, a Nuu-chah-nulth learner quoted by McIvor (2020), says it even more simply and eloquently. She says:

> *"I have found a part of my soul that was missing. I just feel so grateful. I feel like it's one of the biggest, most meaningful things I've ever done in my life." (quoted in McIvor, 2020, p. 89)*

How's that for motivation? Reclaiming your language might mean finding part of your soul.

9.6.1.1: Check your understanding

9.6.2: References

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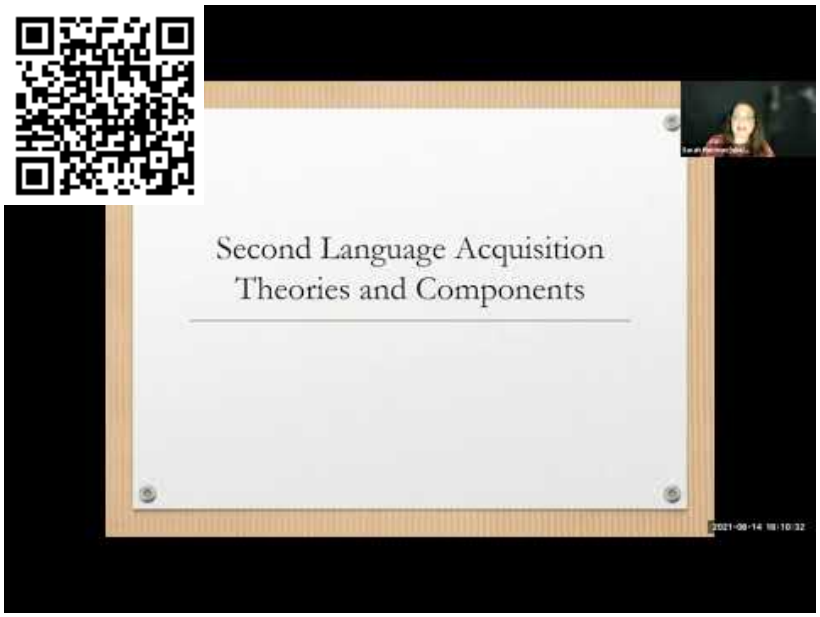
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9.6: Second Language Acquisitions Theories and Components

9.6.3: Second Language Acquisition Theories and Components, from Sarah Harmon



9.6.3.1: Video Script

Every single one of you has attempted to learn a second language; in some cases, you may have been successful, while in other cases, not so much so. As we go through these next few sections about second language acquisition, keep in mind your own experiences. I'm sure some of them, if not all of them, will be reflected in what we talk about.

To start things off, this was a hilarious meme that came through Facebook years ago.

what studying languages is like

latin: words like 'yes' and 'no' aren't important. memorize these 3000 different ways to talk about killing people though because you will use them

greek: hello naughty students it's participle time

egyptian: ancient pictionary

french: pronouncing every letter is for chumps

german: let's combine every other word together to create the U L T I M A T E F R A N K E N W O R D

mandarin: lol whats a verb tense

spanish: LOL WHAT ISN'T A VERB TENSE

english: welcome to hell

Source: thoodleoo

Having learned or attempted to learn a couple of these languages, I can relate. For a bit more context:

- Latin: The fact that Latin doesn't have specific lexicon for 'yes' and 'no', but there seems to be 3,000 different ways to talk about killing people.
- Ancient Greek: There's so many different derivations of verbs that you never knew existed until you look at Ancient Greek.
- Ancient Egyptian: The hieroglyphs are the connection.
- French: Certainly, if you tried to learn or if you have learned French, it seems that half of what you see written doesn't get pronounced
- German: If you go back to morphology, we looked at German compounding; look up the word for 'research' in German, and that should tell you some things.
- Mandarin: Remember, it's an isolating language.
- Spanish: Remember, it's a fusional language and a synthetic language.
- English: Okay, maybe not maybe not hell, maybe not the easiest language to learn.

There are certain impressions about learning a different language., that some languages seem easier and others are harder. None of that's really true; they're all difficult, and don't think otherwise. Everybody has their path in learning a language.

Let's talk about some of these theories of language acquisition. With respect to adults, mind you when I say 'adults', I'm saying anybody who has hit puberty and beyond. That has to do with the **Critical Age Hypothesis**; this is a hypothesis that is up for debate in some aspects, but not in others. It does seem to be the case that somewhere around puberty is when our brains have stopped absorbing like sponges. The elasticity and the neural plasticity are not the same when we are teenagers and adults as it is when we are children. Critical Age Hypothesis states that our brains don't seem to be able to pick up various skills as easily, including and especially language. It must be taught via logic, and if you think about a language course, that is really what you're learning: you're learning the logic of the language. Critical Age Hypothesis has its detractors; there are some that suggests that there is no such thing as waning elasticity of the neurons, that any person can learn any skill at any time, and there's no change or difference. That does not seem to be the case at least with respect to this concept of the **Fundamental Difference Hypothesis**, which states that learning a language as an adult is not at all like that of learning a language as a child. Regardless of the detractors, there is a large amount of data that show that with any major skill, children learn these skills as if through osmosis; they just watch, they practice, and they do, and it seems relatively effortless. The reality may not be the same, but that seems to be the case. As adults, the only time that is true is that if we can build upon a skill we already have; take language.

For example, I can learn a Romance language pretty easily, because I already have acquired and mastered two; based off of those two, I can use those skills to use to learn another Romance language. I will tell you that Germanic languages for me are very difficult; I'm terrible at learning Germanic languages. I just don't get the logic, despite the fact that I natively speak a Germanic language in English. It's because growing up, I didn't hear much in the way of Germanic languages; there was a Swedish family down the street, but they spoke English, and there was a Norwegian woman that one of my cousins married, but she spoke English, so realistically I didn't have much. I've tried to learn Japanese, and there's aspects of it that I get, but I heard Japanese as a kid by a few neighbors. Even though tonal languages seem to elude me as far as getting the tones down, I do see some of the patterns in them, but growing up, I had a number of friends who whose families were from Hong Kong, Shanghai, Beijing, or Taiwan. These are various places that speak different Sino-Tibetan languages, so for me, I start to see those patterns easier because I've been around them and have been exposed to them.

Fundamental Difference Hypothesis underlies mostly language learning, but, as I said, can be extended to other skill sets, especially motor skills. There's this concept with childhood development that when you expose a young child to as many inputs as possible—without overloading but certainly a number of them—and give them consistent access to those inputs, they pick up those talents and skills readily. That it sets up an affinity for those similar skills in their later lives. It's why we try to expose children to music, both listening and playing music from an early age, because if children are exposed to those skills early, they will continue to at least attempt to use them.

These two hypotheses are just that: they're hypotheses. We cannot officially make them into laws or universals, because there are exceptions always. In order to test them properly, we would need some very unethical training and activities, and we're not going to do that. We're not going to deprive a child linguistic input to see what can happen. We're not going to force them to do all sorts of activities that they may not be able to do physically. We're not going to do those things. We do have a goodly amount of evidence that shows that Critical Age Hypothesis does not say that you cannot learn a language once you hit puberty; it says that it must be taught as language acquisition based on logic. It can't be through osmosis.

There are certain common errors and processes that all adult language learners do. Whether they stay in this error-laden stage, or they get past these errors, this depends on a number of things. **Fossilization** is the big one; this is the situation of a language learner

who keeps producing incorrect language in certain areas, but it's so ingrained in their mind that they just think it's the right way to do it. A couple of definitions: L2 and L1. ‘L’ refers to ‘language; ‘L2’ is the second language, while ‘L1’ is the first or native language. An example of a fossilization error: I teach Spanish, and one of the huge ones that I still get from intermediate students and beyond is, “Me llamo es." Spanish speakers, I apologize; I know how cringe worthy that is. "Me llamo es" is wrong in every way. "Me llamo" is 'I call myself'; it's what you say, when you say, “Oh, my name is Sarah,” you say "Me llamo Sarah;" I call myself Sarah. "Es" is a verb; it means 'is'. The problem is "llamo" is also a verb; it means 'I call', so "Me llamo es" is never going to work because you have two conjugated verbs that don't go together. It is a big error.

Interlanguage and interference are connected. **Interlanguage** is what we do as we're learning a language, when we combine elements to try and succeed in producing more of the target language. Think of telegraphic speech in child language acquisition, and this is kind of the adult version. Interlanguage is described as having more basic sentences that eventually lead to more complex sentences and phrases. We use interlanguage as we try to put our pieces together. Sometimes as we do that, we end up having **interference** or sometimes it's called **transfer grammar**. When your L1 interferes with your L2, for example as a native English speaker if I go to learn Russian, and I keep trying to use English phrasing, words, and pronunciation, instead of staying in Russian and learning the Russian, that's interference or transfer grammar. This is really common of all folks who learn a second language; we also see them children, but mostly we see this in adults.

Any language learner can get through all of this. In part, this is done through good instruction, which involves aspects that we're going to talk about soon: encouraging and open environments, like allowing students to feel like they can take a risk. Part of this is also internal motivation; we’ll talk about learner affect soon enough. But there are always going to be little bits that keep you from being a native speaker; we can be a near-native speaker, and I’ll explain more that in a minute, but some of those near-native elements are directly related to interference and the related to fossilization. But you can get around it.

I would be remiss to not talk about heritage learners. A **heritage learner** is somebody who is trying to learn the language of their heritage or ancestors; frequently it's the language of their parents or grandparents. Think of a case where you have a family that integrates to a new country, a new linguistic community. Their children and grandchildren may learn that new language very quickly, but then may drop the first language, the heritage language, along the way. Many folks, including maybe some of you, try to learn that heritage language in puberty or adulthood. This is a different process; it's not quite the same as learning from scratch. There are various levels of heritage learners. A low-level heritage learner knows the sounds and some words, but isn't really able to construct the basic sentence in that language. A mid-level or high-level heritage speaker can produce much more. There's always conflicting or competing issues going on with heritage learners, and they have to be addressed in the language and learning environment. There is frequently a desire to ‘speak properly’; I can't count the number of heritage Spanish speakers who sign up for first semester Spanish because they want to learn the language ‘properly’, thinking that what they know is not proper or accurate and somehow substandard. Frequently, that's not the case; in the vast majority of cases, that person is marginally, if not fully, fluent in that language. They just may need to boost their literacy, or learn more complex structures so that they can speak at a higher level, but they are fluent, at least at a basic level. There's also **language attrition**, which we talked a little bit about in child bilingualism. In many cases, once the heritage learner started their formal education in preschool or kindergarten, that is when they had to stop speaking their heritage language; they were forced into speaking the new language. As a result of societal pressures and everything else, they just ‘lose’ the first language; it's attrition. Just like a muscle that you stopped using and it atrophies, the same thing can be said for a ‘home language’ or heritage language.

Finally, there's this thing that I like to call ‘heritage speaker guilt’. As far as I know, this is a Sarah-ism; I don't know if this is an official term, but it's a specific kind of learner affect. When we are learning a new skill, including a new language, we suffer from some element of **learner affect**. That is the emotion that bubbles up inside of us and says that we can't do it, or we're scared to do it, or we're not confident in our abilities and we don't want to be made to feel the fool. When we're learning a language that does not have our heritage, you have learner affect in varying forms. But when it's part of your heritage, it's present at even higher levels, and it's a very specific one. There are a few flavors of it; there's the ‘why aren't I doing this correctly?’ or ‘why can't I get this right, why aren't I speaking properly?’ flavor. There's also the ‘why aren't I remembering this?’, ‘this was something I used to speak or hear when I was a child, why the heck can't I do it as an adult?’ flavor. (Frequently stronger language is used. 😉) Learner affect as a whole is an emotional block, and it takes some psychology to go past it, but it doubles down when it is your heritage language. I didn't have this problem as much when I learned Italian, because it was my great-grandparents that immigrated here and spoke it. But my mother was a different story; my mother, to this day, cannot learn Italian. It’s not to say she can't really learn it; she actually speaks Spanish, which she has not learned since high school many moons ago. If she goes to Mexico, she can give basic instructions to the taxi driver. That's Spanish, though; that's not Italian. She's got such a block on Italian. She has tried multiple times; first, she wanted me to teach her, which was a bad idea. (We have an amazing relationship, but learning from your child is a

little bit different.) I suggested that she take classes at the community college or that she goes to the Italian Cultural Center in San Francisco. She tried a number of ways, and she's never been able to get over that heritage speaker guilt. In her mind, this should be instantaneous, and it's not.

How do you include heritage speakers? The answer is: whenever possible, especially the higher-level heritage speakers. We try to separate them out into their own class, and that makes sense; they're going to learn the language in a way that's different from a complete beginner. But the big one is support, even if you have a separate class, but especially if they're mixed in with the general population, as it were. You have to give them that emotional support, so they feel like they can take that risk, but also that they can feel pride in what they already know. You include their experiences, especially when discussing elements of culture. One of my favorite lessons when we do intermediate Spanish is when we talk about Spanish in the United States. I love this section, because we start picking apart this concept of what it means to be bicultural. There are so many folks in the class that are bicultural with different cultures, that it brings this really rich conversation. You start seeing the pride well up in them; that starts breaking down the learner affect, the heritage speaker guilt. Alongside that is to expand their knowledge. There are many people who say, “well, I don't need to learn the language; I’m already fluent in it, I already know everything about it.” Learning a language, especially a language that has multiple cultures and dialects—English, Spanish, and Mandarin are just three that come to mind—when you start expanding their horizons and cultural knowledge, they start feeling more of that pride. I always grew up with this pride of being an Italian-American. Even though I could count to 10 in our dialect and I knew words for certain food items, and certain not-so-nice things to say to people 😜. But when I was a senior in high school, I started taking Italian at a local community college. It expanded my horizons. Suddenly, I was learning about all sorts of things with respect to Italian culture, and not just my little neck of northwestern Italy, where my family is from. I suddenly was starting to learn about all these different concepts and different ways to phrase things. To this day, I still can't say *focaccia*, the bread, without visualizing the term; it still is always going to come out for me as *fogassa*, which is what we say in Lombardy. But I do know there's a difference, and I know that difference, and I express that difference. That all comes from learning about my heritage language and the cultures and the dialects that are associated with it.

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9.7: Gaining proficiency

9.7.1: Gaining Proficiency



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Learning a language as an adult is a lot of work! It takes a huge amount of effort and practice to construct another grammar in your mind. Many later language learners often feel like they never quite reach the level of fluency they'd like. Given everything we've learned about language so far, do you think that notion of "fluency" is maybe a little problematic? Who decides what counts as fluent? What level of proficiency in a later language is enough to count as proficient or fluent?

As we saw in the previous sections, adult language learning is deeply intertwined with the issue of language standards. Recall from Chapter 1 that a standardized variety of a language isn't any better than other varieties: it's just the variety that has higher social status, and has more grammar books and dictionaries associated with it. Language teachers usually understand their job to be helping adult learners meet the standard. In fact, the government of Canada publishes standards, known as **Benchmarks**, for English and French proficiency. (Citizenship and Immigration Canada, 2012; Citoyenneté et Immigration Canada, 2012) These benchmarks define, in a lot of detail, what counts as Basic, Intermediate or Advanced proficiency in listening, speaking, reading and writing the two official languages. Likewise, the American Council on the Teaching of Foreign Languages publishes Proficiency Guidelines (ACTFL, 2012) with five levels, the two highest of which are *Superior* and *Distinguished*. The value judgment is right there in the name!

As soon as you label some language users as "superior", you're automatically implying that some other users are "inferior", aren't you? It's easy to see how the accent prejudices we learned about in Chapter 2 arise. It's a short leap between perceiving someone as an inferior language user and viewing them as an inferior human.

The notion of fluency is even more complicated for Indigenous languages. On the one hand, many learners want to use their language in a way that is consistent with the traditional, ancestral form. On the other hand, a language that is in regular use inevitably changes over time (see Chapter 10). Megan Lukaniec is working with archival documents to reawaken Wendat, the language of her Nation, the Huron-Wendat. She describes the tension this way:

> *"In the case of reawakening dormant languages, since there are no speakers to learn from, there is simultaneously a pressure to remain as true as possible to the language as it is found in the archival documentation and a freedom to forge a new path for the language and its emerging speakers."*
> *(Lukaniec & Palakurthy, 2022, p. 347)*

Wesley Leonard, a citizen of the Miami Tribe of Oklahoma, is likewise working to reawaken the Tribe's sleeping language myaamia. While his work relies crucially on the archival documentation by non-Indigenous linguists, he points out the irony that the documents themselves represent yet another reenacting of colonial power, arguing, "part of colonialism entails socially dominant groups asserting the right to determine what counts as valid knowledge". (Leonard, 2020, p. e285) In other words, the definition of fluency or proficiency in myaamia, and many other Indigenous languages, depends on how colonial linguists have documented and defined the grammar of the language.

To add one more dimension to this complicated notion of proficiency, standardizing documents can also be useful in the work of learning and teaching Indigenous languages. Some language-learning programs like the Kanyen'kéha school Onkwawenna Kentyohkwa, use benchmarks like ACTFL's Proficiency Guidelines or the *First Nations Language Benchmarks* (Johnson, 2013; Miller, 2004) as goals for learners to work towards.

As we saw above, different learners have different goals and motivations for learning a language as an adult. Maybe your goal is to read scholarly work, to watch a film without subtitles, to have conversations with your relatives, or to pass a test. Maybe standardized benchmarks will help you reach that goal, and maybe they won't. Whatever your goals are, you're the one doing the work of learning a new language, so you get to decide what counts as proficient for your purposes. If you've learned enough to watch that film or talk to your aunties, then you get to call yourself proficient!

9.7.1.1: Check your understanding

9.7.2: References

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9.7.3: Cognitive Processes in Language Learning



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So far we've focused a lot on the social side of adult language learning. This section considers the psychological side: what cognitive processes occur when you're learning a later language? Just like in L1 learning, the overall goal is to construct a mental grammar for the language. What has to happen for the mind to arrive at a useable grammar?

One crucial ingredient seems so obvious that we might even overlook it: a language learner needs **input**: they need to see the language signed or written, or hear it spoken. The more input, the better, but input isn't just about quantity – the learner also needs the input to be used communicatively, so that the mind links the forms of the language (the signs, sounds, words and phrases) with a meaningful message.

There's quite a lot of debate in the literature as to whether the patterns of a later language are learned from overt instruction, or unconsciously from the language input. Researchers in this subfield often contrast **declarative** knowledge with **procedural** knowledge (Levelt, 1989; Paradis, 2009; Ullman, 2005). Declarative knowledge consists of things you know explicitly, such as your postal code, how to do laundry, or how to get to your Linguistics classroom on campus. On the other hand, procedural knowledge is unconscious – it's the kind of knowledge that allows you to recognize your sibling even if you haven't seen them in months, or to shift your weight so you don't lose your balance when you're climbing stairs. (In the Exercise section at the end of this chapter, you'll think about which parts of your grammar are declarative knowledge and which are procedural.)

Regardless of whether your mind is learning the grammar implicitly or explicitly, the input is only useful if your mind can process it. When you first start learning a language as an adult, you can probably only pay attention to a small part of the input. Here are a couple examples of languages that are probably unfamiliar to most of you:

- a user of Auslan (Australian Sign Language) describing an event happening in Melbourne in January 2022 [YouTube video], and
- a user of Kaurna (an Indigenous language of South Australia) introducing himself on the radio [Audio at First Languages Australia].

Unless you know some Auslan or some Kaurna, you probably can't make much use of the input: you can't recognize individual words or morphemes, and maybe you can't even tell where words begin and end. What these two examples illustrate is that an adult learner's **intake** is often considerably less than what's available in the **input**. Your mind can only construct a grammar from its intake: the language input that it actually processes. And it can only process a limited amount at a time because your **attention** and **working memory** have a finite capacity.

Because processing constraints limit the intake a learner can obtain from the input, many adult learners' early grammars consist disproportionately of content words, rather than function words or inflectional morphemes. When you're trying to understand or

express a certain idea, the semantic content of nouns and verbs gives you more crucial information than, say, conjunctions or tense morphemes!

Limitations on processing capacity also affect how adults **produce** the language they're learning. When adult learners of signed languages are starting to sign, they tend to make systematic simplifications in their utterances. The most common articulation errors are in handshape, especially in signs produced with two hands, and all the more in signs where the two hands move independently (Marshall, 2020; Ortega & Morgan, 2015). Notice that these errors happen even though adults usually have a fully developed motor system: it's not that the learners haven't yet mastered the control of their articulators, it's that they haven't yet mastered the complex phonology of the language they're learning.

For both comprehension and production, gaining proficiency in a later language involves moving from conscious, effortful processing to rapid, automatic processing. And that takes practice – lots and lots of practice. The only way to build up robust neural pathways in the brain for the new grammar is to use the language. At first, an adult learner's grammar is likely to include a lot of memorized phrases. To develop a grammar that can be used productively, generatively, you'll want to practice using the language in complex, naturalistic settings, not just the structured dialogues of a classroom (Götz, 2013).

9.7.3.1: Interlanguage

When you're learning a later language, there's a period during which you have some degree of competence in producing and understanding, but your grammar is still quite different from that of an L1 user. This not-yet-fluent grammar is called **interlanguage** (Selinker, 1972), and some researchers have argued that interlanguages have a lot in common with each other, no matter what your L1 is, and no matter what later language you're learning (Klein & Perdue, 1997). The idea is that the process of learning a later language is similar across many languages because the human mind is similar.

This interlanguage phase has some interesting consequences when it comes to speech accents. A team of researchers in Chicago worked with international students who had just arrived in the USA to begin graduate programs (Bent & Bradlow, 2003). The students had arrived from many different countries and spoke many different languages as their L1. The researchers asked these adult English learners to record a set of simple English sentences, and had some L1 English speakers do the same. Then they mixed the sentences with white noise, played them back to a variety of listeners, and asked the listeners to write down what they heard.

For each talker, the researchers calculated an **intelligibility** score. The word *intelligibility* sounds like it refers to some objective, acoustic measure of speech clarity, but in this case what it means is how many errors listeners made in writing down what a talker said. If listeners make few errors, you have a high intelligibility score, and if listeners make a lot of mistakes, your intelligibility score is low.

The obvious prediction is that that the L1 English speakers would have the highest intelligibility scores. And that was partly true: for L1 English listeners, the L1 English talkers were the most intelligible. But that was not the case for the later learners! When the listeners were adult learners of English with L1s as diverse as Bulgarian, Dutch, Greek, Hindi, Spanish, and many others, the late-learning English talkers were more intelligible than the L1 English talkers! Bent and Bradlow (2003) called this effect the "interlanguage speech intelligibility benefit" (2003, p. 1608). They argue that, because the effect was observed even when the talker and listener had unrelated L1s, the benefit is probably not due to similarities in the L1s, but due to shared experience in learning English as a later language – in other words, the talker and listener probably have some common properties in their **interlanguage**.

9.7.3.2: Check your understanding

9.7.4: References

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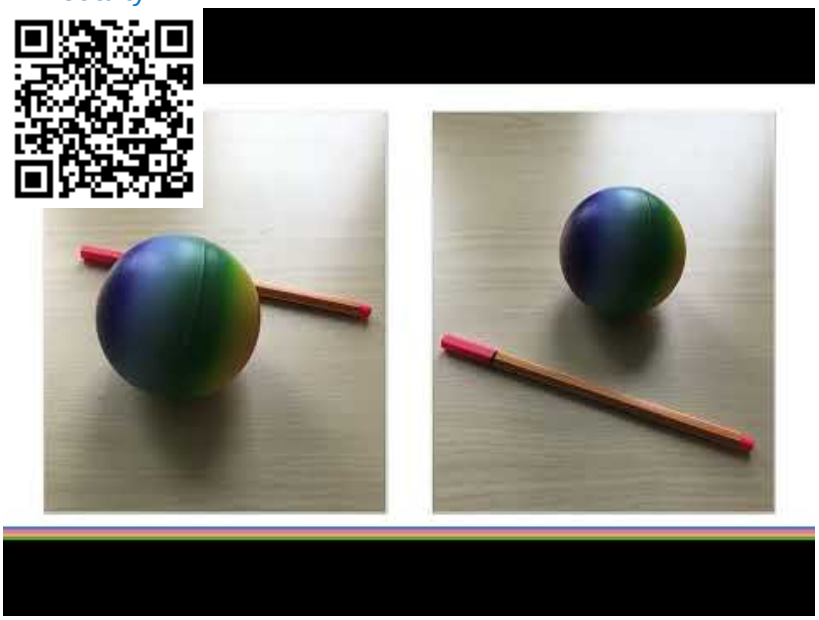
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9.7.5: Learning a New Modality



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One of the biggest differences between first language learning and later language learning is that, when you start learning a language as an adult, you already know at least one other language! The mental grammar of your L1 can influence the mental grammar that you're developing in your later language: this is called **transfer** (Weinreich, 1953). If the grammar of your L1 includes a structure that's similar to your later language, your learning might be facilitated by **positive transfer**: your mind can transfer that part of your L1 grammar and apply it to your later language.

But if the structures in the grammar that you're learning are different from those in your L1, then you might experience **negative transfer** (also known as **interference**). In this case, the grammatical knowledge from your L1 could make it more difficult to learn the structures of your new language. And of course, you might experience both positive and negative transfer to your new language from various elements of your L1 grammar.

Suppose the new language you're learning also has a new modality. Maybe your L1 is spoken and the new language you're learning is signed. You might think there wouldn't be much transfer from one grammar to the other, but there's evidence that, for adult learners of signed language, **iconity** can have both positive and negative transfer effects in their developing grammar.

9.7.5.1: Iconicity

A word's iconicity has to do with the similarity between the form and the meaning of a word.

For a lot of words, the relationship between form and meaning is entirely arbitrary. For example, the word for the vegetable that's called *onion* [ʌnjən] in English is *Zwiebel* [tsvibəl] in German and *κρεμμύδι* [kɾɛmydi] in Greek. There's nothing particularly oniony about the spoken forms of any of those three words: the connection between the sounds and the meaning is **arbitrary**.

But some words have a form that isn't totally arbitrary; instead it has some iconic relationship with the word's meaning. In spoken languages, we sometimes observe iconicity in the forms of words that refer to sounds. Here are some examples from Japanese (Dingemanse et al., 2015)

[koɾo]	コロ	a small light object rolling in a single circle
[koɾokoɾo]	コロコロ	one or more small light objects rolling around continuously
[ɡoɾo]	ゴロ	a large irregular object rolling in a single circle
[ɡoɾogoɾo]	ゴロゴロ	one or more large irregular objects rolling around continuously

These words illustrate two elements of iconicity: the reduplication of the form iconically represents the repetition of the sound, and the the distinction between voiceless [koɾo] and voiced [ɡoɾo] represents the difference between a small, pleasant sound and a loud, rumbly noise.

Iconic forms are more common in signed languages than in spoken languages because the visual modality allows many elements of word meaning to be represented visually (Taub, 2001). Consider, for example, the words for beard in British Sign Language (BSL), Turkish Sign Language (Türk İşaret Dili) and Icelandic Sign Language (Íslenskt táknmál). The three signs are all different from each other, but all three of them iconically represent the shape and location of a beard.

9.7.5.2: Iconicity affects signed language learning

For fluent signers, high iconicity facilitates word recognition and word production in both ASL (Thompson et al. 2009) and BSL (Vinson et al. 2015). But for later learners of signed languages, the effects of iconicity are more mixed.

In one study (Marshall & Morgan, 2015), adult learners of BSL were asked to describe scenarios where two objects changed location. (For example, at first a ball is in front of a pen, and then the ball is moved behind the pen.) These learners made plenty of mistakes when signing their descriptions, but most of their mistakes were in the handshape, which is an arbitrary component of the sign. They almost never made mistakes in the location or orientation of the signs, which iconically represent the location and orientation of the objects. So in this study, the iconicity of the location and orientation parameters facilitated the learners' productions of phrases that referred to spatial relationships.

On the other hand, iconicity can also interfere with adults' learning. Ortega & Morgan (2015) asked beginner BSL learners to watch videos of individual signs then imitate each sign as accurately as possible. The researchers coded the accuracy of the learners' productions. Unsurprisingly, the learners were less accurate at imitating signs that were more complex. But for the signs with the greatest complexity, the learners signed iconic words much less accurately than arbitrary ones. The researchers offered a couple possible explanations for this surprising result.

Maybe the iconicity of the signs made it easier for learners to remember their meanings, so they paid less attention to the forms and were therefore less accurate in signing them. On the other hand, it's possible that the existence of an iconic non-language gesture interfered with learning the iconic sign. For example, after seeing a video of the sign for write, the learners did not imitate the BSL handshape, but instead used a gesture that imitated their handshape and movement when actually writing.

It's clear from these results that beginner signers are transferring some of their existing, iconic, non-language knowledge to their learning of a signed language. Sometimes that transfer facilitates their learning, and sometimes it interferes. In the next couple sections we'll look at other ways that existing knowledge transfers to a learner's developing grammar for their new language.

[self-test]

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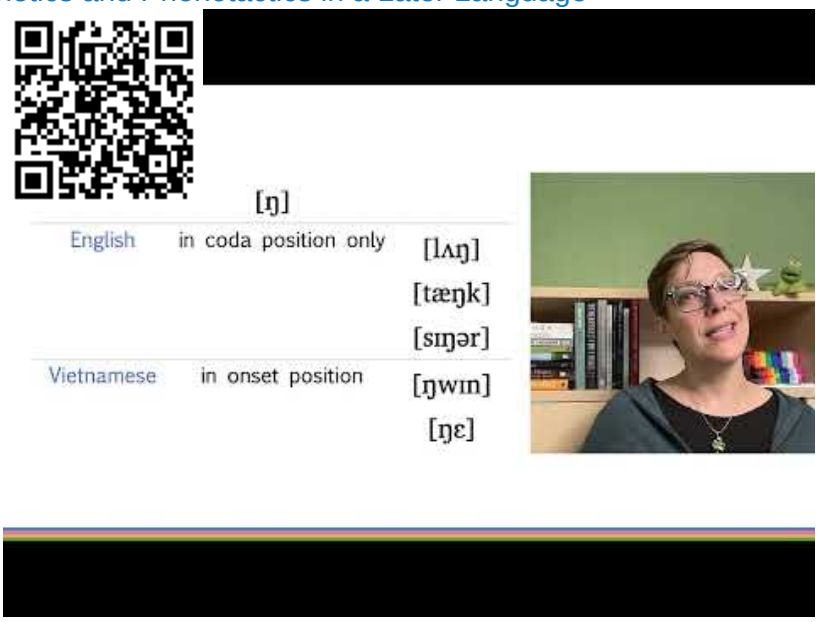
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9.8: Learning Phonetics and Phonotactics in a Later Language

9.8.1: Learning Phonetics and Phonotactics in a Later Language



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If your first language is a spoken language, you've had a lot of practice at articulating the speech sounds in your **phonetic inventory**: the set of segments that are present in the grammar. For example, most varieties of English have somewhere around 25 consonants and a dozen or so vowels. That's a lot of vowels, compared to many other languages, so learning to articulate English vowels can be particularly challenging for adult learners of English.

In contrast, Hawaiian, the Indigenous language spoken in the Hawaiian islands, has only eight consonants and five vowels. And on the other end of the spectrum is Adyghe, one of the Circassian languages spoken in Russia and Türkiye. Adyghe has only three vowels, but (depending on the dialect), between 50 and 60 consonants, including 18 different plosives, ten affricates, and 24 fricatives!

If the language you're learning includes segments you haven't yet learned to articulate, you might make a substitution with a segment from the phonetic inventory of your L1. If you have a name that isn't English, you've probably had the experience of English-speakers making substitutions in your name. For example, the Hebrew name *Baruch* [baʁʊx] ends with a velar fricative [x], but English speakers often pronounce it with a velar stop instead [baɻuk]. Likewise, the Tamil name *Kavitha* [kaviʈa] has a dental stop in the onset of the last syllable, which English speakers often turn into a flap [kəviɾʌ] or into a dental fricative [kəviθʌ].

Another challenge for adult learners comes from your L1 **phonotactics**. Phonotactic constraints are restrictions in the mental grammar on what sounds can appear in what positions, and what syllable structures are possible. For example, the velar nasal [ŋ] is part of the phonetic inventory of English, but it never appears in the onset of a word, only in coda position, like in *lung*, *tank*, and *singer*. The phonetic inventory of Vietnamese also includes the velar nasal, but it's grammatical in onset position, like in the very common surname *Nguyen* [ŋwɪn] and the word *nghe* [ŋɛ] which means *listen*.

Phonotactics also constrain the possible syllable structures in a grammar. In Chapter 3 we learned that English can have a whole lot of consonants in syllable onsets and in syllable codas – consider the word *strengths*, [strɛŋkθs] which has three consonants in the onset and four in the coda! English also allows much simpler syllables, like *nice* [naɪs], or *odd* [ɑd], and even syllables with nothing in the onset or coda, like *eye* [aɪ].

But some languages have much tighter phonotactic constraints on their syllable structure. When you're learning a later language, you often adapt the shape of the words to fit the phonotactics of your L1. Likewise, when a language borrows words from another language, the **loanword** gets adapted.

A famous example comes from Hawaiian, which has only two possible syllable structures: a syllable can have either one or zero consonants in its onset, no coda consonants and no consonant clusters. So when Hawaiian borrows the two-syllable English word *Christmas* [krɪs.məs], there's a lot of adaptation to do.

The only position a consonant can occupy is the onset, and onsets can't have more than one consonant. So the [krɪ] from English becomes [kali] with the [l] substituting for English [r] and [i] for English [ɪ]. Then the [s] from the coda of [krɪs] gets a substitution and its own syllable to become [ki]. The [s] from the coda of the second English syllable [məs] becomes another onset, and result is that the Hawaiian adaptation of the English word *Christmas* is [kalikimaka].

Besides loanwords, English speakers also tend to adapt proper names to conform to English phonotactics. For example, when English speakers are talking about visiting the Polish city of Gdańsk [ɡdaj̃sk], they usually epenthesize an extra [ə] between the first two consonants, because [ɡd] isn't a grammatical onset in English. Or when English borrows the German name *Pfeiffer* [pfaɪfɐ], the plosive [p] at the beginning gets deleted because [pf] isn't a possible onset.

9.8.2: Learning Phonemes and Allophones in a Later Language



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In Chapter 11 we learned that babies have set up the phoneme categories of their L1 by the time they're only twelve months old. So by the time you're an adult learning a new language, those phoneme categories are pretty deeply embedded in you mental grammar. Psycholinguist Catherine Best has proposed a theory, called the Perceptual Assimilation Model (Best, McRoberts & Goodell, 2001), that predicts which phoneme contrasts will be hard for adult language learners, and which will be easy. The theory centres around the concepts of phonemes and allophones.

Best predicts **positive transfer** for phoneme contrasts happens if the new language has a phoneme contrast that maps onto a contrast in the adult learner's L1. In this case, the new phoneme contrast should be easy to learn. She also predicts that it should be easy to learn a new contrast in the case where there's no transfer at all: if the new language has contrastive phones that don't exist at all in the learner's L1, then the learner can set up two new phoneme categories from scratch.

The situation that leads to **negative transfer** arises when two contrasting phonemes in the later language map onto a single phoneme category in the learner's L1. In this case, the learner will have spent a lifetime treating the phonetic difference as allophonic variation, and not a meaningful contrast, so it's a challenge to learn to pay attention to the difference as meaningful.

Best and her colleagues (Best, McRoberts & Sithole, 1988) tested this theory by investigating how English-speaking adults learn phonemic contrasts in Zulu. Zulu is a language that has about 27 million speakers, most of them in South Africa. First, researchers asked the English-speakers to notice the difference between voiced and voiceless lateral fricatives [ɬ and ɮ] in Zulu. English doesn't have lateral fricatives, but English does have lots of pairs of fricatives that contrast in their voicing, so the theory predicts

that it should be easy for English listeners to map the voicing difference between the Zulu fricatives onto those English voicing contrasts and recognize this phonetic difference. And that prediction was upheld: The English listeners were about 95% correct.

Then they asked the English speakers to tell the difference between three Zulu clicks: a dental [ǀ], an alveolar [ǃ], and a palato-alveolar [ǂ] click. English doesn't have any clicks at all, so the English listeners should be able to simply pay attention to the phonetic differences between these segments, without any interference from their English phonology. The English listeners were about 80% correct at these sounds.

Last, they asked the English listeners to notice the difference between two different kinds of bilabial stops in Zulu: the plosive stop is similar to the English [b] sound. The other is an implosive [ɓ], which is made by obstructing airflow at the lips, but when the stop is released, air flows into the mouth instead of out of the mouth. The English adults were not much better than chance at hearing this difference.

These results are consistent the predictions of the Perceptual Assimilation Model: Because the English listeners have only one phoneme category for voiced bilabial stops, their mental grammar simply treats the implosive as an allophone of the plosive. It's difficult for the adult learners to hear the phonetic difference between the two sounds in their new language because the mental grammar of their L1 categorizes both segments as members of the same phoneme.

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9.9: Second Language Acquisition Teaching Methods

9.9.1: Second Language Acquisition Teaching Methods, from Sarah Harmon



9.9.1.1: Video Script

I've been fortunate to teach foreign language for over 20 years, and it's been an interesting ride in those 20 years plus. The additional 10 or so beforehand, when I was learning a foreign language, these teaching methods changed just in my own lifetime, very drastically. While most of what you're going to see on this next slide is not in use anymore (thankfully), it certainly represents what most people had to suffer with respect to foreign language learning. I do use the term *suffer* because when we're talking about **grammar translation** and **audio call and response**, these are techniques that have been used for millennia, and with respect to language learning and they don't work. For a very small portion of the population, they actually do help, but for the most part we have left these methods behind. Grammar translation is when you have a term in language one, and then you have the term in language two, and you are supposed to repeat. It's usually a call-and-response type of scenario; I say 'this is not a hat'; 'este no es un sombrero'. You, the student, are supposed to say 'este no es un sombrero'. The lesson would go from there. It doesn't work because it does not actively engage the synapses so that you actually remember. What you're trying to say and what everything means. Remember that first rule of language: everything is arbitrary. If you do not see the pattern, you're not going to see how and why you should remember something, and it just won't stick.

For the last 40 years, we have moved away from that grammar translation, call-and-response mentality, and have been in the content-based instruction mode. There are two main flavors of this. The first is **immersion**, when you immerse yourself in the language 100% of the time. The usual case is that the person moves to a location that speaks that language, and then lives within the population and learns—not through osmosis, might I add—but the input. They're combining what they're hearing around them with classes. It must be said, immersion is all about motivation. For example, if you are forced to move to a new area that speaks a completely different language, you may not have a lot of motivation to learn that new language, you may feel a bunch of resentments, and therefore try to not learn that language. Or, you may be highly motivated because you need a job, so that you can earn money, and therefore be able to afford things. Everybody's motivation is going to be different, and an immersion scenario usually accelerates the motivation in one path or the other.

What we tend to do in a classroom is much more communicative; let me explain what that is. When we talk about the **communicative approach**, mostly we're talking about the work of Stephen Krashen, Bill Van Patten, and a number of others, starting in the late 70s and through to today. Recently, Bill van Patten published a new book about three years ago. The communicative approach is just that: acknowledging that language is a tool, and that we use it to communicate with others. There have been multiple iterations of the communicative approach over the last 40 years, and it is all based off of information that we know to be true, based off of observation and, in the last five years, what we've been able to show as far as how the brain processes language. (More on that in the next chapter.) Suffice to say that so many of the theories that we've come up with over the last 40

years as to how we learn language, how we process language, and how to improve the language learning environment, we're starting to see evidence of that with respect to the neural processing. It is a fascinating time right now to start understanding how language and the brain work.

For now, let's focus on the communicative approach. It's an active learning environment, so you really focus on getting the students to practice the language in multiple ways. The five Cs are the core: communication, culture, comparisons, connections, and communities. When you learn a language in a communicative approach, you are not simply learning the grammar and the vocab; you're learning the culture behind it, or cultures in the case of multicultural languages. You're making comparisons between your first language and this one, and perhaps any others you've learned along the way. You're making connections in a variety of ways: neural connections, the literal connections with respect to the language learning, but also connections with other peoples and then communities, which is you're communicating with other communities, not just locally, but around the world. It is important to remember that, with this communicative approach, we involve technology; this communicative approach starts off just as we were starting to have personal computers, and it really takes off in the 1990s, when we start to have Internet in all homes. Not surprisingly, with the Internet, you can then communicate with the world, literally. Harnessing that power of communication in the language classroom is incredibly important; it can be a hindrance, or it can be a help.

Personally, in my practice, I have always included communications with technology, even at its earliest stages. I was using the Internet to learn languages myself through online bulletin boards or chat. By talking and typing in the languages, I was learning to facilitate; at one point in my life, I could chat English, Spanish and Italian pretty much at the same time. (Those days are long gone, by the way; now, it's two at a time, at most.) That being said, if you encourage students to use the technology to push them forward, as a way to apply that knowledge—to read about something in that new language they're learning and then report on it, to talk to somebody whether it is live or it is email, to investigate a little bit more about that culture and then report back on it—these are ways that technology can help.

But technology in the language learning classroom can be a hindrance. The worst thing that a person can do is try to use some kind of app or website to translate everything. For one, it's not going to work and it's not going to work for some time yet; processors just do not function at that speed with all the permutations possible to give the correct translation. Most trained multilinguals can spot it every single time. The other reason that it does not work is because it is passive. One of the things I tell my students, regardless of the level of Spanish they're in, is I require them to be active in their learning. If you are looking up every single word, that's passive; you're not going to remember any of the vocabulary that you looked up. It's the same as the grammar translation; that never works. If you use that term that you look up, by using it in your speaking in your writing, and then later you hear it, and process it—that is what works. This active learning process gets ingrained into your mental lexicon for that language. That is how technology can be used as a tool.

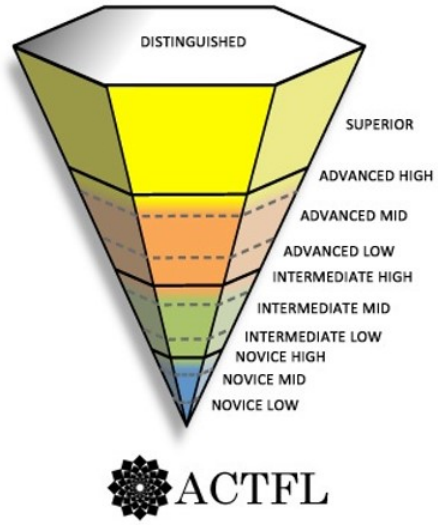
(And no, Apple Translate and Google Translate should not exist; they need to be abolished. 😝)

Flipped classrooms are a part of this concept, where you put the onus of the learning on the student. While the foreign languages have been doing this for some time, we got the idea from a lot of vocational or career technical programs. This scenario is where the student needs to read up and learn about certain processes in that course ahead of the class meeting, and then they come to the lab or they come to the classroom and apply it. If you're in a culinary program, you read about different culinary techniques, and then you go into the kitchens on campus and you apply them. If you're in an automotive program, you learn about a specific system, the transmission or the exhaust system or what have you, and then you go into the mechanic shop and you practice it. Foreign language classrooms have been moving to a flip model for some time; I've been teaching in a flipped model for about 15 years. It really does put the onus of the learning on the student; the student has to take that responsibility. But that's also how you foster two aspects that are really important in combating learner affect: If you put the responsibility for learning on the students, they find the motivation, they want to come to class prepared, or at least with the questions that they need answered. You also break down that learner affect because the student will take that skill that they read about at home. In the classroom, we're going to apply it; I'm going to have you read something and then I want you to tell me about it. Or, I'm going to have you write something to a person or colleague, or to a random person that doesn't exist. I'm going to have you tell a story or write a story; I'm going to have you give your version of Little Red Riding Hood or Sleeping Beauty or whatever folk tale you wish to use. When you use a flipped classroom with active learning, at its core language learning isn't so terrible. When you chunk the learning—meaning you break it down to little pieces and present those chunks in ways that students can acquire on their own—and then apply it in the classroom, suddenly the process isn't quite so onerous.

The last real thing that we're going to talk about with respect to language learning and teaching methodologies has to do with proficiency versus fluency. It is interesting when somebody tells me that they are fluent in a language, and especially if it's a

language I happen to share, and then I will see what that fluency really is about. The popular concept of fluency is something along the lines of, “I can make a basic conversation. I can maybe use some past tense, but I mostly stay in the present tense, because what else do I really need. I can go travel to a place, I can get food or water, do some kind of activity. In my eyes, I'm fluent in the language.”

The problem is when it comes to teaching methods, that's not fluency at all. What you see over here is the ACTFL pyramid; ACTFL is the American Council for the Teaching of Foreign Language. They're one of the preeminent academies, if you will, or associations with respect to language learning.



This inverted pyramid describes what you can do when you first start out, all the way up to the most distinguished and elevated speaker of that language. It doesn't matter what language we're talking about. When you start off, you're at a Novice level; you can make a list of things that you like or dislike, or attributes of something. You're only speaking in the present tense, and your vocabulary is very limited. When you're an Intermediate level, you're starting to branch into a couple of different tenses—not drastic, but a little bit more. You have a more robust vocabulary, but there's still plenty of holes. This is where most people's concept of being fluent is because, in truth, they're not really that fluid. They're really only speaking in the present tense and that's about it. For a linguist or a foreign language professional, in order to be fluent, you need to be in the Advanced level. It means that you modulate your verb structures, so you're using tense, aspect, and mood, those aspects we talked about deixis, semantics and pragmatics. If you recall, many languages have two, if not three tenses. Frequently, there's multiple aspects and there's different moods. If you're an advanced speaker, you're able to use those pieces, and you're able to convey so much more. A novice speaker really is only able to talk about themselves, and maybe immediate family. Intermediate speakers can talk about their immediate community, like their neighborhood. Advanced speakers can talk about their larger neighborhood. Superior is when you are fully fluent; you are a native or near-native, fully fluent speaker. You're able to talk hypotheticals, you're able to talk about potentials, and you're able to talk about massive complex sentence structures that usually involve a goodly amount of discussion.

What is really important with respect to this, is that language is a tool. We use the tool as a skill; I've used that metaphor throughout the course. This pyramid shows us that we always have room to grow.

The very top level is Distinguished, and there are very few Distinguished speakers of any language. For example, I’m a native speaker of English, I have a PhD in Linguistics—yet I am not a Distinguished speaker of English; I am Superior. I can do all of these things: talk all of these complex causal structures, and hypotheticals, and everything that you want. I can write an academic language. But to be a Distinguished person, that would be the highest level of legal language that you can think of. I do not speak legal-ese, as it were, so I’m not there. Most people who have a full formal education, usually through the concept of high school and maybe even a little bit of college, you're going to be in the Superior, or at least Advanced-High level. It's not to say that if you do not have formal education, you can't be up here in the Superior level; it just means you have to get your education from elsewhere. You can be a Superior level speaker in your native language and not have formal education. If you're consistently using hypotheticals, thinking about more than just your immediate society, talking about national or global society—when you start expanding with your language, that is when you come into those higher levels.

That's an important thing to bring up for everyone with respect to language: Push yourself, even in your native language or languages. Keep pushing yourself; keep reading; keep talking; keep expanding what you can do with that tool. You don't just learn to boil water in a cooking class; you learn how to cook, how to make a sandwich, or make a soup. You make some pretty important things; language is no different.

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9.10: Exercise your linguistics skills

Exercise 1. Here are some examples of utterances by young children reported by Bowerman (1988).

a. **Button** me the rest.
b. I don't want any more grapes. They just **cough** me.
c. I want to **comfortable** you.

In each example, the child has used a word (bolded) in a way that is unusual when compared to adult English grammar. For each example, describe the word's category and/or subcategory in adult grammar, then compare how the child's use of the word differs.

Exercise 2. Ambridge et al. (2006) conducted an elicitation experiment to observe preschool children's production of wh-questions. Here's an example of what the researcher said to the child:

- Mickey and Minnie are drinking something.
- I wonder what they are drinking.
- Ask the dog what they are drinking.

The children often responded with an adult-like sentence, such as, "What are they drinking?". But they sometimes made errors like these ones:

a. What they are drinking?
b. What are they are drinking?

Draw a tree diagram to represent the adult version of the question. Then compare the children's errors to it. How do the children's grammars, as evidenced by their errors, differ from the adult grammar?

Exercise 3. Imagine your cousin's young child starts kindergarten at age 3;10. Before starting kindergarten, the child has spent half-days in an English-language daycare, and the rest of their time at home with their parents and grandparents, where the adults most often speak Farsi. At the first parent-teacher interview, the teacher points out that your cousin is behind the other children on some of the typical milestones, and advises the parents to start speaking English at home. What power structures are at play in this advice? What biases does the teacher have? What advice could you give to your cousin, informed by what you know about language acquisition and about power and privilege?

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9.10.1: Exercise your linguistics skills

9.10.1.0.1: Exercise 1.

The phonetic inventory of French includes a pair of tense and lax high, front, rounded vowels [y] and [ʏ], as illustrated in the following words:

[lʏn]	*moon*
[tʁʏk]	*thing, trick*
[lynɛt]	*glasses*
[tʁyke]	*to rig or falsify*

These two vowels are not part of the English phonetic inventory. What substitutions are L1 English learners of French likely to make when they pronounce these words? Explain the reasoning for your predictions.

9.10.1.0.1: Exercise 2.

German includes the following phones:

- the voiceless post-alveolar fricative /ʃ/, which contrasts with
- a phoneme that has two allophones: voiceless velar fricative [x] and voiceless palatal fricative [ç].

Given what you know about English phonology, how easy or difficult will it be for an L1 speaker of English to learn this contrast in German? Explain how you arrived at your conclusion.

9.10.1.0.1: Exercise 3.

Think about your mental grammar in your L1. Consider the phonetics and phonology, lexicon, morphology, syntax, semantics and pragmatics. What parts of your language knowledge would you classify as declarative knowledge? What parts are more like procedural knowledge?

Now think about any language you've learned later than your L1. Would you classify the parts of your grammatical knowledge in your later language the same ways?

9.10.1.0.1: Exercise 4.

Think about your experience of learning a later language. What parts of your L1 grammar led to a positive transfer to your later language? What parts of your L1 created a negative transfer to your later language? Consider phonetics and phonology as well as morphology and syntax.

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CHAPTER OVERVIEW

10: Psycholinguistics and Neurolinguistics

Learning Objectives

When you've completed this chapter, you'll be able to:

- Describe several important experimental methods in psycholinguistics and neurolinguistics,
- Support claims from theoretical linguistics using experimental evidence, and
- Explain why the field of linguistics is viewed as a part of cognitive science.

In this chapter, we will explore experiments in psycholinguistics and neurolinguistics that give us information about the way language works in the human mind. We will show how experimental evidence can support the concepts in linguistic theory introduced in the previous chapters.

10.1: The mind makes language
10.2: Human Language versus Animal Communication
10.3: Evolution of Human Language
10.4: Evidence for 'top-down' effects of word knowledge on perception
10.5: Evidence for phonemes as mental categories
10.6: Language Processing in the Brain
10.7: Aphasia
10.8: Autonomy of Language

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10.1: The mind makes language

Linguistics is a part of the field of **cognitive science**. The hypotheses that we have developed in this book about important linguistic elements, like phonemes, morphemes, phrase structure etc. are in some sense really hypotheses about how the human mind represents language. A classical view of cognitive science holds that the mind has symbolic representations, and operations that transform these representations. Connecting this larger framework to linguistics, we can think of our mental grammars as the means by which linguistic representations (like our phonemes, morphemes etc.) are transformed. For example in spoken languages, a *phoneme* is encoded into the appropriate *phone* according to the phonological rules of the language prior to being spoken.

Sometimes, the intuitions of native speakers provide enough evidence for the importance of a particular linguistic element or rule as a part of the mind's capacity for language. But sometimes linguists are interested in different kinds of evidence for these important concepts in linguistics, or they want to know how the important concepts are deployed during language production or comprehension. **Psycholinguistics** is an interdisciplinary field in which researchers devise experiments to test hypotheses about linguistic representations and processes in the human mind. Psycholinguists normally use behavioural methods, for example measuring how quickly someone can make a decision about a word after seeing it on a computer screen (we will explore this particular method later in the chapter). In this chapter we will focus on the relationship between psycholinguistic findings and linguistic theory, but psycholinguists also propose and evaluate theories of mental processes like language production and comprehension.

As a basic assumption, we will assume that the human mind has a biological basis in the brain. **Neurolinguists** conduct similar research to psycholinguists, but with a focus on figuring out how language as a cognitive system is organized and implemented in the biology of the human brain. They use experimental methods from cognitive neuroscience as well as examining disorders of language that arise from problems in the brain, for example following a stroke or other brain injury. Neurolinguists may be interested in evaluating linguistic theory, but also have neurolinguistic theories in their own right, similar to psycholinguists.

The fields of psycholinguistics and neurolinguistics are too vast to be summarized in one chapter of one book. So in this chapter, we will focus on experiments that provide further evidence for some of the important concepts from earlier chapters. We will also highlight some of the key experimental methods used in these fields.

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10.2: Human Language versus Animal Communication

10.2.1: Human Language versus Animal Communication, from Sarah Harmon



10.2.1.1: Video Script

part of it. I know a number of you have felt it was difficult throughout this whole process; I'm not going to argue. But when we talk about the actual neural components to language—how the brain processes language—this is where things get really technical.

For this section on animal vs human communication, this is evidence that we have up to this point. It's still evolving and we're still learning, but I can be more confident with what we're saying and what we're presenting here. There is so much that we're still learning about this thing between our ears and how it processes everything, including language, that this is constantly evolving. Just for a frame of reference, I am recording this mid-August of 2021; by the time you watch this, there could be some significant advances, and I won't know it until we get there. Just know that everything I'm presenting is with a grain of salt, in the sense of I am presenting the latest that we have up to this point. There is much more research to come, there is also more research underway and, additionally, our understanding of everything is changing. I'm confident and what I'm going to present for this chapter, but understand that things are changing.

Let's start off with a discussion that we had back in Chapter 1 when we talked about animal communication and human language. Let's refresh our memories a bit; let's go back to those **attributes or hallmarks of human language**. We understand that human beings have something that is potentially unique, if not very rare, that this form of communication—we talk with arbitrary signs and signals, we talk about things in front of us and not in front of us., we transmit aspects of our culture of our lives, we make an infinite use of finite means, we only have a certain number of vocabulary or lexicon, we only have a certain number of ways that we can put them into a phrase, and yet we can say anything that comes to mind, that we are productive and creative and constantly changing and adapting with our language, we can talk about all these things and ourselves, we can create, we can express and we can talk about things that are not just here in now, not just immediate needs, we go well beyond that. Just think of this class alone!

There are some similar aspects that we see in other forms of animal communication, but limitedly. Let me explain a little bit. There's no question that all animals have some form of communication to express their needs and basic desires; that's not in-argument. The question is: Are they be able to talk about things, not in front of themselves? Are they able to talk about hypotheticals, or make suggestions? Are they able to talk about things that happened in the past, or what may happen in the future?

Maybe. This is why I'm going to say maybe. We know, for example, that most species of birds are able to describe where food or mates are when they're not in front of them—as if to say, "Oh yeah, that flower, that is about five miles that way. That's a really good place to go get nectar." We know that birds and bees tend to do this, and we see other mammals, especially other primates, have aspects to this in their forms of communication. However, we're still not sure what they actually do among their species.

We are not talking about mimicking human language, and that's a really crucial piece of this argument. We are not talking about when we try to teach a parrot how to talk, or when we try and force another primate to learn a primary sign language. That is not how they communicate with each other, and so we have to abolish that concept entirely.

Because we understand that what a different species used to communicate with its peers is going to be different than what humans do, the research that I'm referring to requires analyzing, observing and being descriptive about what species do amongst their own kind, and to a lesser extent to other animals in the region.

When we talk about animal communication, I love this old *The Far Side* comic—I'm sorry, I'm a Gen X and *The Far Side* was part of my upbringing.



It encapsulates everything that we think of about animal communication versus human language, as far as what we say to them versus what they hear and understand. I absolutely love and adore *The Far Side*, especially this comic but I'll give you an example in real life. I have a cat her name is Bella and she is 16. When I think about my cat, and I've had her since she was a kitten since she was three months old, there's a ton of things that we communicate to each other through voice and through body language. She tells me when she needs attention and love, and when she thinks I need attention and love. She tells me very clearly when she has no food in her bowl or its old food and it's not acceptable anymore. She plays well, not so much anymore, but certainly when she was younger, and she definitely communicates that when I go away, she doesn't like that, and when I come home, she makes that very well known. I communicate to her when she does it behavior that I do not approve of, like if she were to scratch the furniture —which she's never done save for once, and it was to get my attention because I forgot to feed her, so she knows how to get my attention. We have a form of communication. When I am at a low point, she's one of those folks I confide in; I cry and she's there. She cuddles me, and I cuddle her; I tell her all my hopes, fears, desires and wishes. and she purrs.

Now, does she understand what I'm saying? Or, is she like *The Far Side* comic where she just hears noise and she doesn't know what it is? I don't speak cat and she doesn't speak human, so I don't know what really is able to be communicated as far as displacement, as far as productivity or creativity. We certainly have arbitrary sounds and meanings for those sounds. It has often

been said, the cats probably learn to meow because of humans their interactions with humans. When they meow in certain ways, humans do certain activities, and it's a symbiotic relationship. I think there's some of that that's true. But she's not able to tell me her deepest hopes, wishes and desires; she's not able to tell me what she thinks might happen in the future, or what did happen in the past. I don't know what she thinks really, although as I'm saying this, she's walking around my feet right now, because she's clearly telling me she doesn't want me talking like this, she doesn't want the camera and she doesn't want the lights. She wants me on the bed right now; she's able to communicate her needs and basic desires. But not much more. Is that to say that she can do that with a different cat? Who's to say?

Where we have been starting to observe a few pieces with respect to animal communication and whether they might have a language, primarily, has to do with our primate cousins. We know certain things to be true. First of all, their vocal tracks are not like human vocal tracks; they are well more primitive, to the point that they cannot produce the sounds that we can produce. We know that part that goes out the window. Yes, it is true that, certainly for other great apes like chimpanzees and gorillas, some have been taught American Sign Language, in particular, and a few other primary sign languages. But—and this is a huge 'but'—their learning is very slow and formulaic, and they basically get stuck at the level of a three-year-old. If you remember telegraphic speech from child language acquisition in the previous chapter, they're not able to do much more than that, at least not in ASL. They're also not able to create with ASL very well at all. Therefore, I would argue that you can throw out using any kind of human language with a primate; it's probably not going to work.

All that being said, there is quite a bit of evidence to suggest that they *might* have something primitive. I'm saying the term 'primitive', but I do not want you to think that this is a prescriptive use of it. It's saying that this is a very early stage, and maybe in a millennium or several they might have the capability to use a language, much like a human language. At this stage, we don't know. What do we know is that chimpanzees and other great apes are able to teach each other tools. Chimpanzees are particularly good at this, but even we see this in gorillas and some other great apes. We also know that other primates use sounds to communicate things beyond basic needs and desires, not just a warning system, not just to say, "Hey, I need food" or "Hey, I need sex." You do observe them using the sounds in more arbitrary ways. But—and this is an incredibly important point—we are still trying to decipher what those calls and sounds mean. When we observe our primate cousins teaching each other how to use tools, they are not necessarily using a vocal communication to do it. There is some kind of gesturing. I don't really want to call a sign language yet, because I think it's too early to say that, but our colleagues and primatologist are showing us that our primate cousins, especially the great apes are able to use some kind of communication that's at a higher level than what most other animals do.

Primates are an interesting discussion. What is also interesting, and this is in the video below is Zipf's Law, and the video is going to go a little more into that. Here's the interesting thing: It could be that dolphins in particular might have a language. You may have heard of studies on dolphin communication before, and this is an area that continuously evolves. Suffice it to say we are very much at the precipice of understanding what other animals do when they need to talk to each other, when they need to communicate to one another, beyond their basic needs, hopes and desires. We are still learning so much about what our own brains do, let alone what other brains of other animals do. So, we'll come back to this—maybe not in this class, and maybe not in the next year, but certainly in the future, so keep an eye on this.

10.2.1.2: 10.1.2 More on Zipf's Law, from NOVA Wonders (PBS)

To finish things off, watch the video below about Zipf's Law, and why we still have so much more to learn about other animals and their methods of communication. (The video is captioned.)



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10.3: Evolution of Human Language

10.3.1: Evolution of Human Language, from Sarah Harmon



10.3.1.1: Video Script

When it comes to the evolution of human language, we still have quite a few missing pieces, but there is more that we can say with certainty at least up to this point. As far as when the first human language came into existence, let me dispel something really quickly: we don't know. We know that *homo sapiens sapiens*, our current version of the species, seems to have a language capacity from the start> For reasons that I'll come to in a minute, we are starting to understand that maybe other hominids also had if not as robust language as we have now, certainly something pretty close. There's so much more we have to know; there's so much that we probably will never know. But let's start off with some basics.

Based off of data—not just linguistic data, but biology, paleontology, anthropology and archaeology, all of the studies of the human existence, we know the following:

- The formation of our vocal tract as well as our ear is unique. Even amongst primates, it is unique. That may have something to do with this concept; it could be that we evolved to have these apparatuses so that we could communicate via language. As I said, this is something unique amongst even the primates.
- We also know that there are a couple of areas of the brain, in particular, that in humans seem to be more developed than any other species. Specifically, that's **Broca's Area** and **Wernicke's Area**; in the next couple of sections, you'll learn more about them.
- We also know that humans have a very specific genetic mutation, which I'm going to talk about that in a minute.

All of this aside, we still have folks who are deaf from birth, yet they seem to be able to communicate with a language, if not more than one language just fine—so maybe the vocal tract and ear may not be exactly connected to this linguistic faculty; it may, but we're not sure.

As far as theories about how languages evolved in the first place, a couple of them have come about that should be debunked, but others have a little bit more merit. The first one is that our linguistic faculty comes from **gestural origins**. I like thinking of the caveman metaphor, as it were, that early hominids or early humans gestured and grunted a lot, and then they decided to become more fluent and more expressive. This pretty much has been thrown out; we are pretty confident in saying that that probably is not the case. While there certainly was an evolution of language, and the first language that was spoken was not as robust as modern English or Sanskrit or Old Chinese or Sumerian, but evolved to that point. The other hypothesis comes out of primatology. The **grooming hypothesis** is the concept that if you watch other primates, in particular, and some other mammals, we groom each other. Let's face it, folks; what happens when we go get our hair done? What happens when we get our hair cut in a hair salon, whether we go to the same person over a number of years or it's a brand-new person? We talk a lot. Therefore, the thought is perhaps that's

part of the grooming experience, that you talk and exchange information. You get to know each other a little bit better, if you don't already, and life goes on. However, linguists by and large don't tend to subscribe to this hypothesis. It's circumspect; there are plenty of people who don't say anything when they are being groomed. There's also plenty of times when we communicate and it has nothing to do with grooming.

Genetics might hold a key, and this is tied to **Universal Grammar**, the fact that we have this template or this faculty for language. That was the hypothesis of Noam Chomsky back in the late 50s-early 60s, and we more or less continue with a version of that to this day. Interesting data have come about and, specifically, it has to do with the specific gene called the FoxP2 gene; if you take an anthropology course, you may hear about it. The FoxP2 gene in humans has a very specific mutation that you do not see in any other primates or any other mammal or any other animal. There are people who have a different mutation of the FoxP2 gene, and they do not have as strong or robust a faculty for language; they are not as expressive linguistically. They are more basic in their needs, and their mutation is very similar to what we see in other primates. We don't fully understand the role of the FoxP2 gene; it seems to have something to do with the motor cortex, which is part of the left hemisphere that hits right about where Broca's area is and has something to do with motor skills, along with muscles in the face. Maybe it has something to do with language. And this is a maybe. We have no proof yet; we're still collecting data and trying to understand the brain and everything about it. But with respect to that one gene, perhaps that is the case.

The final one to talk about the **social cognition**, which again tapping into this concept that human beings are social creatures. We crave being in a social environment and, if you think back to the previous chapter when we talked about theories of how children learn a language, a couple of them had social components to them. That's because we can observe how children interact both amongst other children as with adults and how they acquire language. One thing we suspect—I won't go stronger than 'suspect'—is that if we see this in modern humans now, this might tie into how humans acquired language originally. This is a very questionable idea; we do not know whether this is true, mostly because we're lacking a few things. For example, a time machine would be helpful. 😉 It's a nice idea to think about. What we have been able to show is that many of the same patterns we observe with children and how they acquire a language come up when we talk about creolization and second language acquisition as an adult. Maybe there is something to this concept that as social creatures, we feel the need to express more. But there are other animals, especially other mammals, that are equally social, yet they don't seem to have a language like ours, at least not something we can identify. Therefore, this is a 'perhaps'.

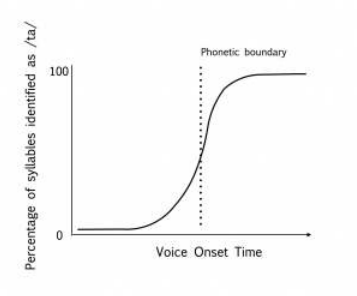
Truth be told, what we can say is that there might be a little bit of all those reasons; maybe not so much on the grunting and the gesturing, and maybe less so on the grooming hypothesis. With the latter two, they seem to have some more plausibility. But here's the thing: there could be other aspects, with respect to the development and the evolution of language, that we don't know. What we really need is that time machine. So, get on it, folks; create that time machine, so that we historical linguists can go back in time and we can go find out the answer. 😉

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10.4: Evidence for ‘top-down’ effects of word knowledge on perception

The preceding sections provided evidence for how a speaker’s knowledge of the phonology of their language can influence the way they perceive speech. In this section, we will see that a speaker’s knowledge of the words of their language also has an influence on the way language is perceived. In particular, we will focus here on ways in which a speaker’s word knowledge has an influence on the speech sounds that they hear.

The first example comes from an influential experiment by Ganong in 1980. Remember from Section 13.2 that the difference between a voiced stop like [d] and a voiceless stop like [t] is the stop’s Voice Onset Time, or in other words the time between the release of the stop closure and the beginning of the following vowel. Many years of research have shown that although Voice Onset Time is a continuous variable – it can take on any millisecond value – listeners perceive a sharp boundary between speech sounds like [d] and [t]. So in an experiment that presents participants with different values of Voice Onset Time and asks them to indicate whether they heard [d] or [t], you would get nearly all [d] responses below a threshold and nearly all [t] responses above that threshold, with only a small area of uncertainty in the middle. This figure shows a typical pattern found by experiments that vary Voice Onset Time in increments. Below the boundary between [d] and [t], nearly all participants would identify the sound as [da]. Above the boundary, the responses would be all or nearly all [ta]. There is only a short window around the boundary where responses are not all one way or the other.



Graph showing a typical pattern found in phoneme identification tasks. This particular graph does not show real data, but rather an idealized pattern.

This pattern is called **categorical perception** and holds for a variety of phonetic continua other than Voice Onset Time as well. Categorical perception was initially thought to reflect phonological knowledge, but subsequent studies provided evidence against that interpretation. For example, categorical perception is found for contrasts that are not a part of the phonology of a listener’s language, for babies who have not had sufficient time to tune their mental grammar to the phonology of their language, and even for non-human animals, who we presume do not have human-like phonology (see Kuhl and Miller, 1975, for a study on chinchillas). This is why, in this section, we use the square bracket notation for [d] and [t].

Building on the robust findings of categorical perception, Ganong examined whether presenting sounds on a continuum from [d] to [t] as a part of words would influence participants’ perception of the sounds. In particular, words were chosen such that at one end of the continuum, the word was a real word of English (e.g., *dash*), while at the other end, the word was pronounceable but not a real word of English (e.g., *tash*). The critical hypothesis was that listeners might be more likely to categorize a sound that was intermediate between [d] and [t] as the sound that would create a real word. This is what Ganong found. When a sound near the threshold was presented as part of *Xash*, where X represents the critical stop consonant, it was more likely to be perceived as *dash*; (the real word of English) rather than *tash* (which is pronounceable but not an English word). When the same sound is presented with *Xask*, it would be more likely to be perceived as *task* (a real word of English) rather than *dask*. So people’s knowledge of words of English influenced which speech sound they heard, even when the acoustic signal is the same. This finding, which now gets called a **Ganong effect,** is an example of a **top-down** influence on perceptual processing. We call information that flows to the brain from the outside world through sensory surfaces, like the vibration of the inner ear or an image on the retina, **bottom-up** information. It is no surprise that bottom-up information has an influence on processing, as it couldn’t really be any other way. What we call top-down influences are cases where our knowledge, for example our knowledge of words, has an effect on perceptual processing. In this chapter we have seen several ways in which our knowledge of language has an influence on the way we process linguistic input from quite early stages of perception.

10.4.0.1: References

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Kuhl, P. K., & Miller, J. D. (1975). Speech Perception by the Chinchilla: Voiced-Voiceless Distinction in Alveolar Plosive Consonants. *Science*, 190(4209), 69–72. www.jstor.org/stable/1740887

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10.5: Evidence for phonemes as mental categories

In Chapter 4, you learned that every human language has a phonology, but that the phonology of each language is distinct. For example, two sounds that are allophones of a single phoneme in one language might be separate phonemes in another language. The conclusion that we reach, then, is that each language has its own way of organizing speech sounds into a phonological system. This system is part of the mental grammar of a speaker of that language. In this section, we will examine some evidence from psycholinguistic and neurolinguistic experiments that provide further support for phonology as something that the mind and brain do.

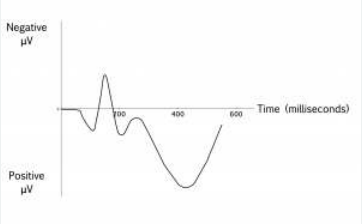
Chapter 4 defined a *phoneme* as the smallest unit in a language that can create contrast, such that exchanging one phoneme for another can create a minimal pair. The English words *pat* (/pæt/) and *bat* (/bæt/) differ only in the initial phoneme (/p/ or /b/), but have different meanings. This makes them a *minimal pair*, and the fact that we can make a minimal pair shows us that /p/ and /b/ are separate phonemes in English. Another way of thinking about phonemes is to say that a phoneme is a mental category of speech sounds (signed languages also have categories that permit variation, so this isn't something special about spoken language). It was also noted in Chapter 4 that English voiceless stops like /p/ are produced with aspiration (written [p^h]) at the beginning of a stressed syllable. But the difference between an aspirated and unaspirated voiceless bilabial stop ([p^h] vs. [p]) cannot create contrast in English. This is because [p^h] and [p] are two variants of a single phoneme. When a speaker of English hears either [p^h] or [p], the mind of that speaker maps the sound onto the same category /p/. Of course there are many other languages that treat [p^h] and [p] as separate phonemes, for example Hindi and Thai.

We can make conclusions about the categories a speaker of a given language has in their mind by doing phonological analysis. We can look for minimal pairs, for example, or try to characterize the phonological environments in which a given speech sound appears. But in this chapter we are exploring the idea that these categories are exist in the mind and brain of a speaker. We might ask then, can we find evidence that our brains map sounds to the category they belong to. In other words, we might ask whether our brains treat sounds that vary a little bit in their acoustic qualities as the same, because they are examples of one phoneme.

One group of researchers (Phillips et al., 2000) looked for this kind of evidence by examining whether our brains show a 'surprise' response to a new sound that is in a different phonological category to the others.

How to be a linguist: The use of electro/magneto-encephalography in linguistics

You have likely seen visual representations of electroencephalographic (EEG) recordings in medical or scientific settings. These look like wavy lines and are recordings of electrical activity from electrodes placed on the surface of the scalp. The overall character of the wavy lines varies depending on a number of factors, for example whether the person whose scalp is being recorded is awake, asleep, or having a neurological problem like a seizure. Psycholinguists, however, are typically interested not in these overall differences but in very small changes in the electrical field generated by the brain in response to a stimulus. These are called Event-Related Potentials, or ERPs. To compare ERPs to different stimuli, researchers must typically collect a number of responses from one participant, and collect responses from a number of participants. In the end, an average response to a stimulus might look something like the following:



Sample averaged ERP wave from a single electrode.

Notice that in this diagram, negative electrical potentials are plotted up; this is merely a convention in this type of research. The horizontal axis represents time, beginning at the time the stimulus is presented to participants.

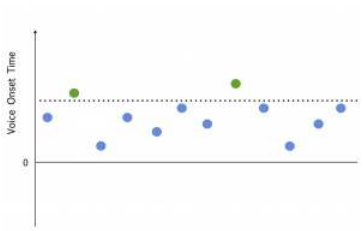
Several decades of research into Event-Related Potentials have shown that there are characteristic brain responses to, for example, seeing a printed word on a computer screen or hearing a spoken word of a vocal language. Researchers have shown that ERPs are sensitive to, for example, whether a word is expected versus unexpected in a sentence (see e.g., DeLong, Urbach and Kutas 2005), or when it is an ungrammatical continuation of a sentence versus a grammatical continuation (see e.g., Friederici, Hahne and Mecklinger, 1996), etc.

ERPs are a useful source of information to psycho- and neurolinguists because they record the brain's activity with high *temporal resolution*: they record the brain's responses as they are happening with timing accurate down to the millisecond. However, although differences in ERPs can be found at different electrode locations on the scalp, typical ERP studies cannot tell us very much about where in the brain the critical response is happening. In other words, its *spatial resolution* is poor.

Another method that, like EEG, has excellent temporal resolution is magnetoencephalography (MEG). This method examines changes in the magnetic field generated by the brain (which is of course related to the electrical field). The main advantage of MEG over EEG is that MEG allows researchers to draw better conclusions about where in the brain the response of interest originated.

Previous research in ERPs had shown that there is a measurable brain response to auditory stimuli (sounds) that stand out from the rest. For example, if you have people listen to tones, where most of the tones have an identical frequency but a small proportion have a different frequency, the tones in the minority are associated with a specific brain reaction that gets called the **Mismatch Negativity**: Mismatch because the tone mismatches what is normally heard, and negativity because the measured brain reaction is a negative-going wave in the measured electrical signal. The Mismatch Negativity can be measured even if a person is not really paying attention to the sounds, for example if they are watching a silent movie during the experiment (see Näätänen and Kreegipuu, 2012 for a review findings regarding the Mismatch Negativity).

Using magnetoencephalography (MEG), Phillips and colleagues (2000) asked whether presenting stimuli that had the structure in terms of phonological category, but importantly not in terms of a mere acoustic difference, would elicit the MEG version of the Mismatch Negativity, called the Mismatch Field. The specific contrast they examined was a voicing contrast – whether a sound would be categorized as /dæ/ or /tæ/. The difference between these two comes down to a difference in the time between the release of the stop consonant and the beginning of voicing the vowel, or the Voice Onset Time. Critically, speakers of English perceive a /t/ sound when Voice Onset time is above about 25ms, and a /d/ sound when it is below – the switch is sharp rather than gradual. But within those categories, the millisecond value of VOT can vary. Take a look at this figure. Each dot represents one syllable sound, with the vertical axis representing Voice Onset Time. You can see that there is a variety of Voice Onset Times in the diagram. None of them would stand out in particular if we hadn't marked the perceptual boundary between /ta/ and /da/ with a dotted line. The green dots represent sounds that would be identified as /ta/ and the blue dots as /da/. This diagram shows that the important many-to-one relationship isn't there when considering acoustic values only. But from a phonological point of view, there are a lot of sounds in the /d/ category and only a couple in the /t/ category.



Syllable sounds that vary in Voice Onset Time. The dotted line represents the perceptual boundary between the phonemes /da/ and /ta/. Green dots represent syllables likely to be identified as /ta/, and blue dots represent syllables likely to be identified as /da/.

By presenting their participants with sounds that varied in their millisecond value of VOT, but where only a small subset crossed the boundary to be perceived as /t/, Phillips et al. were able to test whether a mismatch effect would occur at the phonological level. This is because the critical many-to-one relationship that leads to a Mismatch Negativity only existed at the phonological level, not at a purely acoustic level. Phillips et al. found a phonological Mismatch Negativity, and they further showed that this effect originated in a part of the brain that processes auditory information. The fact that the Mismatch Negativity was present in this part of the brain shows that the brain processes phonological contrasts quite 'early' in perceptual processing, before other brain areas more typically associated with language processing get involved.

10.5.0.1: References

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13.3: Evidence for language-specific phonology

In Section 13.2, we examined some evidence that the part of the brain that processes auditory information is sensitive to phonological categories. Critically, in the study by Phillips and colleagues (2000), the participants were English speakers who have separate /t/ and /d/ phonemes as a part of their mental grammar. We could expect that for a speaker of a language that doesn't have that distinction, the pattern of brain reactions could be quite different.

Researchers have studied how a person's native language could influence their processing of vocal language. For example, Marslen-Wilson and Lahiri (1991) asked whether Bengali speakers and English speakers would process nasal and non-nasal vowels differently. Both English and Bengali have nasal vowels, but the nasal/oral distinction is only phonemic — in other words it can only create contrast — in Bengali.

For example, the English word *ban* is typically pronounced with a nasal vowel ([bæ̃n]) because of a phonological process called nasalization. The vowel becomes nasal because of the influence of the upcoming nasal consonant /n/. The vowel in *bad* is not nasalized because /d/ is an oral consonant. So in English, nasal vowels are predictable based on the phonological environment they are in: before a nasal consonant, the vowel is nasalized, and elsewhere the vowel is oral. Therefore, [æ̃] and [æ] are variants — *allophones* — of one phoneme.

Bengali also has a rule nasalizing vowels before nasal consonants, but is different from English in that having a nasal versus an oral vowel is not completely predictable based on the phonological environment. For example, Bengali has the minimal pair /bãd/ (which means 'dam') and /bad/ (which means 'difference') that differ only in the nasal/oral status of the vowel /a/ and yet have different meanings. This means that in Bengali, /a/ and /ã/ are separate phonemes.

Marslen-Wilson and Lahiri showed that this difference in the phonemic status of nasal and oral vowels between English and Bengali has an influence on how speakers of these languages recognize spoken words. Before we get to their experiment, let us introduce some background about spoken word recognition and their experimental method, the **gating task**.

Spoken words unfold over time. The human mind doesn't wait for a word to be over before recognizing it, but rather activates potential matches from the very beginning of hearing the word. Upon hearing the first sound of a word, there will be a large number of potential matches. This number will get smaller and smaller as more of the word is heard, because potential candidates will be ruled out. For example, imagine that a listener hears the word *report* (/ɹipoʊɹt/). The first phoneme, /ɹ/, is compatible with lots of words: *report*, *red*, *reach*, *robot*, etc. Once /i/ is heard, then *red* and *robot* would be ruled out because they are no longer compatible with the input. The set of all potential matches that overlap with the beginning of a word up to a given point is called an **onset cohort**. One influential model of spoken word perception, the Cohort Model (see Marslen-Wilson & Tyler, 1980) claims that members of the onset cohort of a word become active during the hearing of the word, but that the activation for a potential match drops off once the evidence is no longer compatible with that word.

At a certain point in each spoken word, listeners (on average) will be able to correctly identify what the word will be. This is called the **recognition point** for that word. One way to determine a word's recognition point is through an experimental method called a **gating task**. In the gating task, a recording of a word is presented to experimental participants in progressively bigger fragments. After hearing a fragment of the recording, participants are asked to guess what the word is, perhaps by writing down their guess. As you might imagine, these guesses become more accurate as the fragments become longer. Eventually a particular fragment length will provide enough information to reach a threshold where most people correctly identify the word, so the end of that fragment can be said to be the word's recognition point.

Marslen-Wilson and Lahiri asked whether a listener's knowledge of the phonology of their native language would influence their ability to recognize words as they unfold. They found that English listeners could identify whether a word was *ban* or *bad* before they heard the last consonant, because the nasal or oral quality of the vowel helped them predict what the upcoming consonant would be. Bengali listeners, on the other hand, needed more information before identifying a word with a nasal vowel, leading to a

later recognition point for those words. This is presumably because, in Bengali, a word with a nasal vowel could end in a nasal consonant, like /n/, or an oral consonant, like /d/. Bengali speakers do not use the nasal or oral quality of the vowel to predict the upcoming consonant because, in their mental grammars, nasal and oral vowels are separate phonemes.

Further language-specific phonological knowledge has been found using ERPs and again, the Mismatch Negativity. Dehaene-Lambertz and colleagues (2001) asked whether sequences of syllables would be processed similarly by speakers of languages with different **phonotactic constraints**. Remember from Chapter 4, Section 4.2 that languages have restrictions on what syllables they allow. In Japanese, for example, nasals are the only consonants allowed at the end of a syllable – oral consonants cannot be syllable codas, in other words. English and French, however, allow a variety of consonants in coda position. So what happens when a Japanese speaker listens to sequences of syllables that have an illegal coda consonant?

Following up on earlier work by Dupoux and colleagues, Dahaene-Lambertz et al. presented French native speakers and Japanese native speakers with fake words like *igumo* and *igmo*. The first one, igumo, is possible with either Japanese or French phonotactics because it can be split i.gu.mo (here I have used '.' to indicate a syllable boundary). The second one only fits the phonotactics of French. The sequence /gm/ is not a good syllable onset in either language, so the only potential syllabification is ig.mo. This is a possible word of French but not Japanese, because it has the a /g/ as a coda consonant.

In their experiment, participants listened to sequences of fake words while the electrical signal from the surface of the scalp was recorded (EEG). The participants heard one word several times, which was then followed by either the same word again, a word that differed only the presence or absence of /u/, or a completely different word /igimo/. They found that for the cases that differed only in the presence of /u/, French speakers indicated that the last word in the sequence was different from the rest, whereas Japanese speakers largely thought they were the same. The brain's response echoed the responses – the French speakers showed a response that can be interpreted as a Mismatch Negativity for the 'deviant' items but the Japanese speakers did not. So why would the Japanese speakers not notice a difference between /igmo/ and /igumo/? One interpretation of this finding is that because /igmo/ doesn't fit with the phonotactic constraints of their language, Japanese speakers mentally insert a vowel to correct the illegal coda. In other words, Japanese speakers "hear" /igumo/ rather than /igmo/. So our mental grammar can influence the way we perceive speech.

This experiment is part of a body of evidence demonstrating that our knowledge of the phonology of our native language, as a part of mental grammar, has an influence on how our brains process language.

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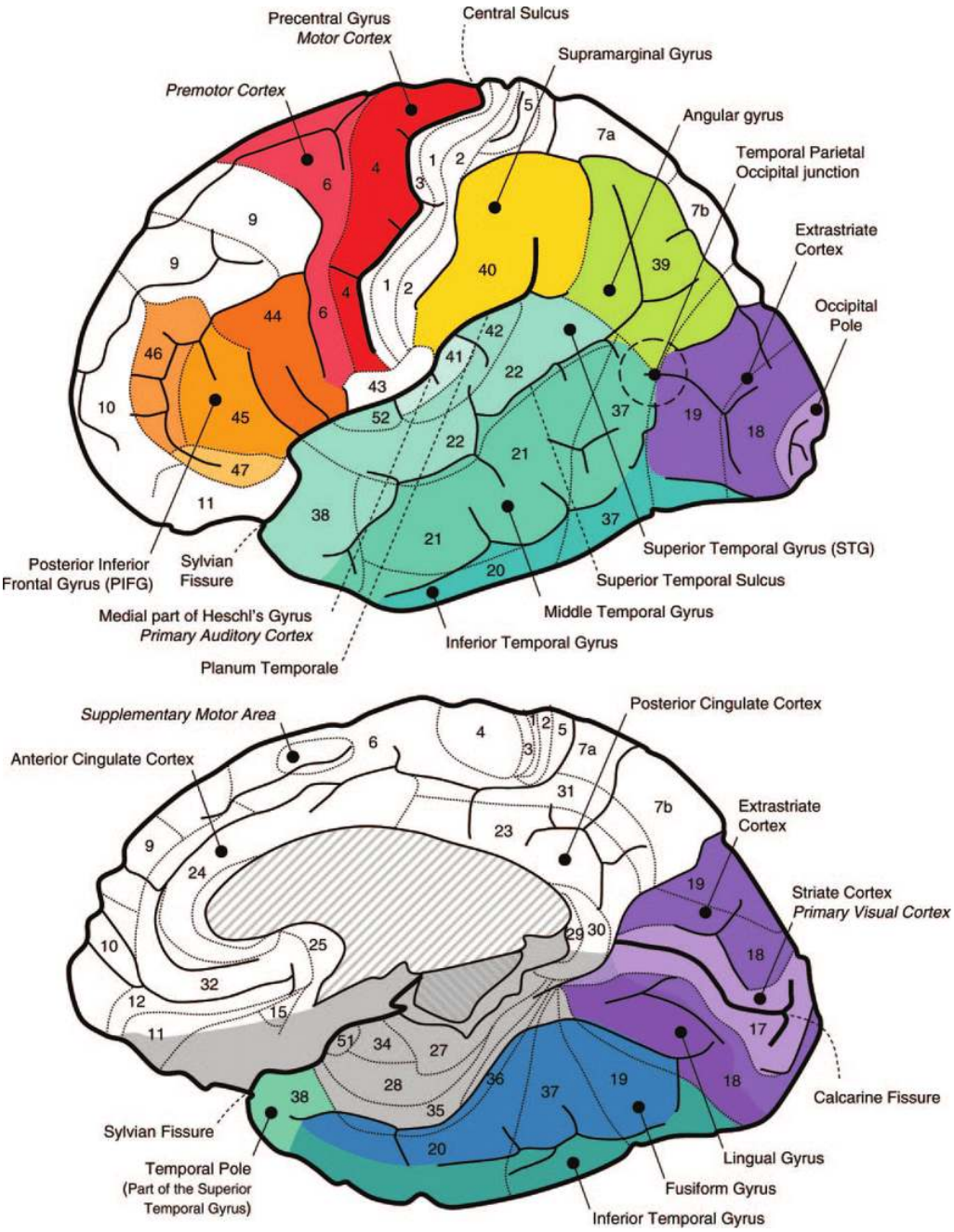
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10.6: Language Processing in the Brain

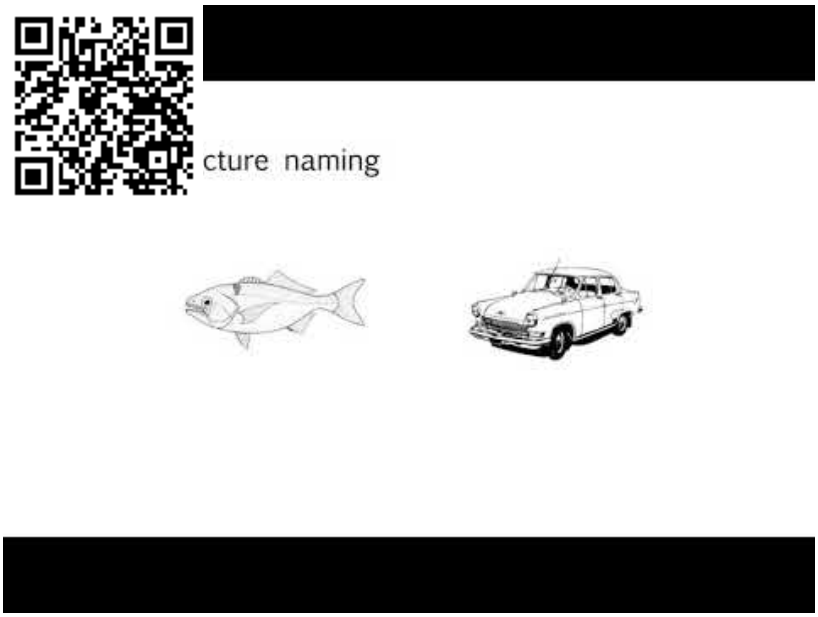
10.6.1: The brain and language processing

Below are some updated graphics of the brain with respect to processing. They may be useful to you as you read the subsequent material.

The anatoy of the functional areas of the cerebral cortex



10.6.2: Neurolinguistics: Syntactic Category Differences in the Brain, in Anderson's *Essentials of Linguistics*



10.6.2.1: Video Script

We've seen that we can group words into categories according to how they behave. We know that words within a particular **syntactic category** behave similarly to the other words in that category. They're similar in their inflectional morphology, and in their syntactic distribution, that is, what positions they can occupy in a sentence. That's some linguistic evidence that syntactic categories are real. There's also **neurolinguistic** evidence that our brains respond differently to words from different categories.

Lorraine Tyler and her colleagues used **functional magnetic resonance imaging (fMRI)** to measure blood flow to different regions of the brain. The idea behind fMRI is that brain activity consumes oxygen, and when a particular area of the brain is active, then more blood flows there to bring it more oxygen. The researchers asked people to do an easy task. They showed them lists of three words and asked them to decide if the third word, the one in all caps, was related to the first two. So in this example, *sparrows, thrushes, and wrens* are all kinds of birds, so the participants would respond Yes. In this next example, *hammer, wrench, banana*, the first two are tools but the third one is a fruit, so it's not related to the first two, so the participants would answer No.

Some of the words in this task were nouns, like the lists we just saw, and some were verbs, like these ones: *eating, grazing, dining*. All of those words are related to eating, so the participant would decide Yes. This is a pretty simple task, but what the researchers found in the fMRI was that there were several areas of the brain that showed greater blood flow for verbs than for nouns! Apparently, the brain was reacting differently to words from these two different syntactic categories, even though the task was the same for both categories.

We also see differences between nouns and verbs in the brains of people with **aphasia**. Aphasia is the name for any kind of language disorder that results from an injury to the brain, such as a stroke or a tumour. There are different kinds of aphasia that have different kinds of symptoms. Louise Zingeser and Rita Sloan Berndt found a **dissociation** between nouns and verbs in the speech of two different groups of people with aphasia.

The researchers asked their participants to do a few simple tasks. One was a picture naming tasks, where the researcher would show a line drawing and ask the participant to say what it was, like a *fish* or a *car*. In another task, they asked participants to describe how they would go about a particular action, such as making a birthday cake or attending a concert. And in the last task, they gave participants a picture book that depicted a well-known fairy tale but didn't have any words in it and asked them to tell the story. So from all these tasks, they had a good collection of each person's speech. For each person, they calculated the ratio of nouns to verbs.

It turns out that in people without any brain injury, the ratio of nouns to verbs is pretty close to one. That means there are about the same number of nouns as there are verbs in the average person's speech for these tasks. But for people with **agrammatic aphasia**, verbs are very difficult to produce. These people had more than twice as many nouns as verbs. And for people with **anomic aphasia**, nouns are quite difficult. This group of people had fewer nouns than verbs.

Aphasia researchers call this kind of pattern a **dissociation**. We say that nouns are verbs are dissociated from each other because it's possible to have verb production impaired while noun production is ok, or vice versa. This dissociation is consistent with the idea that verbs and nouns are processed differently in the brain.

So what does all this mean? We've seen that, in typical brains, a simple task with verbs involves greater brain activity than the same task with nouns. And in people with brain injuries, some people have an impairment of verbs but not nouns, while others have an impairment of nouns but not verbs.

All this suggests that our brains treat words differently depending on what category they're in. Or in other words, different syntactic categories exist not just in language, but also in the brain!

10.6.2.2: Check Yourself

? Exercise 10.6.1

Comparing the following sets of words, which would you predict would lead to greater blood flow in more areas of the brain?

- Humming, singing, whistling.
- Piano, flute, guitar.
- Gloves, scarf, hat.

Answer

"Humming, singing, whistling."

Hint: Think about the categories of each group of lexicon, and remember which took more bloodflow to recall.

? Exercise 10.6.2

When shown a picture of a pair of tongs, a patient describes the picture, "You pick up things with it". Which type of aphasia is this response more typical of?

- Anomic aphasia.
- Agrammatic aphasia.

Answer

"Anomic aphasia."

Hint: Think about the word that the patient can't recall, and then think about its category.

? Exercise 10.6.3

When describing an injury to his knees, a patient says, "no good uh ache and uh uh uh knees and ankles uh home doctor and legs". Which type of aphasia is this response more typical of?

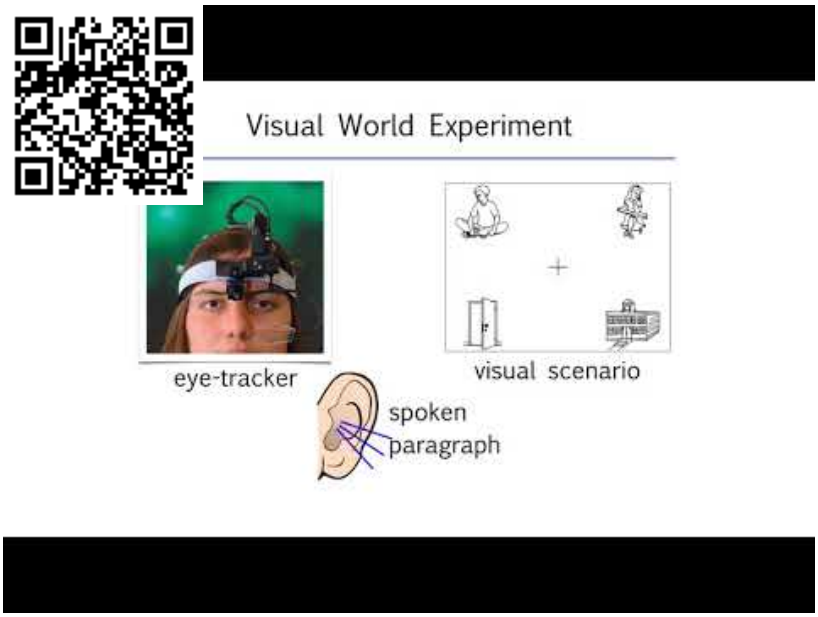
- Anomic aphasia.
- Agrammatic aphasia.

Answer

"Agrammatic aphasia."

Hint: Think about the word that the patient can't recall, and then think about its category.

10.6.3: Psycholinguistics: Traces in the Mind, in Anderson's *Essentials of Linguistics*



10.6.3.1: Video Script

We've been working with a theory that says that the operation MERGE generates a Deep Structure. For this *wh*-question, *Who did Lucy invite to wedding*, the Deep Structure looks like this. This *wh*-pronoun *who* refers to whoever it is that Lucy invited, and it is generated in this position in the complement of the Verb head, which is exactly where the noun phrase complement would be if we know who it was that Lucy invited. The preposition phrase gives us more information about the event of inviting, and it's adjoined at the V-bar level. Because this is a *wh*-question, there's both a [+Q] feature and a *wh*-feature in the C-head position.

Then the operation MOVE does its work.The *wh*-phrase moves up to the Specifier of CP, where it can support the *wh*-feature in C. Then *do* comes into the T-head in its past-tense form, *did*, then moves up to the C-head position.

One element of this theory that we've been taking for granted so far has to do with the **trace** that's left behind when something moves. When we speak a sentence, we pronounce words in their Surface Structure positions, but we don't pronounce anything in the Deep Structure position. But when we draw the tree, we show the deleted copy in that Deep Structure position, to suggest that, in the underlying representation, in our mental grammar, there's something unspoken occupying that position.

There is some linguistic evidence for the existence of traces in our mental grammar. We're claiming that there's a trace in this position in the complement of *invite*. Notice that it's not possible for any other phrase to occupy that position: if we try to put another noun phrase in the complement position, we can observe that each attempt is ungrammatical.

There's also some psycholinguistic evidence for the existence of traces. The evidence comes from what's called a **visual world experiment**. In this kind of experiment, a person's eye-movements are measured using a device called an **eye-tracker**. The eye-tracker records where their eyes move while they listen to a spoken paragraph and look at a visual scene. The spoken paragraph goes like this:

> *This story is about a boy and a girl. One day they were at school. The girl was pretty, so the boy kissed the girl. They were both embarrassed after the kiss.*

The idea behind a visual world experiment is that you look at what's being mentioned. So when you hear *the boy*, your eyes move to the picture of the boy, and when you hear *the girl*, your eyes move to the picture of a girl.

At the end of this paragraph, one group of listeners heard a *wh*-question, *Who did the boy kiss that day at school?* A different group of listeners heard the same paragraph, but followed by a *yes-no* question, *Did the boy kiss the girl that day at school?*

These two sentences are similar in their structure, but they have a crucial difference. In the complement of the verb position, the *yes-no* question has an overt noun phrase, *the girl*. In that same position of the *wh*-question, there's a trace, a deleted, unpronounced copy of the moved *wh*-word.

The researchers focused on this exact position in the spoken question: they observed where the participants' eyes moved after the verb *kiss*. They compared how often the participants looked at the girl vs. how often they looked at the boy. In the *yes-no* question, when they heard the verb *kiss*, people looked at the boy 11% more often than to the girl, maybe because the boy is the one doing the kissing. But in the *wh*-question, when they heard the verb *kiss*, people looked to the girl 21% more than to the boy.

In both scenarios, the boy kissed the girl. But people's eye movements differed in the two conditions. We know from previous studies that eye movements are quite closely synchronized to what's being mentioned in the discourse. In this study, people's eyes move to the girl not just when the sentence refers to her overtly, but also when the deep structure contains a trace that refers to her. The evidence from this eye-tracking experiment suggests that traces don't just exist in tree diagrams, but also in our minds.

10.6.3.2: Check Yourself

? Exercise 10.6.4

Which of the following illustrates the position of the trace in the wh-question *What did Christina order at Chipotle?*

- What did Christina order at Chipotle what.
- What did Christina order what at Chipotle.

Answer

"What did Christina order what at Chipotle."

Hint: Recall what we studied earlier in Syntax with respect to movement, and then think about where that 'what' would have originated from.

? Exercise 10.6.5

Which of the following ungrammatical sentences gives evidence that unpronounced traces exist in our mental representations of sentences?

- *Did you ate what for lunch?
- *What did you eat sandwiches for lunch?

Answer

"*What did you eat sandwiches for lunch?"

Hint: Recall what we studied earlier in Syntax with respect to movement, and then think about where that 'what' would have originated from.

? Exercise 10.6.6

Predict which sentence would lead to more eye movements to a picture of a rabbit after the verb *chase*:

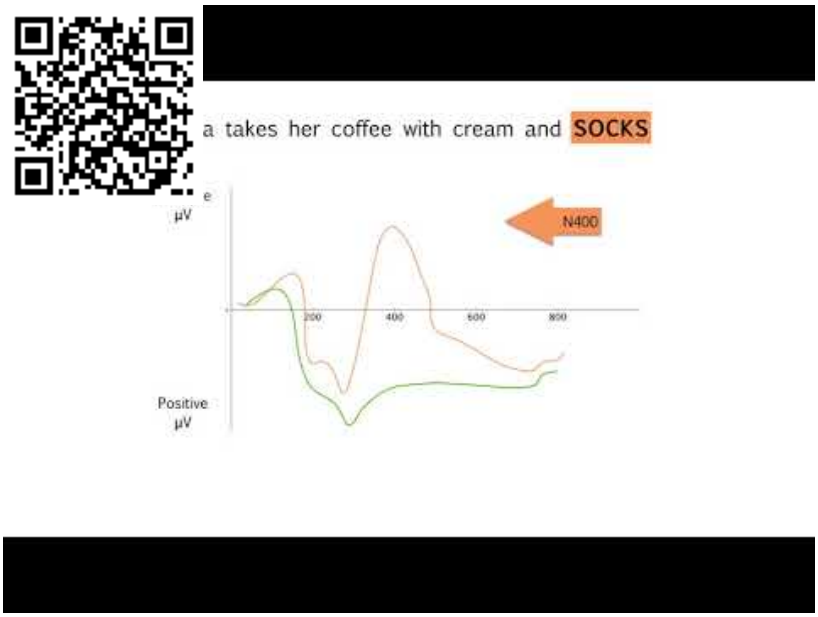
- What did the fox chase ^ into the hedge?
- Did the fox chase ^ the rabbit into the hedge?

Answer

"What did the fox chase ^ into the hedge?"

Hint: Think about the role that a Prepositional Phrase plays, which includes movement or location.

10.6.4: Neurolinguistics: Using EEG to Investigate Syntax and Semantics, in Anderson's *Essentials of Linguistics*



10.6.4.1: Video Script

When we started talking about semantics, we observed that a sentence's syntax influences its semantics, because of the principle of **compositionality**. For example, we saw that a given string of words can have two different meanings if it has two different grammatical syntactic structures. And yet, we also observed that syntax is independent of syntax. A noun phrase that has the semantic thematic role of Agent often occupies the syntactic position of Subject, but not all Agents are Subjects, and not all Subjects are Agents!

The division of labour between thematic roles and grammatical roles is some evidence that syntax and semantics are represented differently in our minds. There's also evidence from **neural imaging** to show that our brains process semantic information differently from syntactic information. This evidence comes from **electroencephalography** or **EEG**. Electroencephalography uses electrodes to measure electrical activity on a person's scalp from which scientists can draw conclusions about the person's neural activity. The particular EEG technique that gets used in neurolinguistics is **ERPs** or **event-related potentials**, which measure the timing of the neural response to a particular event, like a sound or a word.

When we're observing ERPs, we always do so by comparing responses to different kinds of events, and the usual comparison is between events that are expected and events that are unexpected. For example, a sentence like, "She takes her coffee with cream and …" sets up a very strong expectation in your mind of what the next word will be. If the next word that arrives in the sentence matches your mind's expectation, then the electrical response at your scalp will look something like this: the baseline condition. But if the next word that shows up violates your mind's expectation, then compare your brain's response: We observe a spike in negative voltage about 400 milliseconds after that unexpected word appears.

This response is called an **N400**. The N in N400 stands for a negative voltage, and the 400 indicates that this spike in negative voltage shows up, on average, about 400 milliseconds after the event. The N400 was first observed in 1980 by Kutas & Hillyard and has been replicated hundreds of times since then. It's clear from all these studies that the particular kind of event that leads to an N400 response is a word that is unexpected in the semantic context.

The N400 is the brain's response to an unexpected or surprising event, but not every kind of surprise will produce an N400. In other words, we have expectations about things besides the meanings of sentences. Think about a simple sentence like, "The bread was…" If that sentence finishes with "eaten", that fits our mind's expectation, and this is the baseline brain response. Now, what expectation do you have for this sentence, "The ice cream was in the.."? You probably expect a noun to come next, to follow the preposition and determiner. But if what comes next is not a noun but a verb participle, this violates your mind's expectation. Notice that the word *eaten* is semantically consistent with ice cream, but is not consistent with the syntax of the sentence: determiners are followed by nouns, not verbs. So the brain's response is a positive voltage about 600 milliseconds after that unexpected word: a **P600**.

When we're using language in real time — either reading or listening — our mind sets up expectations about what's going to happen next. If what happens next violates our semantic expectations, the brain's response is an N400. And if what happens next violates our syntactic expectations, the brain's response is a P600.

These two different brain responses give us further evidence that syntax is independent of semantics in our brains!

10.6.4.2: Check Yourself

? Exercise 10.6.7

What kind of ERP is likely to be observed in response to this sentence?

The children's feet have grown so I bought them some new *spoons*.

- N400.
- P600.

Answer

"N400."

Hint: Think about what is wrong about the indicated word, and the types of ERPs described above.

? Exercise 10.6.8

What kind of ERP is likely to be observed in response to this sentence?

Elias told the coach that he wanted to learn to *swam*.

- N400.
- P600.

Answer

"P600."

Hint: Think about what is wrong about the indicated word, and the types of ERPs described above.

? Exercise 10.6.9

What kind of ERP is likely to be observed in response to this sentence?

Before the dinner party, Isla spent a long time in the *cooked*.

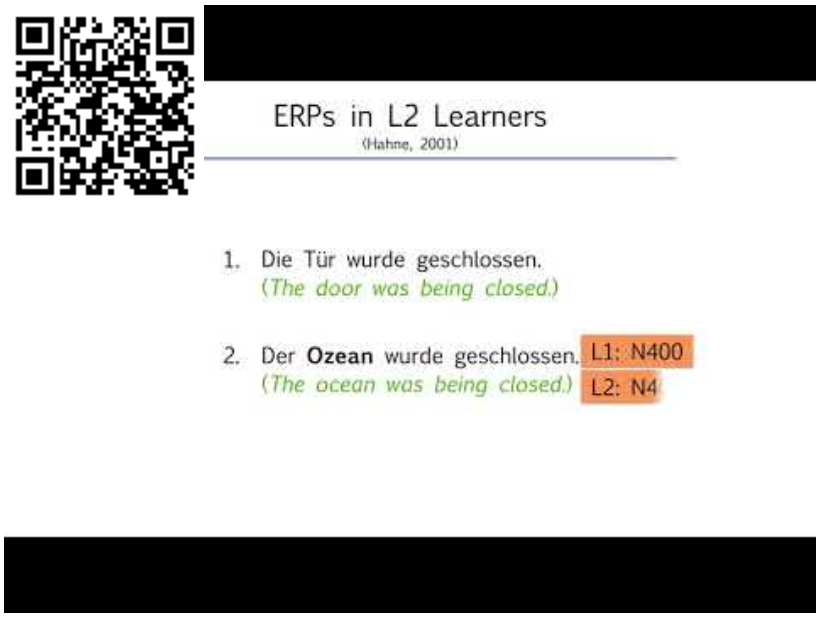
- N400.
- P600.

Answer

"P600."

Hint: Think about what is wrong about the indicated word, and the types of ERPs described above.

10.6.5: Neurolinguistics and Second Language Learning, in Anderson's *Essentials of Linguistics*



10.6.5.1: Video Script

As we've been talking about mental grammar, we've concentrated almost entirely on the mental grammar of your **native language** — the language you learned to speak in childhood, in your home. Linguists refer to your native language, your first language, as your **L1**. But many people in the world speak more than one language, and many of those people learned a second or third language in a different way from their L1. Any language that you learned after childhood, whether you learned it in school, using software, by travelling or immigrating somewhere, is called an **L2** (even if it's really your third or fourth language).

Learning an L2 is different from learning an L1 for a couple of different reasons. One is that, obviously, the language learner is not a child, so their cognitive processes might be different from those of a child. L1 learning happens by being immersed in a language environment, and most of the learning is unconscious, without overt teaching. L2 learning often happens with a lot of conscious effort: studying and memorizing and practicing.

But of course, the biggest difference between L1 learning and L2 learning is that when you start learning an L2, you already know at least one other language. The mental grammar of your L1 can influence the mental grammar that you're developing for your L2: this is called **transfer**. Transfer can be helpful in L2 learning or it can pose a challenge. If your L1 includes a structure that's similar to a structure in the L2, then you might experience **positive transfer**, which facilitates learning the L2: you can transfer what you know from L1 and apply it to the L2. But if the structures that you're learning in L2 are different from those in your L1, then you might experience **negative transfer**: the knowledge from your L1 could make it more difficult to learn the new structures in the L2. And of course, you might experience both positive and negative transfer from your L1 to different parts of the grammar of your L2.

One theory of second language acquisition predicts that we would observe differences between native speakers and beginner L2 learners, but as the L2 learners become more proficient, their mental processes should become more and more native-like — that is the mental grammar of a fluent L2 speaker should look very similar to the mental grammar of an L1 speaker of that language. We can use the tools of psycholinguistics and neuroscience to learn about the mental grammars of L2 learners. Let's take a look at some of the evidence.

Several studies have compared N400 effects in L1 and L2 speakers of a language. Remember that the N400 is an electrophysiological response that our brains show when a word is semantically unexpected in a given context. The brains of native speakers of English show a negative voltage about 400 milliseconds after a semantically unexpected word (*socks*), compared to an expected word. But what do the brains of non-native speakers show? What do we see in L2 learners?

A 2001 paper by Anja Hahne compared L1 speakers of German with L1 speakers of Russian who had moved to Germany in their 20s and had been living there and studying German for an average of six years. The experiment used fairly simple German sentences like these ones:

> Die Tür wurde geschlossen / The door was being closed.

Der Ozean wurde geschlossen / The ocean was being closed.

Obviously, the word *closed* is a reasonable way for the first sentence to end but is a pretty unexpected way for the second sentence to end. So it's not surprising that the native speakers of German showed an N400 in response to sentence 2 compared to sentence 1. The L2 speakers, the ones who had started learning German in their 20s, also showed an N400 to sentence 2. Hahne concluded that words that are semantically unexpected cause "essentially similar semantic integration problems in native participants and second-language learners" (Hahne, 2001: 263). In other words, the evidence from the N400 suggests that the lexical semantic component of an L2 learner's mental grammar is not too different from that of an L1 grammar.

Now, we know that there's a whole lot more to mental grammar than just the meanings of words. What can ERPs tells us about morphology and syntax? Remember that native speakers' brains often show a P600 response to sentences that are syntactically unexpected. For many years, studies that looked at the P600 in L2 learners seemed to suggest that adult language learners never really approached native-like proficiency in their L2 morphosyntax: the P600 response to syntactic violations was significantly delayed or not there at all in these late learners. But some more recent research has suggested that maybe those earlier studies just didn't give the learners enough time to learn their L2 — of course, their mental grammar wasn't native-like if they hadn't been learning the language for very long.

A 2013 study by Harriet Bowden and her colleagues looked at L1 English speakers who started learning L2 Spanish in university. They compared learners who had completed first-year Spanish to learners who had completed more than three years of university Spanish and had spent a year abroad. And they included a control group of L1 speakers of Spanish. The researchers presented Spanish sentences that violated syntactic expectations about word order like these ones. Sentence 1, "I have to run many miles this week" has the expected word order, while sentence 2, "I have to miles many run this week" is unexpected in its word order: the quantifier *many* comes after the noun *miles*, and that whole complement phrase comes before the verb *run*. Sentence 2 is ungrammatical in Spanish.

As you'd expect, the native speakers of Spanish showed a P600 in response to the ungrammatical sentence. But so did the advanced L2 learners: their ERP response was the same as that of the L1 Spanish speakers. It was only the beginning learners, the ones who had had only a year of Spanish, who showed an atypical P600: it was a smaller response and more diffuse. The researchers concluded that "University foreign-language learners who take L2 classes through much of college and also study abroad for one or two semesters …show evidence of native-like brain processing of syntax" (Bowden et al., 2013: 2508).

So this study suggests that one year of studying a language maybe isn't enough to achieve native-like fluency, and three years of study including a year of immersion allows a learner to approach native proficiency, but the researchers also wondered whether the kind of language-learning makes a difference to learners. If you're learning a language in university, you probably spend three or four hours a week in the classroom, and maybe two or three more hours each week studying. But that's not the only way to learn a language.

A study in Montreal looked at university students who were L1 speakers of Korean and Chinese who were enrolled in a nine-week intensive English L2 course. These learners were studying, practising, using English at least 8-10 hours a day, five days a week, for nine weeks. The researchers tested the learners on sentences with morphosyntactic violations in the tense features on the verb, like these ones:

1a. The teacher did not start the lesson / 1b. The teacher did not started the lesson.

2a. The teacher had not started the lesson / 2b. The teacher had not start the lesson.

Notice that in 1b and 2b, the verb has unexpected morphology on it. A native speaker of English would show a P600 response to 1b and 2b in comparison to 1a and 2a. In this study, the researchers measured learners' ERP responses at the beginning of the course and after the nine weeks, and they also asked the learners to judge whether the sentences were grammatical. At the beginning of the course, none of the learners showed P600s in response to the syntactically unexpected sentences, and they also weren't very successful at deciding whether sentences were grammatical or ungrammatical. After the nine-week course, all of the learners showed P600 responses to the syntactically unexpected sentences, and the learners who scored highest on the grammatical judgments showed the largest P600s. This study suggests that even short-term, intensive L2 learning can help a learner develop a mental grammar that approaches that of a native L1 speaker.

And the results of all of these studies tell us that L2 language learners can achieve fluency that compares to that of a native speaker; it just takes lots of training to get there!

10.6.5.2: Check Yourself

Exercise 10.6.10

French uses morphology indicate whether nouns, adjectives and determiners are masculine or feminine. If an L1 speaker of English is learning French, what kind of transfer are they likely to experience in learning this property of French grammar?

- Positive transfer.
- Negative transfer.

Answer

"Negative transfer."

Hint: Think about the structures of French and English, and think about whether they are more similar or more different.

Exercise 10.6.11

Russian does not have definite or indefinite determiners like English *a* and *the*. If an L1 speaker of Russian is learning English, what kind of transfer are they likely to experience in learning this property of English grammar?

- Positive transfer.
- Negative transfer.

Answer

"Negative transfer."

Hint: Think about the structures of Russian and English, and think about whether they are more similar or more different.

Exercise 10.6.12

Russian groups nouns by their grammatical gender, either masculine, feminine or neuter. Look again at the facts about French presented in Question 1. If an L1 speaker of Russian is learning French, what kind of transfer are they likely to experience in learning this property of French grammar?

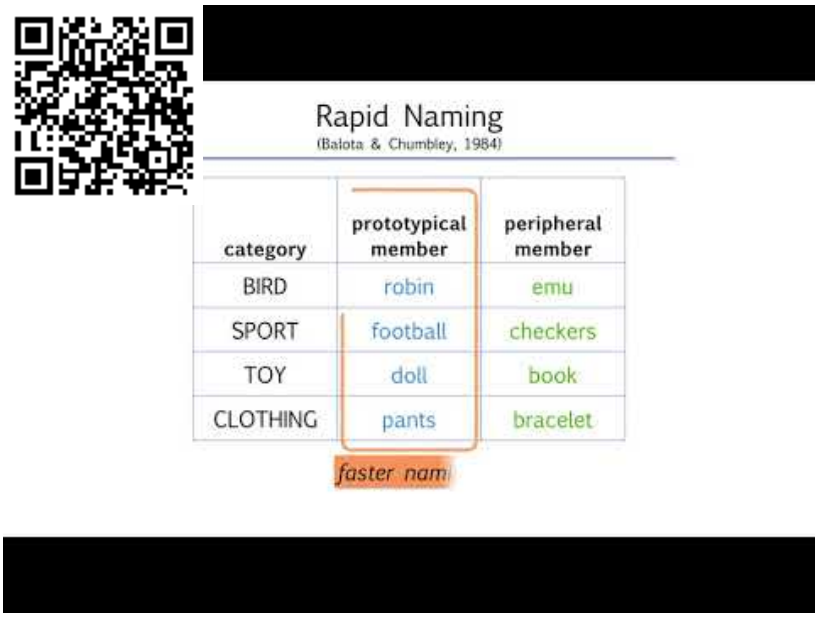
- Positive transfer.
- Negative transfer.

Answer

"Positive transfer."

Hint: Think about the structures of Russian and French, and think about whether they are more similar or more different.

10.6.6: Psycholinguistics of Word Meanings, in Anderson's *Essentials of Linguistics*



10.6.6.1: Video Script

In the last unit, we suggested that **intensions** for word meanings might be organized in our minds in **fuzzy categories**. Our minds construct categories of things based on our experience in the world: each time we encounter an extension of a word, we count it as an **exemplar** in that fuzzy category. There is some evidence from psychology and psycholinguistics that our mind really does represent a difference between **prototypical** category members and **peripheral** members. For lots of categories, we have some instincts about what kinds of exemplars are prototypical and what kinds are peripheral. When we give somebody the name of a category and ask them to name an exemplar, people from a given language community are remarkably alike in the first things they name as exemplars. If your mental grammar for English is like mine, then perhaps your prototypical bird is a robin, your prototypical fruit is an apple, and your prototypical tool is a hammer.

In a behavioural study of word recognition, participants saw a word appear on a screen and had to say the word out loud. This is called a **rapid naming** task. Some of the words referred to prototypical exemplars of their particular category and some of them referred to peripheral exemplars. The prototypical and peripheral exemplars were all mixed up in the experiment, but when the researchers measured how fast people had been able to name the word that they saw, the found that people were faster to name the prototypes than the peripheral exemplars.

The same researchers used these words in a lexical decision task. In this kind of task, a word appears briefly on a screen, and the person's job is just to decide whether it's a word or not, and say Yes or No. So if the word *pants* appears on the screen, you would say "Yes", because it's a real word in English. But if *pfonc* appears, you say "no", because that's not a word of English. What the researchers found in the lexical decision experiment was, again, that people are fast to make a decision about a word if it refers to a prototypical category member, and slower to make the decision if the word refers to a peripheral member.

These findings indicate that the process of recognizing a word is easier and faster if that word refers to a prototype. We can interpret these findings to mean that our intensions for categories are made up of exemplars and that prototypical exemplars have a privileged position in our intensions.

So that's a couple of examples of psycholinguistic tasks we can use to observe how words are processed in our minds: a simple naming task, and a lexical decision task. There's an additional task that we can combine with each of these, to allow us to investigate relationships between different words. That task is called **priming**. A **primed lexical decision** task works like this: First, a word appears on the screen for a very short length of time: that word is called the **prime**. The prime disappears, and then a second word appears on the screen. This word is the **target**, and the participant makes a lexical decision about the target. The prime word can have an influence on how quickly people make their lexical decision about the target word.

For example, in one condition, the prime might be *doctor* and the target *nurse*. In another condition, the prime could be *apple* and the target *nurse*. As you might expect, people are faster to make their lexical decision to *nurse* when it's primed by *doctor* than

when it's primed by *apple*. When we observe this faster lexical decision, we interpret that to mean that these two words are connected to each other in our minds.

Over the years, psychologists and psycholinguists have conducted thousands of experiments on priming, and the results of these experiments show us how words are related to each other in our minds. The scientific literature has shown priming between words that are members of the same category, for words that are synonyms, antonyms, and even for words that describe things that share attributes. For example, an orange and a baseball aren't members of the same category, but they're both spheres, so they can prime each other.

Looking at all these and many other priming effects, we can conclude that those semantic relationships play an important role in how the meanings of a word are organized in our minds.

10.6.6.2: Check Yourself

? Exercise 10.6.13

Which of the following words would we expect to prime a target word *carrot*?

- Power.
- Broccoli.
- Cattle.
- Car.

Answer

"Broccoli."

Hint: Think about the meaning of *carrot*, and the meaning of *broccoli*, and what they share in common.

? Exercise 10.6.14

Which of the following words would we expect to prime a target word *happy*?

- Rabbit.
- Umbrella.
- Sad.
- Zoo.

Answer

"Sad."

Hint: Think about the meaning of *happy*, and the meaning of *sad*, and what they share in common.

? Exercise 10.6.15

Which of the following words would we expect to prime a target word *week*?

- Month.
- Actor.
- Goal.
- Unit.

Answer

"Month."

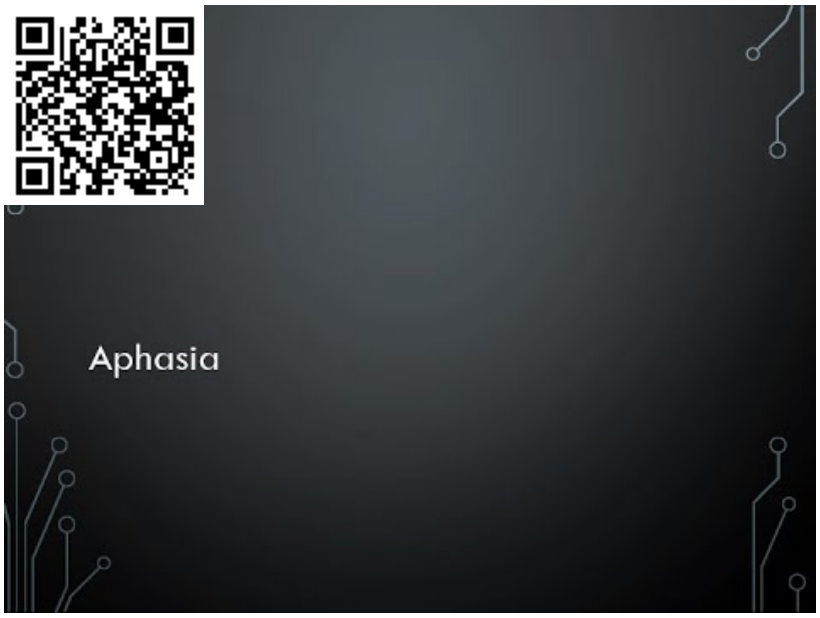
Hint: Think about the meaning of *happy*, and the meaning of *sad*, and what they share in common.

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10.7: Aphasia

10.7.1: Aphasia, from Sarah Harmon



10.7.1.1: Video Script

In the previous section Catherine Anderson described a little bit about aphasia. But this is an area that I think deserves much more discussion, so I'm going to create a whole mini-lecture on this. It also is something that affects me personally; I do not have aphasia but my husband does. He suffered a stroke about eight years ago, and while he is as humanly recovered as possible, he's still showing effects of aphasia. Not all the time, but occasionally. This is not uncommon; as more and more people survive strokes or massive head traumas and severe concussions, there's more evidence for aphasia. I think it's one of those areas that most people do need to understand, at least at a basic level.

Just like with every other section of this chapter, the information I'm going to provide you is as up-to-date as we can get for our understanding of the brain. There is much more that we are learning; in fact, almost weekly, if not monthly, there's a new study on various types of aphasia and how to improve and treat aphasia. We'll see some of this here, but know that this is a constantly evolving area of neurolinguistics and neurology as a whole.

What is aphasia? **Aphasia** is an issue with speech or language; we do see aphasia also in deaf folks who use a primary sign language, so this affects both spoken and signed language users. We know that, as you read before, language processing is predominantly a left-brain activity, while lexicon are stored throughout the brain. Primarily, the processing is in the left side and that the **Broca's Area**, which is here in the front part of the temporal lobe on the left hemisphere, that is where much of the syntax and sentence formation occurs. The morphology and function words tend to reside there, too. **Wernicke's Area**, which is more or less behind it—but that's kind of nebulous—that is controlling of semantics and processing. There are pieces in the middle; **Exner's Area** controls writing, and that is in the motor cortex; the **Articulate Fasciculus** connects Broca's and Wernicke's Area; the **Angular Gyrus** is where a lot of the visual processing is done, and it's more towards the occipital lobe. Therefore, if you have a lesion in Broca's Area, you tend to suffer from Broca's Aphasia; if you have a lesion in the Wernicke's Area, it tends to be Wernicke's Aphasia. The name of the aphasia is tied to the primary area that is being affected.

Let's talk about these different aphasias.

Expressive or **non-fluent aphasia** is one entire category, and this is when the patient knows what they want to say, but they're not able to get it out. There are various levels of this aphasia. The lowest level is something called an **anomia**, where the motor skills of the patient are fine, but occasionally the patient is never able to come up with certain terms. Anomia frequently is called **jargon aphasia**, but jargon aphasia also affects Wernicke's Area, so we'll talk about that in a minute. If the patient has trouble getting out language regularly—everybody suffers a bit when they're tired, and they can't express yourself. But if this is a chronic issue, so when you have the phrases and words that you want to say, but you can't get them out—that feeling that it's like at the tip of your

tongue and they just not coming out—that is called either **motor aphasia** or **dysarthria**. That is what my husband has. If you're talking to him normally, most of the time you won't know that he has anything wrong. But if he's in a lot of pain, if he's very frustrated or upset, or if he's tired, he can't get out what he wants to say. He has to circumnavigate; he has to pivot and trying to think of a different way to say it. Again, all of us suffer from that a little bit when we're tired, or when we're sick, but certainly not at a chronic level; this is chronic. One of the things that dysarthria patients suffer from is extra wordiness, because they can't get out exactly what they're trying to say. They have to pivot, frequently that results in the patient getting very wordy. Frequently, it feels like they're going on a tangent, to a different conversation, and that's not actually the case. They desperately want to stay in-lane, as it were; they just can't because they've had to find other ways to describe their thoughts. Motor aphasia or dysarthria is challenging, and most patients who have dysarthria or motor aphasia also have some kind of coordination issue. In my husband's case, he certainly has a balance issue, and he also has certain dexterity issues, that are related to a stroke. A more aggravated version would be **Broca's Aphasia**. This aphasia can vary greatly, but by and large, if you have Broca's Aphasia, you are not putting sentences together fluently; this is why we call it non-fluent aphasia. Everything comes out in chunks; it may not be the correct term at first, and/or you may have to pivot and think of something else you know. Importantly, you know that you're not communicating properly. Unfortunately, many Broca's aphasics, if they cannot find any fluency, if they are permanently non-fluent, most of them just stop talking, or only talk to one or two very trusted folks. They're very aware that they are not able to communicate.

Below in 10.5.2, you have examples videos of a young lady named Sarah Scott. She is a British woman who, when she was 18 years old, suffered a massive stroke in her English class. As a result, she ended up with Broca's Aphasia. On the YouTube channel that her mother created and now she's a heavy participant of she shows her progress over time. I want you to watch the videos, at least in part. When you see Sarah Scott one year after her stroke, she shows very hesitant speech; stuff just isn't coming out. She doesn't have the right word, or she might know the word but it just is blocked and she can't do it.

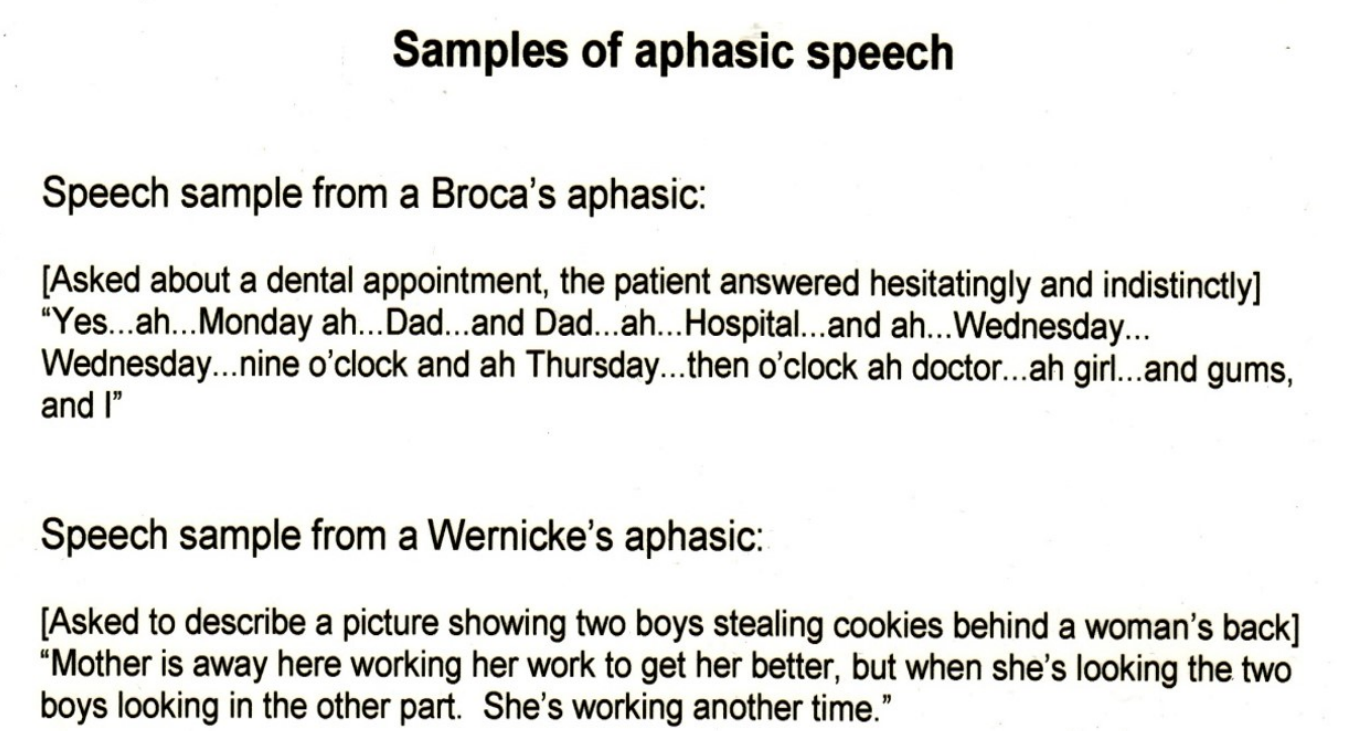
Broca's aphasics, however, do improve, with many, to the point of just having dysarthria. Check out Sarah's progress over the years—and this is just a couple of videos; there are many more on their channel. The same happened with my husband. When he first had his stroke, the first 2-3 months he was in Broca's Aphasia-land; he was able to get out much of what he wanted to say, but there was great hesitation, frequently searching for the word and not quite getting there. Between therapy and genetics, and the fact that he was young—he was only 41 when he had a stroke—that helped him to recover, to the point of dysarthria. As I said, if he's having a good day, with good energy and in good mood, you would never know he ever had a stroke. On a bad day, you suspect something has happened.

When we talk about **receptive aphasias**, frequently called **fluent aphasias**, that's a different story. **Wernicke's Aphasia** is the main one here, and this is when the patient's language is a jumble, that what the person says has no semantics; they're completely gone. Sometimes in extreme cases that can be called **jargon aphasia** because you're saying that the person is not able to come up with the right terms; the syntax is frequently decent, if not intelligible. There's grammaticality in many cases, but the semantics is wrong, the compositionality is wrong, nothing to do with anything else. When the lesion is away from the Wernicke's Area and closer to the Articulate Fasciculus—closer to Broca's Area—we see **conduction aphasia**, which is when the person can hear and understand and perform but can't repeat. They otherwise speak normally, but if you say, "Could you repeat that back? Can you repeat back what I said?" they can't do it. It is interesting to know that while dyslexia as a whole is still being researched, and we still don't really know a lot about how and why it forms, there are types of **acquired dyslexia** that have to do with language, specifically reading. These acquired dyslexia conditions do involve Wernicke's Area, so the person with acquire dyslexia frequently is able to speak perfectly fine, but because of where the lesion is, at the back part of Wernicke's Area affecting reading and processing, they're not able to read and comprehend.

There is important to underscore with respect to aphasia. Aphasia is fairly permanent; it may progress to a state that is better, especially with expressive or non-fluent aphasias, but even with receptive aphasias you can see progress, where the patient does get back some of their linguistic facility. But it never goes away; it's never 100% healed, at least not at this point in time. Certainly, there are factors that are in the favor or against improvement. When a younger person under the age of 60 has some kind of trauma or lesion, the brain is able to adapt; the brain is able to reroute a lot quicker and especially if that person was otherwise decently healthy. Even though a patient is not able to fully recover from any aphasia, there can be progress. As I mentioned earlier, there tends to be more progress with expressive aphasics. However, Wernicke's patients, in particular, are a different story; they very rarely recover. Although it can happen, it is very difficult. Conduction aphasia has much more success, and usually patients are able to recover some of that ability. It is something that takes a lot of time and there's a number of factors that need to be included.

Just to give you a written example of aphasic patients, specifically Broca's Aphasia versus Wernicke's Aphasia. You can see that with Broca's Aphasia, there's a lot of pausing—that's what the ellipses represent—that more or less, you can understand what the

person is trying to say. They were asked about a dental appointment and they described what happened. But notice how many times the patient has to pivot and start saying one thing in order to really say another thing. See the graphics below.



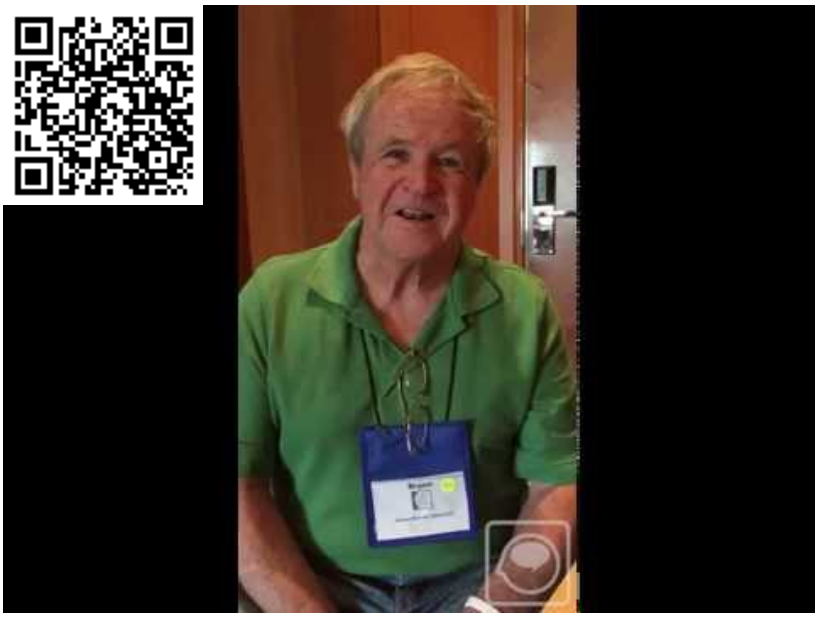
It's very hesitant, and it makes it hard to figure out exactly what he's saying, but you get the idea. This person is trying to convey that they went to a doctor's appointment that was for their teeth—therefore dentist—their father sent them or came with them, and it was probably in the morning. You look at Broca's aphasic, you can get the point. But Wernicke's aphasics are a different matter. In this scenario, we see a Wernicke's aphasic. They have a picture in front of them with two boys stealing cookies behind a woman's back. Now, I realize both examples are very difficult to understand. But I think you would agree with me that, with the Broca's aphasic, you got some of what this person was trying to convey; it was difficult, but you could do it. In the case of the Wernicke's aphasic, it's impossible. Yes, the person says that there's a mother and that there's two boys. But there's nothing about a kitchen; there's nothing about cookies; there's nothing with stealing; there's nothing about anything. This is what makes Wernicke's so difficult to treat is the processing part of it. In most cases Wernicke's aphasics don't necessarily understand that they're not communicating; sometimes they do, but frequently they don't.

All that being said, what aphasia tells us and helps us to understand is that language is independent of intelligence. Even at his worst moments, my husband may not have always been able to communicate exactly what he wanted to say. But he was just as intelligent as he was before the stroke. Now he's able to communicate pretty well. It just goes to show that there's always hope.

10.7.2: Examples of Aphasia

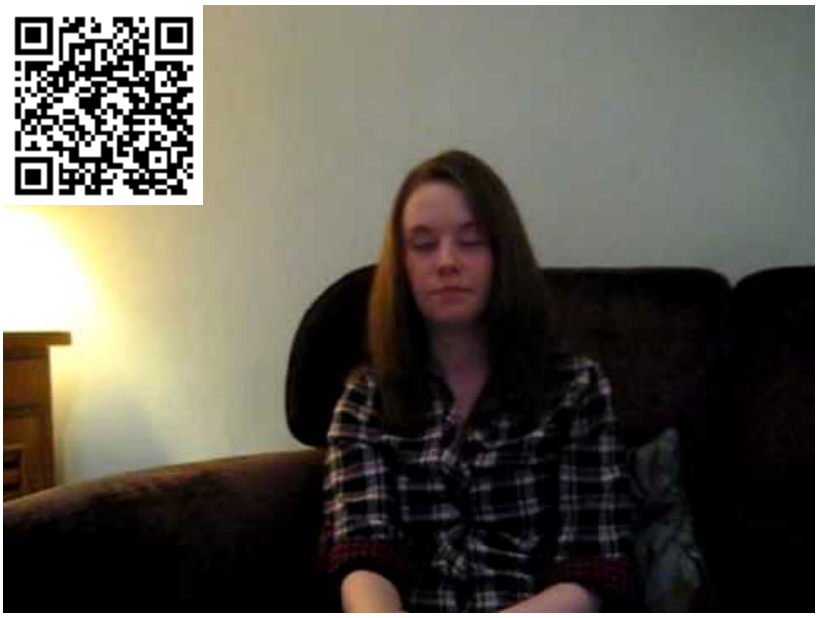
All videos below are captioned.

10.7.2.1: Wernicke's Aphasia

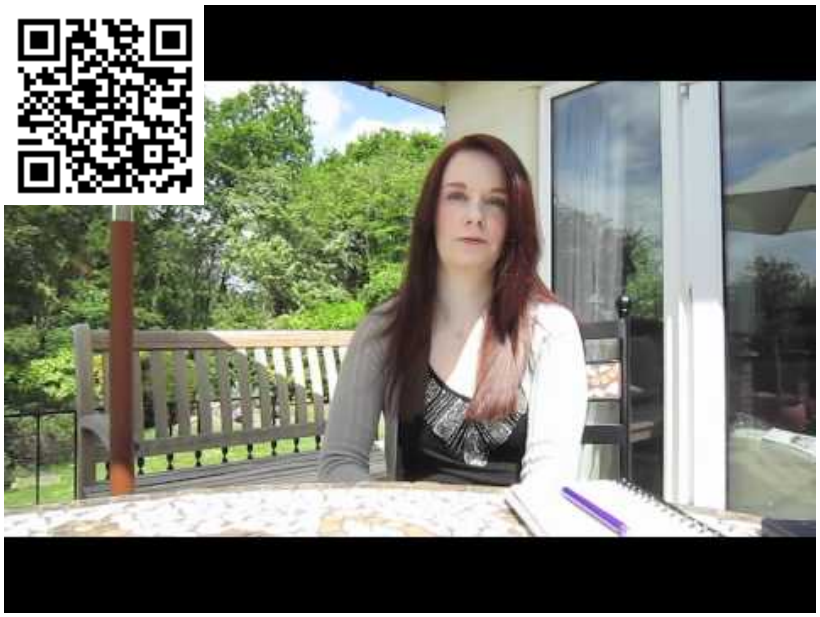


10.7.2.2: Broca's Aphasia

Sarah Scott, 1 year out from her stroke:



Sarah Scott, 2 years out from her stroke:



Sarah Scott, 5 years out from her stroke:



10.7.2.3: Bilingual Aphasia



10.7.3: More on Aphasia

Watch this TedEd video in which Susan Wortman-Jutt explains a bit more about the affects of aphasia on the brain. (The video is captioned.)



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10.8: Autonomy of Language

10.8.1: Autonomy of Language, from Sarah Harmon



10.8.1.1: Video Script

To close out the chapter, the course and the book, let's remind ourselves that language is only one thing that our brain does. Our brain is this multifaceted, amazing, complex combination of neurons and other matter that does so much, and we're still learning about what the brain can do.

For example, through **lateralization studies** and **brain mapping**, we're able to start figuring out exactly how the brain processes various things, including language. Catherine Anderson in an earlier section talked about **PET scans** and **MRIs** and other things, so I'm not going to go into that too much here. Certainly, when we look at **Event-related Brain Potentials** (**ERPs**), we're able to start mapping out how the brain processes language. This is even evolved in the 15 years or so that I've had this slide. Realistically, we use ERPs and many other tests and procedures to describe and capture how the brain processes language and everything else it does. We're able to look at speech versus non-speech stimuli and see how the brain lights up, how it processes, how that light processes through different parts of the brain. We're also able to show pretty distinctively that the left hemisphere is where language is processed.

We should also remind ourselves about **the Critical Age Hypothesis**, and we talked about this with respect the second language acquisition in the previous chapter. We know, and we can show even neurologically, that sometime around puberty is when the elasticity of the brain changes. Now, how it changes is still being understood; we do know that once humans hit right around puberty, they learn by logic; we don't absorb information like a sponge, rather we are processing it based off of previous information that we have learned. Even when you think somebody is learning through osmosis and they're just soaking up information and spitting it out all, they are processing, probably at a faster pace or at a higher rate than we mere mortals, and that they're basing it off of knowledge they've learned previously. We do know that there are cases where, unfortunately, children have been deprived of language; you may read about the case of Genie or Chelsea, or other children who, at birth, their parents or caregivers thought that they were somehow 'not normal'. They therefore deprived these children of everything, including language. These children were stuck in a room and were not talked to, not played with, not interacted with, abused and neglected. In those cases, yes, it is true that the children have exhibited different developmental issues with respect to the language, such that when they are found as teenagers or adults, unfortunately, they do not have the linguistic capabilities that most others do. That being said, their treatment was certainly unethical and inhumane and should never be duplicated. What is more, we don't actually know whether their lack of linguistic inputs affected their linguistic productivity later on, or whether there was something else going on, and most of these cases that we hear about come from prior eras, meaning we didn't have any concept of the neurological processes that we do now, or have had for the last 30 years. What we can say is this: When we get older, we have to rely on making neural connections and learning based off of prior experience. The more prior experience you have, the easier the learning is.

It is also important to bring up when we have cases of children or young adults who seem either to be on the autism spectrum, or have some other developmental capability that precludes them from talking too much, or talking in ways that are not quite as fluent as you would expect for somebody of their age. We definitely have cases and continue to have cases of children who linguistically seem to be okay, but developmentally are behind their cohorts. We have cases with respect to autism spectrum disorder where linguistic development is not on par with other aspects of the neurological development. However, notice that it doesn't necessarily mean that just because you can't speak well or speak at a certain level that you are not intelligent. There is true autonomy, and we can see this in a variety of cases. Numerous folks who are on the autism spectrum show amazing brilliance with respect to everything to math and science to art. They just may not be able to communicate verbally or through sign language what they're actually thinking. That does not mean that language and intelligence are connected; in fact, it shows pretty conclusively they're not.

Finally, there are a couple of examples to bring up with respect to **Specific Language Impairment (SLI)**. Our data on this are changing, and I mean rapidly. Historically, SLI has been something that runs in families. For example, if a four year old says, “Woofwoof run door,” “Give me apple,” or “Man speak yesterday,” you would expect that kind of language out of a two-year-old. Children are frequently told or diagnosed with specific language impairment right around 4-6 years of age. This is changing rapidly; much of what was previously diagnosed as SLI might actually be autism spectrum disorder. In some cases, it may be nothing at all, that maybe at the age of four they're still talking like this, but come age five or six are significantly more verbal and fluid in their speech. Sometimes it could be environmental factors; if you have a child who was in a family that doesn’t talk very much to the child, and they’re allowed to play very much, their linguistic output is going to be reduced compared to someone else in their same age range.

Our understanding of how we process language is changing almost daily; this new information that we keep getting over and over again shows that language and intelligence and any other aspect of cognitive development are separate. You may be highly proficient in math but not be able to tie your shoelaces, or so the story goes with Albert Einstein. The same is true for language. You could be perfectly highly fluent in language but not be able to solve this simple math problem, or be able to understand a piece of art, or be able to sing a song. Language is autonomous from every other cognitive process, and even if there is damage or lesions or other type of malady that affects the brain, and it can affect both language and other aspects of cognitive processing, that's not to say that language can't come back, or any of these other areas of processing can't come back. With the brain, anything seems to be possible.

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CHAPTER OVERVIEW

11: Reclaiming Indigenous Languages (Optional)

As we saw in Chapter 1, Canada's settler government has engaged for many decades in deliberate strategies to eliminate the languages spoken by Indigenous peoples. Indigenous people have been working for years to try to preserve their languages by increasing the number of people who can speak them, and since the 2015 report of the Truth and Reconciliation Commission, the federal government has more openly acknowledged the importance of these efforts.

This chapter includes interviews with several Indigenous experts who are doing the work of preserving and reclaiming their languages, and the work of helping other members of their Nations become speakers.

11.1: Preserving Mohawk
11.2: Learning Mohawk
11.3: Mohawk culture and language
11.4: Creating materials for teaching Mohawk
11.5: Speaking Mohawk and reconciliation
11.6: One view on the future of Indigenous languages
11.7: Reclaiming Michif
11.8: Reclaiming Hul'q'umi'num'
11.9: Growing up speaking Nishnaabemwin
11.10: Learning Nishnaabemwin at University
11.11: Resources for teaching and learning Nishnaabemwin

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11.1: Preserving Mohawk

David Kanatawakhon-Maracle

The next several units are excerpts from a conversation with David Kanatawakhon-Maracle, a Turtle Clan Mohawk and a professor at Western University. In this unit, Dr. Kanatawakhon-Maracle talks about how, for a language to survive, it must be widely spoken.



11.1.1: Video Script

I've been a language teacher for years, you know, and trying to teach and there's always been this segment of people out there who "really support what you're doing" and stuff like that and I've gotten into the habit of just ignoring them because their support is verbal; they're not in my classes; they're not learning the language. Real support for an Aboriginal language is getting out there and learning that language and learning to speak it, you know, so, to help bring that language back into its own. I don't expect any community to work towards, you know, sole monolingualism — that's that's just not doesn't make sense — however, bilingualism is a fairly normal way to be with a large percentage of the world's population. And, and, for, you know, my grandparents, my grandfather was bilingual, you know, and my great-grandparents were bilingual and they could use English when they needed to and they used Mohawk when they needed to and, or by choice or whatever.

I speak Mohawk and English so the thing is I can also, you know, use both languages. I … the difference I guess is that I also read and write Mohawk as well. So I'm a speaker and I'm literate which is the sort of thing that we would want to teach students especially at the university level because there's a lot of stuff written in Aboriginal languages that are presently not available in English or, you know or probably doesn't necessarily have to be available in English if they're speakers of the language.

People have always said you know, "Oh yeah, we know that the language should be in the home." No! The language should be in the street! If the language is surviving — if the language is truly an important part of being — it's in the street; it's in the stores; it's outside of the home. When you keep the language in the home it dies, because the speakers of the language eventually leave that home and then they go into the street where they're speaking English all the time and they meet somebody else who is also speaking English and eventually … the next generation is being raised by two English-speaking people and of course then the language is, is gone.

> [CA: Would you say that that attitude that says "oh the language is for at home," is that, is that another legacy of colonialism where it was shameful to speak an Aboriginal language?]

Yeah well let's keep it.

> [CA: Yeah, it's private, but not outside the house.]

Yeah and the real problem is that when when the language is only spoken in the home especially in contemporary society where people are, spending more and more time at home in front of some sort of technical device — in times past they were out going from home to home and all people were speaking the language and visiting and the language is very much alive — but once it becomes ensconced within the home and people get to the point where, sure they can talk to their parents, but they can't really understand their neighbours.

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11.2: Learning Mohawk

David Kanatawakhon-Maracle

Some Mohawk people have learned to speak Mohawk by growing up among fluent speakers. Many others are trying to learn to speak Mohawk in school or in university. Having some knowledge of linguistics can make learning a second language easier in some ways.

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11.2.1: Video Script

One of the things about language is — I understand Mohawk and I speak Mohawk because I've heard hundreds of people speaking it.

> [CA: Right. So that's how you learned it, was growing up in the community where it was spoken?]

Yeah I basically grew up with Mohawk and English and as I got to be a teenager I spent a lot more time with the older folks because they were more inclined to be speakers. Also, I find old people a lot more entertaining than younger adults, you know, they no longer have the sort of worries that, and the stress, that younger people have. And the stories, I mean, the really funny thing is that I find with older people, with the old folks, they're not very trusting, you know you basically have to visit them a lot before you kind of crack that shell and you get access to, to what they what they know. And I suppose to a certain degree that's self-serving but at the same time these people have got, they've got tradition to pass on; their responsibility is to be passing on this stuff and if they've decided that well nobody wants to hear that you know and so they stop telling it then it, it dies with them. So I found that spending a lot of time with the older folks you hear a lot of stories.

And the funny thing too about, one of the things that I found with the language is they were a lot more fun in Mohawk than they were in English. They get cranky and grumpy and unhappy when they speak English and I don't know why because, it just, I had an uncle used to visit and, well, boy I mean this he had a complaint about everything he had a gripe about everything and stuff and it always seemed to be so grating in English but when he was speaking Mohawk we spent a lot more time laughing. Because that was the language of his childhood and that was how he grew up and he's, you know, he would tell stories from that time where it's often you know were, were a lot more amusing or a lot more interesting than what he was having to deal with presently in English.

I've had students that have come in that have taken a number of years in the immersion program at Six Nations. They seem to have a sense of the language but they're not speakers. The course that I teach right now is a fairly heavy grammar-based course because I find that if I mean you can you can learn all the vocabulary you want, but if you have no sense of the grammar of the language, how are you going to utilize that vocabulary? What are you gonna do with it? And the thing is that the students that have come in that have some language, they know a lot of vocabulary… can't do a thing with it! They know how to say expressions; they know dialogues; they know a whole lot of things that I find is, okay, great, so you at least know the pronunciation, which is a good place to start. Anglophones can't get past what they see written. "Well, but that's a 't' it's written as a 't'." I says yeah, it's pronounced [d].

> [CA: And here's where, actually, thinking of my students the having a bit of Introduction to Linguistics would help to say, well, look, this is a, this is an allophone and it's voiced in these circumstances and voiceless here, someone who has Intro Linguistics might get that.]

Yup. I had students who will comment on the fact that they've taken a linguistics course and it has helped their pronunciation it does make them more aware of it. […]

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11.3: Mohawk culture and language

David Kanatawakhon-Maracle

In this unit, Dr. Kanatawakhon-Maracle mentions some of the elements of Mohawk culture that are embedded in the grammar of the language, and we discuss the idea that living languages are always changing.

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11.3.1: Video Script

What I also do too is that I include culture with the language. I'll be teaching them a particular word or phrase or expression but then I'll tell them where it comes from — why it is this way — why we say it that way — why we don't say this word. I mean, the word *nyaweh* in Mohawk gets interpreted as 'thank you' in English but that's kind of the beginning and the end of it. We don't, the reality is, if you follow older tradition, which is the way I was raised, you don't say *nyaweh* for every little thing; you don't use it the way it's used in English. In English it's just thank you thank you thank you — it becomes meaningless; it becomes a grunt, quite literally, in the English language, because people just use it so freely that it starts to lose its meaning. In Mohawk, *nyaweh* is used, or should only be used, between yourself and the Creator even when you say *nyaweh*, you know you see something beautiful, you see a sunset, a beautiful flower, nice majestic scenery or whatever, stuff like that, then you say *nyaweh* because now that *nyaweh* is directed towards the Creator and it's showing appreciation for what you're dealing with. When we sit at the table and we eat, the first one that gets up says *nyaweh*, not for the food, you know, but for, for the opportunity to sit with other people and share food. We're getting into the habit of using it much the same way it's used in English — you'll hear young, young speakers, more contemporary ones that are using or learning the language, they'll use *nyaweh* the same way they do and I said, No! (laughter).

> *[CA: Well I wonder, is there, is there a tension there that, so, on the one hand, you want to honour the traditions and the things you've learned from the Elders and from the older people and, on the other hand for a language to stay alive it has to change, right? Is that, so, if people are changing the language some, it's because it's still a living language…]*

I don't know — there are certain things that we don't, we don't want to change, that we don't particularly want to update because then it starts to erode our uniqueness. If you're going to speak Mohawk the way you speak English, why don't you just speak English? You can update certain things but other things you can't. Like negating a future situation — in English, you can say, "Oh, it will not snow today!" How presumptive you are! (laughter) Because, just because the sky is blue, but there's a cloud and you know the clouds — if there's one cloud there's another cloud and another cloud and another cloud and by the end of the day we could see snow, which is all within the realm of the "will" because the "will" is in the in future. We cannot negate the future.

> [CA: So that's, so that's a cultural attitude that shows up in the grammar of Mohawk? That you don't use negation with the future?]

You can construct a negative future. Nobody does. Fluent speakers don't. I mean, why would you? You know, because it interferes… We have other ways of kind of getting around it right but … most people just wouldn't. You just would not say, "it will not snow." We can create what amounts to it, a negative sort of thing and we use it with the non-definite, which is like saying "it would not" or "there's a possibility that it won't" It would not… but the thing is that you cannot directly say, "it *will* not" so we go to a very fuzzy sort of a non-definite situation and we negate that. Cheating in a way but at the same time, it is an important cultural part of the language. I mean, the fact that you have a culture that that doesn't negate the future — they deal with the future in a different sort of way — so those sorts of things, I think they have to be kept in language because they are the sort of things that add to the uniqueness of a particular language.

Word order in Mohawk. English has a set word order: subject-verb-object. Mohawk… Mohawk's word order is, is quite literally whatever comes out of your mouth. What joins it all together are pronominal prefixes and that works. But because the pronunciation of Mohawk, the pronunciation of a word in Mohawk is set; however, due to the situation in which that word may occur within, within a statement or sentence, the accent on that word may shift. So okay fine, so if I say *kahiatónhsera* for "book" then the accent is on *tón*. *Kahiatónhsera*, okay fine, but if I say *kahiatonhseráke*, "on the book" that accent shifted to the penultimate syllable. So accent shifts on a word depending upon where that word occurs. English is a language blessed with one or two syllable words which actually puts English speakers in an odd situation since most of them seem to have a hard time

pronouncing a word that has more than one, more than two syllables, (laughter) which makes my name really hard for them, “Oh, Kanatawakhon, oh, I can’t say that!” It’s worse if they see it written.

But the thing is, in Mohawk, word organization, word position is dependent on emphasis, so if I want to say, “The boy is walking on the road,” what am I saying?

“The BOY is walking on the road?” “*raksá:’a ire ohaháke*“.

or am I saying,

“The boy is WALKING on the road”? “*ire raksá:’a ohaháke*“.

Or am I saying,

“The boy is walking on the ROAD”? “*ohaháke ire raksá:’a*“.

So I shift my words around, there’s actually six arrangements of that, the three words and it’s all depending on, on emphasis. Also dependent upon if you’re answering a question. Because, “What did you buy?” “A COAT I bought.” Because the question *what* is asking, is asking for information which is then placed first which puts it in an emphasized position. That’s a very important part of the uniqueness of a language. So there are three very unique things with the language that we don’t want to, we can’t lose by modernizing it or contemporizing it. The language is set.

The culture that goes with the language … if you stop using a stone axe then eventually the word for stone axe is going to disappear unless for some reason … And then some vocabulary we’ve created in the past that we’ve carried through into the future like *oháhsera*, “a light” now is used primarily in reference to artificial lighting but originally it referred to something that looked very much like this bone *oháhsa* with the *–ra* suffix so then *oháhsera* just kind of gives the impression or gives the appearance of this particular bone and if you look at that bone and you look like a candle — yeah — so the thing is so we called the candles *oháhsera*, then lamps showed up. Well, more or less the same shape, *oháhsera*. Then lights, lamps, you know, living room lamps and stuff showed up, okay, *oháhsera*. Nowadays *oháhsera* refers to anything that throws artificial light, you know, ceiling lights, wall lights, the whole bit. So that is a word that has followed through time because even though we had your basic application but the shape kept changing.

[CA: That’s a natural semantic drift that happens in most languages…]

Yeah.

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11.4: Creating materials for teaching Mohawk

David Kanatawakhon-Maracle

Dr. Kanatawakhon-Maracle has developed his Mohawk textbooks and exercises over his many years of teaching Mohawk, but when he started teaching, there were very few books or materials available. In this unit, we talk about the kind of linguistics work that can be helpful in creating textbooks and other teaching materials.

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11.4.1: Video Script

Over the years I've been teaching Mohawk since '91 … '90-91 and I wanted to, I initially taught the course here, got the opportunity to teach the course because I wanted to see if the text material that I had developed for a language course would actually work. So I had developed a textbook and we used it the first year in that language course — mmmyeah, it did — as I modified it and I did things to it. That one sitting there that's the most recent within the last five years. There is an audio that goes with that on a USB stick. That's just the teaching text; there's another one that's called Supplements and it's divided into ten, ten supplement areas, where you've got everything about numbers, everything about locations, everything about… And it's equally as thick as that…

And then the band council back home, they finally got the opportunity to offer the Mohawk language in the public school there, so they wanted me to come home and teach it because I was quite literally the youngest speaker there and we didn't have a lot of old folks in the community to draw on. So I said okay fine, I'll, well I went back home and of course they said, "Okay there's, here's the Eastern school, here's the Central School, here's the Western school and then here's the main school one, Grades 1, Grade 2, Grade 3 and then 4 to 8 and I drove to each one every day for a half an hour, about a half an hour of language in each one, sometimes 40 minutes. So my first year of teaching was Kindergarten to Grade One — Kindergarten to Grade 8, you know of course having to deal with an attitude all the way through, worst at the 7/8 level because they started to be a lot more like their parents, and a lot more annoying. And then your little guys you know, just soaked it all up and were a lot of fun.

But then, the band council says well here's, here's your job, here's where you're teaching, and here's a hundred dollars a week. (laughter) No materials whatsoever, so I bought, I had to buy any materials that I needed for flashcards, for doing things within the class to help the kids learn and that sort of thing but one thing that there wasn't was a textbook. There was, there was no available materials that they were using and that was pretty much everywhere, so you pretty much had to develop your own material so I started doing more and I got thinking well the language is a lot more than just words. And there are a lot of words that seem to be very much the same.

I taught for five years and about the fourth year came across this book published by Günther Michelson called *A Thousand Words of Mohawk* and it was all about the roots. And I bought a copy of this thing and I started looking at it, "Oh, wow, this makes so much sense." So then I started, well maybe that is the better way to teach the language course.

> [CA: So he had done the linguistics research to assemble the roots?]

Yeah, he was a linguist himself and of course, a lot of the linguistic work done on Iroquoian languages at the time was for the most part unreadable. (laughter) I didn't have the education to deal with all that sort of weird and wonderful vocabulary. If I got a book, I had some linguistic stuff on the language, but as long as it provided enough examples that I could, then I could figure out what they were talking about … but … I really needed to have the examples. So I started doing his stuff and then gradually working this into, to doing the class, classroom stuff.

> [CA: So it sounds like there could be a valuable role here for people who may not have, who may not know languages, Indigenous languages but know some linguistics to work with speakers of the language to create materials?]

Oh yeah, I think, if they, and if they're going to be working with speakers they really do have to be somebody who has a sense of the grammar of the language. One of the things I learned how to do by trial and error was, learned how to ask the right question. Because speakers will tell you what comes to their mind. So we say, well what's the word for "tree"? "Oh, *kerhitáke*". Okay, eventually I learned that means "on the tree". *Kerhitákon*, eventually I learned that was "in the tree", and then, you know, they would give me all of these, *tkerhitoke*, "There's a tree standing there," and eventually I figured out that, *kérhite* was the word for "tree". Oh, yeah, yeah, you're telling us *kérhite*, yeah, that's "tree". (laughter)

But the thing is that, and when you're asking them something, you know, a question like, you know, "I trust him." You trust him for money? You trust him for what he says? You trust him for what he's doing? You trust them to get the job done? What? Because those are all different, you know?

And, and the business of using pronominals — we have a subjective, objective and transitive, and they would mix them. Now this is a problem that was happening in the, in the language programs in the schools, is because the fluent speakers were suddenly, oh Aunt Maisie there, she's a fluent speaker. Yeah, she's 85 but she can teach these kids — what a horrible thing to do to an old woman (laughter) — but anyway, she could use the money, so. But the thing is that she had, as a fluent speaker she had no sense of the grammar of the language.

> [CA: Right, didn't have the metalinguistic awareness.]

Constantly mixing categories, constantly mixing, you know, mixing things up. "How come you said, *wahahní:no* yesterday and today you said *rohahní:no* for 'he bought'?" They both kind of mean that, *wahahní:no*, "he just bought it", *rohahní:no*, he bought it, but quite a while ago".

> [CA: Yeah, that's something that my students in, in first-year linguistics struggle with making this, this unconscious implicit knowledge about how their language works and making that explicit. It's a real challenge. Whatever, I mean, we mostly do it in English but whatever your native language is, it's hard to become conscious…]

Yeah, so learning – learning to ask the right question, you know and, even when, when doing a sentence, you really have to pay attention to, to how they're organizing the sentence, how they're putting it together, and even though when they would say things, I would, "yeah, yeah, I know". I have a sense of what they were saying, but (laughter), it just, sometimes it was so confusing, sometimes very frustrating, sometimes you would ask three or four different speakers the same thing and they would all tell you something different. Is it because there are four ways to say the same thing or is it not really the same thing but simply refers to similar situations?

Now, I mean, that, that textbook there is all about the grammar of the language — what you use where, how you organize it, what you say when, and stuff.

> [CA: And it's over your years of experience that you've assembled…]

Yeah. Over the years I've written five different language learning textbooks complete with, with exercises, drills and all the sort of stuff. That also has a book of exercises and drills to go with it. The difference is that is on, on audio, so it's … you can, you'll find the exact same textbook on screen which you can highlight the audio and get a pronunciation.

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11.5: Speaking Mohawk and reconciliation

David Kanatawakhon-Maracle

In this unit, Dr. Kanatawakhon-Maracle shares his view that language will play a vital role in reconciliation efforts, and talks about some of the challenges of maintaining a language when English is so dominant in Canadian society.

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11.5.1: Video Script

> [CA: I mean I was thinking about your students, like, are, are they going to speak Mohawk to their kids when they have kids, do you think?]

I think it's really up to, up to the student, I mean, they may have thought you know learning the language is difficult. Finding a compatible partner who also speaks the language is going to be the real test. And some of them have, have found partners who, and they have raised kids, they're raising kids together.

> [CA: So are there kids who are growing up who are learning to speak it as they're growing up?]

Yeah.

> [CA: That's starting to happen more?]

Yeah.

People don't realize that learning language is a lifelong… I, every now and then I'll run across vocabulary — oh yeah, wow this word — and then just … learning new vocabulary, words I hadn't heard before or words that I'd heard but I didn't have time to figure out the context and so, always in a state of language learning you know even after you're a speaker.

We need language. I don't know how we function without language. And nowadays with Native people you know, so much of this, this reconciliation thing going on and that sort of thing. Years ago in my home community, a lot of farmers that lived around the territory also spoke Mohawk. Very minimal in a way and stuff like that because they hired a lot of people from the territory to work on their farms. So they learned Mohawk. They learned it to a degree — you could go into stores in Deseronto and shopkeepers would, you know, would deal with, with the people in Mohawk. Now, it was Mohawk that would be related to the whole buying and selling and this sort of thing that but they did that. Now, to me, that's an aspect of reconciliation. That's where two groups have reconciled with each other — okay you're there, you speak your language but I will learn to speak with you mostly because I want your money — and … we, you know, we'll speak your language because we need your goods. I mean there's always a give and take on any, any two groups that have reconciled with each other but I think at the same time, too, when people take time to learn your language, they do have a certain respect.

> [CA: That's what I was thinking — it certainly shows respect, that I value interacting with you enough to do it in your language.]

Yeah, and the ones that want to interact more, learn more of the language.

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11.6: One view on the future of Indigenous languages

David Kanatawakhon-Maracle

In this unit, Dr. Kanatawakhon-Maracle speaks eloquently about how vital each Indigenous language is to the identity of each First Nation, and about the long-term effects of colonization by the English and the French.

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11.6.1: Video Script

Canada is a bilingual country … and I think if Canada learns to extend itself, we'll start including more and more Aboriginal languages. I think Canada is, would be better to tout itself as a multilingual country. Because I think when doing that, even if they, if their definition of multilingualism is, is the two founding languages and then the Indigenous languages, you're still looking at you know like fifty-five languages. And then because the difference, I think too, Native people have to be included in all that because we were here when English and French showed up. Okay, English and French showed up and they created the present-day institutions and stuff like that, okay fine. Everybody else who has come to this country basically has read the brochure and understood that English or French are the languages, therefore come to this country understanding that, okay I'm going to have to learn English or French because that's how the company is organized, country is organized. Or if maybe I'll go learn an Indigenous language as well. But the Indigenous languages have to be at the table.

> [CA: The English and French arrived and didn't say oh well we're gonna have to learn the language that people speak — they said we're here, now you're gonna speak our language.]

Yeah, but you know initially they did learn our languages to deal with us because they didn't have much choice. We had what they didn't have and when we got to a point where we no longer had what they wanted, and of course, they wanted the land which meant pushing us off anyway, so the respect for the languages and stuff, kind of went out the door. Then it became well everybody here speaks English only. … I find that we need we need to have the languages. I think that gives us a greater sense of who we are — the language!

And, and the thing is that for, for Native people in this country we have spent so many years under the colonial thumb and so many years being convinced that our own languages and our traditions and everything that's about us is inferior or not as good as … And the thing that I've found is that if you're a Native person you can work your butt off to become as much like you know the non-native Canadian; at the end of the day your skin is still brown and that's not going to change. If I focus on speaking Mohawk then in the process of learning my language I'm also learning Mohawk culture and what it is to be a Mohawk person and that's, I think is something that is very important. We've gotten into the habit of being Indians or Natives or Aboriginals or Indigenous. Nowadays the word's 'Indigenous'. I think I keep telling my students, I said you know, I said, when I was born I was born an Indian but then I became a Native and then I became Aboriginal and then I became First Nations and now I'm Indigenous, yay! You know, Indigenous is the word of the 21st century and I'm sure they'll find another one, but the word I would really like them to find and stick to is Mohawk, Oneida, Ojibwe, Chippewa. Know us by our nationalities, know us by our distinct cultures, know us by what makes us unique in the world.

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11.7: Reclaiming Michif

Chantale Cenerini and Martin Kohlberger

Chantale Cenerini is an assistant professor at the Department of Linguistics of the University of Saskatchewan. She is a citizen of the Métis Nation Saskatchewan. Her work revolves around language reclamation, maintenance, description and documentation, focusing on the languages of the Michif/Métis people, Algonquian languages and French spoken in Manitoba and Saskatchewan.

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Martin Kohlberger: Hello everybody, my name is Martin Kohlberger. I'm an assistant professor at the University of Saskatchewan. And today, I am delighted to have the opportunity to have a conversation with Chantale Cenerini, who is also an assistant professor at the Department of Linguistics of the University of Saskatchewan.Chantale works with languages of the Michif people, Algonquian languages, language reclamation, language description and documentation, and I'll simply let you introduce yourself a little bit more, Chantale. Why don't you please tell us a little bit about you, your nation and your languages?

Chantale Cenerini: For sure! Thank you so much for the invitation, I'm very happy to be here and to be sharing my experiences, so like like you mentioned, I work with languages of the Michif or Métis people. I myself am a citizen of the Métis Nation Saskatchewan. It's one part of my heritage. I am equally proud, I would say, of each Nation which I've come from and to do research on languages of the Michif/Métis people for me has been a really special way to celebrate my ancestors and that part of my heritage and my roots because I've had the opportunity to visit so many wonderful communities and to speak with many people that are so hard working and so dedicated to their language and to their community. And not only preserving the knowledge and the languages that they speak and the knowledge that they have, but also to pass it on to the next generations.

One thing I think I would like to say about the Métis or the Michifs is that they've always been multilingual people and multilingual nation as a post-contact Indigenous people, they would come into contact with not only European traders and settlers but as well as their relatives such as the the Cree, the Ojibwe, the Saulteaux Nations. And so to be able to communicate and to have a relationship with all these different peoples, they always have spoken many, many languages and that speaks to me to their adaptability as a people. And also what what that is that has made is that the Michif and Métis people are also very spread out.

The Michif homeland is very large across the western provinces and the United States, North Dakota and so on. And so we have we have a Nation that is extremely spread out that is multilingual and so they actually don't share one language across the entire Nation. There is a common consciousness as a Nation that seems to have emerged beyond sharing one single language. So I think one of the things that I've found to be really important when working with Michif/Métis communities has been to really learn about the linguistic history and context of each community and learn from the people what language is spoken and has been spoken in the communities and which languages have become part of their identity as Michif people. So there's really a need when we're talking about Michif or Métis communities to focus efforts locally often because of that fact. So I think that's something that I really found to be a really fascinating question about working with languages of the Michifs and it's very rich in terms of differences in diversity, but also like I said, there is again still that common consciousness.

Martin Kohlberger: So with such a diverse nation, I imagine, from what you're saying, that the roles that people can have in language reclamation can be quite different, depending on the communities and the geographic regions and so on. And so I'm curious – I know that you work a lot with language reclamation and language documentation, so I'm curious what your role specifically is in language reclamation and in what ways you have carried out your work.

Chantale Cenerini: Absolutely, well you're right in terms of saying that there's all kinds of things that you end up being able to do, and I think again that experience for me has somewhat varied depending on the community and the speakers that I end up working with so my role has been in my own research I've been able to work with documenting stories as told in the community's language. These are stories of growing up in the community. They are stories about their family, about the community themselves, and I did get a lot of interest from people with this kind of project, because not only does it bank and document the language, but it also it also promotes it, it also puts it, you know on a plane of prestige, I guess, I would say.

Martin Kohlberger: Right.

Chantale Cenerini: Any documents and history that sometimes has not been included in other community accounts, for example. And just on a personal level as well, it was a way for for people sometimes to just document their own family history. So it's a family legacy, even if it doesn't go beyond the family, that's worth it all in itself. So on that side of things that's definitely been for

me really rewarding work. So that that idea of language documentation and banking, but, as well as sharing, dissemination. So taking those stories and then publishing them in some way that's for the families and for the communities themselves.

But then also my role sometimes expands to beyond that, in terms of then becoming a facilitator or a technician for other community-driven projects. So that would include here in Saskatoon community classes. For the last four or five years as more and more people are interested in hosting classes for the community, especially for adults that want to learn their ancestral language. This has been really high demand. So then they reach out to speakers who at this point are Elders for the most part, and of course they have all the intuitive knowledge as fluent native speakers. But then it's nice – I think it can become a much more positive experience for them, when you have other people that come in to support you on the other side of what it means to teach a class to a group of adults.

So I definitely feel like I've been very fortunate to be part of these kinds of groups where we have teachers, linguist such as myself, and speakers that are working together. We're bringing all our specialized skills and we're delivering the best class that we can together. And that can be a very rewarding relationship as well.

And then from that, you kind of start falling into resource development to support these kinds of classes. So I can talk about it a little bit later, too, but that resource development as well, has been a really important part of of what I've done to try to support especially adults trying to achieve fluency in their learning.

Martin Kohlberger: And from what it sounds like, a lot of this work really revolves around fostering and reinforcing relationships, right? I guess in terms of when you were talking about the documentation of stories and how it's about people documenting their histories, but I guess, in turn, the documentation reinforces their relationships that people have in their communities with their own memories. So that that sounds like a really multifaceted work. So it must be rewarding but I'm guessing it's also a challenge!

Chantale Cenerini: It's a lot of work, but absolutely! It's something great to work with.

Martin Kohlberger: And i'm wondering – you mentioned the fact that a lot of adults are wanting to learn their heritage language and that that often happens in collaboration with multiple different people, whether it's linguists or Elders, or a combination of that, and I'm wondering what is it like, do you think, for adult learners to go through this experience? Do you have any personal insight into that? Because I imagine it's quite a different process to learn a heritage language as an adult than learning it at a younger age.

Chantale Cenerini: Oh, absolutely. Well, I think, for me, that's something that I went through myself, because it was important for me to learn these languages that I'm working with that my family doesn't speak anymore, but that they would have spoken just a few generations ago. So for me it's really personal journey to be part of the learning process myself so and then I have that personal experience and i'm going through maybe what the other students are going through as well, as adults.

In the case here of Saskatoon there's quite a few descendants of the wintering camp called Round Prairie or La Prairie Ronde, and these were Michif families that would have originated from the Red River. They spoke a mixed language that they called Michif. And so there's a lot of interest, for example here in Saskatoon, to learn this language, because it's the language of the families, of their ancestors, so a lot of adults are are looking for opportunities to to learn this language. And there are a lot of challenges. Most adults are native English speakers, and of course English doesn't have a very complex verb structure. But a mixed language like Michif, the verbs come from Cree, so it's an Algonquian verb structure and that's a whole nother animal than the English verb! So, then, to be faced with a complex gender system, a complex verb system, these are things that they have no basis on if they only know English. So those are huge challenges in terms of trying to get people to slowly try to learn.

So the main way that I think people are trying to approach their language learning here as adults is there are a lot of online resources that are getting created for the language, some online beginner courses, lots of videos, online dictionaries, lessons and so on. So I think that's the resource that a lot of people end up depending on. As well as the opportunity to take these community classes taught by a speaker and supporting team. And the goal that we're working on here in the city is how do we take these people that have been taking beginner classes or beginner content for a couple of years now, but are really desperately trying to break through – the next the next step, the next stage, exactly. How do you get to become a fluent speaker if the only material that's really at your disposal is either the beginner stuff or the really complex fluent language videos or children's books that are fully translated, but that aren't really broken down or anything?

So that's actually something that I've really tried to work on in terms of resource development is through a non-profit organization that I'm part of. We're actually developing a verb game so people can actually start to broach the topic of the Algonquian verb and the structure and how do we stratify their learning and make it seem as painless as possible through a series of exercises and, in this case, this is an interactive game where you're manipulating pieces of the verb and building a full sentence using the verb in a

sentence. So the goal is to really try to make the verb not so scary, not so intimidating and to really introduce the idea of those regular patterns which then you start seeing in the verb. And that's the key in this case to going from a beginner to someone who can actually hold a conversation in the language and can feel confident in using the language. So we are definitely thinking about ways to do that and ways to support that with the adults, especially.

Martin Kohlberger: I guess that's one of the key changes that happens there is the difference from being an early student to bringing the interaction in? So is that why that game is interactive to bring a little more conversation into the picture? Or are the early classes also pretty immersive?

Chantale Cenerini: Well, to various levels I think in our journey here in the community classes I've been offered in Saskatoon and even out of Saskatoon – because now with Zoom you can offer the same course to people in British Columbia, to people in Regina, and that's kind of what we've been doing as well. And so we're starting from Saskatoon but then we're distributing content elsewhere in the country where Métis people are spread out.

Martin Kohlberger: Judging from what you were saying about the the geographic distribution of the Métis Nation, I imagine that that's actually been quite a positive development over the past couple of years: having the the Zoom possibilities.

Chantale Cenerini: Oh well yeah, because speakers that are willing to teach a language class is getting harder and harder to find. I think, in the case of of Michif, for example, I mean speakers are in their 70s at least. And with more and more interest and more and more funding available for work on Indigenous languages, the people that are active in language work, speakers that are active in language work, they often get quite busy. Right? With the amount of work that's available to them and they're in hot demand! It's nice if there's ways like Zoom where you can connect with with a speaker if you don't have one in your own community that is doing that kind of language instruction, then it allows you to reach reach out. And the funny thing with all being Michif or Métis people is then you find connections with people that are all the way living, for example on the West Coast. They're all from Saskatchewan, Manitoba, and there's a lot of relations happening there, so it allows you to connect with people that are from your own family that you wouldn't have connected with otherwise.

Martin Kohlberger: Wow, yeah! Hmm. I'm also curious because you mentioned the fact that you have these multiple hats, you have these many roles. On the one hand you're a member of the community yourself, you talked about how the language journey was part of your own journey, but you're also obviously a linguist, a researcher, in terms of your career and also your research interests. But I'm also wondering, in general, what is the your community's experience with linguists – like academic linguists – or even the field of linguistics? Has there been much interaction there? What are the views of community members about linguistics? Do you have any thoughts on that?

Chantale Cenerini: Well, I think, I think, like in many cases, it's a mixed experience sometimes, but there have been some really positive experiences, I think. With many communities in Western Canada, a lot of people have remembered… The linguist that published probably the most foundational work on languages of the Michif/Métis people has been Peter Bakker and he's very well thought of still. And I think one of the things that people mention, for example, they talk about him or other people that have come after him is there seems to be always more of a positive thought towards the linguist or the researcher that came and was interested in your language if they themselves made an effort to learn the language and made an effort to speak the language. I know as linguists we don't like to get asked how many languages do we speak and assume that we're just studying to learn how to speak languages, but when it comes to doing language reclamation or revitalization work, that's actually a really important part of building a positive relationship: become a learner yourself. And I think it allows you to to have a different perspective on the language.

As well, when you do try to become a learner, it allows you to see the language a little bit more from the inside, rather than an outside perspective, and it is just… I've found anywhere that I've gone that that's just generally something that people notice and really appreciate if they see that you've come, you've stayed for however long, a while, but while you were there you did make that genuine effort to try to communicate in the language, try to use the language, try to show an interest in learning the language and a sincere one, of course. And I think that plays a really important role in in building a relationship.

And I think for me that's one of the things that struck me the most coming into my own research and my own work, something that I was told or that I heard. And, well, otherwise it is a lot about building that personal relationship. I think, if you can show yourself, not only as a researcher, but a human being and a person, that you find those commonalities and you build that person-to-person relationship, that just generally tends to be a lot more positive than trying to stay to a certain point too professional. I think that that's something as well that that I see. But of course it depends. It depends on the expectation of the people that you're working with and what they need or want out of the relationship as well, so it doesn't always look the same.

Martin Kohlberger: And like you mentioned,with such a diverse Nation, the meet the needs and expectations are presumably going to be different in all the different cases. Thank you for that point! And I'm wondering if there was one thing,or a few things that you would want linguistics students to know about either the kind of work that you do, or about the languages of the Michif/Métis people? Is there something that you would want linguistics students to definitely kind of know about or come out with?

Chantale Cenerini: Well, I think if they are interested in this kind of work and anything that is related, for example here in North America or elsewhere in Indigenous language revitalization and reclamation, and this is something that students are interested in and that's the direction that they want to take in terms of their their their career in linguistics, I think one of the things that maybe I would want to share again, it has to do if you do want to work with people and you want to work on languages that have this complicated history with disciplines such as linguistics and where relationships are really important, I do like to share something that actually really struck me or marked me the most when I was going through the early stages of my PhD program. I went to a one week institute at the University of Carleton and one of the organizers was John Medicine Horse Kelly, and they had put up a whole week on ethics of research with Indigenous peoples, and it was people from all different fields that came to this this institute so not only from linguistics or social sciences, but we had people in the field of agriculture, in the field of medicine, and everything like that, we kind of all came together. And one thing that he shared with us during that time that honestly just stayed with me the entire time was just: "Come in with a good heart." "Have a good heart." And he says, "If you make mistakes or you make errors in protocol, or different things like that, it will always be better received if you came in with a good heart."

Martin Kohlberger: Wow, yeah.

Chantale Cenerini: And it's really simple advice, but for me it stayed with me the entire time and it's still something that I think about regularly, in terms of sometimes you don't know how to approach something, or you don't know how to go about something. It's just something that always pop back into my head and almost as a reassurance that, okay, take a break and just that simple thing of always checking how you're going into something and your intentions when you're going into something and that sometimes can just make all the difference in terms of even how you approach it. So there's a lot of unknowns when working in language revitalization reclamation documentation, and I think to keep that in mind is maybe just a steadfast something to think about that anyway stayed with me the entire time after I heard it, and it will probably be in my mind, for the rest of my life honestly. So that's something that I like to think about and that struck me to share.

Martin Kohlberger: Thank you so much! Thank you so much for your time, for your insights into your own work, your community and for the lessons.I can say personally, I appreciate that lesson: "Come in with a good heart." I think that that will likely mark me too.So I thank you once again for sharing all this with us! And thank you for being here today!

Chantale Cenerini: Thank you so much for inviting me! It was great, thank you!

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11.8: Reclaiming Hul’q’umi’num’

Rae Anne Claxton

Rae Anne Claxton was born in Quw’utsun (Cowichan) on Vancouver Island, and was raised there and in SȾÁUTW̱ (Tsawout First Nation). She holds a Masters Degree from Simon Fraser University and is currently a Ph.D. student in Linguistics at the University of Alberta. Rae Anne is engaged in the First Peoples Cultural Council’s Mentor-Apprentice Program with her si’lu (grandmother). She has worked extensively on the reclamation and revitalization of Hul’q’umi’num’, and in Summer 2022 will be teaching a course on the use of phonetics software and technology for Indigenous language learning.

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Margaret Grant: So welcome to this segment of Essentials of Linguistics. My name is Margaret Grant and I’m a Lecturer at Simon Fraser University in the Linguistics Department and Cognitive Science Program. And today, we’re very happy to be presenting an interview with Rae Anne Claxton and I will let Rae Anne introduce herself.

Rae Anne Claxton: Huy ch q’u Margaret. ‘Een’thu Rae Anne Claxton [portion to be translated]. My name is Rae Anne Claxton, I’m from Tsawout and Cowichan, and I live in Cowichan.

Margaret Grant: Rae Anne thank you so much for being here. First, I’d love it if you would tell us a little bit about you, your nation and your language or languages.

Rae Anne Claxton: Well, I was born in Quw’utsun, which is referred to as Duncan BC here on Vancouver Island, and I was raised between here and my other home community of Tsawout First Nation. And as a child, I lived with my grandmother who was a Hul’q’umi’num’ speaker, but I also lived with my mother who lived in, Tsawout and worked at ŁÁU, WELN̓EW̱ Tribal School. So I learned a little bit of SENĆOŦEN from my time in Saanich, but I spent a lot of time here in Quw’utsun, where both of my grandparents were L1 speakers of Hul’q’umi’num’. So although I wasn’t able to learn the language from them directly, I heard them speak and was spoken to in the language but never encouraged to speak back. So the language that I’ve been focusing on primarily is Hul’q’umi’num’ and it is a dialect of Halkomelem and the dialect that we speak here is referred to as Island Halkomelem but there’s also two dialects on the lower in the Lower Mainland.

Margaret Grant: And what is your role in the language reclamation process of Hul’q’umi’num’? And What work are you doing in this role?

Rae Anne Claxton: So for the past four years, I have been working on reclaiming language within my family and that was inspired with the loss of my grandmother, the last fluent speaker in my direct family. Since then, I returned to university, Simon Fraser University, where I attained a certificate in language proficiency of Hul’q’umi’num’. And at that time, I had also begun working within the community, we had offered programs such as Language House, I was involved in establishing a Language Nest here in in Cowichan. What else have we done? There was so much that that we’ve done over the years. I’m also a part of First People, First Peoples Cultural Council’s Mentor-Apprentice Program, where I am in the third year of my apprentice program with my si’lu, grandmother, Sarah Modeste. I have worked within the community providing language learning opportunities for children in care through Cowichan Tribes, Lalum’utul’ Smun’eem, their Child and Family Services. I’ve also worked on developing resources for language learners in the form of books and songs and poems. Just basically anything that I could work on in providing for language learners. That’s what I’ve been doing. Currently, I’m working on my PhD through the University of Alberta, in linguistics, and that’s kind of been the – that’s taken a lot of my time within the past two years. But I’ve continued my own personal language learning journey throughout that as well as teaching within my own family.

Margaret Grant: You started to mention this being an adult learner of the language yourself. What is it like for adults in your community to be adult language learners of Hul’q’umi’num’?

Rae Anne Claxton: As an adult language learner of Hul’q’umi’num’, the work is very emotional. I find the work to be very emotional. It’s very hard work. It’s very difficult work and you really need to to take all of the courage and all of the strength that you have to continue moving forward. In a time when we’re losing our first language speakers, it takes a lot of, a lot of self discipline, to encourage yourself to step forward, maybe when you might want to step back. It takes a lot of strength and conviction, and a lot of a lot of time, I have dedicated a lot of the past four years away from my family, learning the language to the best of my ability and providing services that I can to our community. It takes a lot of time, building relationships, in community, and with the remaining elders, to continue to learn to learn from them. I think that the major challenge that you may not anticipate when you think about learning your language is really just the emotional toll. And you may make connections with elders that will

pass and while still trying to maintain work within the community, you have to go through the grieving process. And there are also minimal spaces for us to converse, in our language, especially throughout the pandemic, we have lost the spaces that were meant for us to connect. And the fear that we have of anything happening to our elders has been compounded by current circumstances. So that's the reality of being an adult language learner, of an Indigenous language, during this time, I think is really, it's, it's a heavy job. And it really requires a lot of community involvement and a lot of moral support from wherever you can find it.

Margaret Grant: Oh, thank you for sharing that.

Rae Anne Claxton: As as an adult language learner, it has been a challenge to overcome the fear of speaking. And that is something that I think gets passed down in our blood memory, from the traumatic experiences that we've had. And it's something that we will all overcome in our own way if we keep at it. And that is something that I've had to overcome, not being afraid to open my mouth and tried to speak. And still, almost four years later, I'm still working on not being afraid to open my mouth and speak and to make mistakes. And something my granny always tells me is that you can't, you can't do anything without making mistakes. Making mistakes is how you learn. And I think that within our communities, there's been… there's been generations of language loss, so there are generations of insecurities. And I think that approaching our language learning in any way that we can is very helpful. And that's how it's been helpful for me through learning linguistics. My grandmother, couldn't explain to me why she would call my my eldest daughter sts'a'muqw, but she would call my youngest daughter [transcript in progress]. And she was passed away by time I've learned that that was a diminutive form. When you actually have a way to say it, a way to explain what is going on, explain the phenomenon explain the language, it makes it much easier to retain and to share.

Margaret Grant: You mentioned before we started recording, that you had been working within the Linguistics program and Indigenous Languages at SFU. But I wonder if you could comment on what your community's experience has been like with linguists and the field of linguistics in general.

Rae Anne Claxton: What my community's experience has been like? I can speak from my own familial experience within my family. I know that there's documented language that I would love to have access to. I would say that relationships have not always been easy. And that that is something that I work for, as a student of linguistics, and something that I always try to remind myself, my family and my community, that we haven't always had great relations either with institutions for education. And those are things that we have overcome, that we have collaborated with, that we have voiced our own needs within. And that's something that I strive to do within linguistics, is to be a voice for my people, and for what we need at a community level. And what we really need at a community level is access to documentation that was done by previous linguists at a time when it might have been illegal for our people to practice our language. So at a time when children were taken to residential schools, children like my parents, language is being documented in our communities. And it's very important that that language makes it back into our communities, and that any barriers to that language are removed.

Margaret Grant: Yes, absolutely.

Rae Anne Claxton: Especially at times when when we're losing access to our elders, we need documentation of our previous elders accessible.

Margaret Grant: Yeah, so I'm hearing that there's, yeah, some lack of trust.

Rae Anne Claxton: Yes, there's lack of trust. And it's, it's actually something that inspired me to take on language. Knowing that I have a grandfather, for instance, whose mother had worked extensively on documenting the language. And he and his family obviously, would, would love to benefit from that wealth of knowledge. That's always brought up in our communities, how when we lose an elder, we lose a library. Coming from an oral tradition, that we may not have the written documentation, and we may not have had access to technology, or the skills, in past times, to do what we can today, there was one thing that my grandmother had used to tell me all the time. And she used to always tell me that I live in a different time, that I am able to access things that our people may never have been given access to, that I may not be smarter than my ancestors, but I have abilities that they were denied. I have accessibility that they were denied, and I have opportunities that they were denied. And she always encouraged me to do the best that I could and to remember that in every step that I took, that there were, I'm taking steps that we weren't allowed to take before. And I find that really inspiring. My grandmother is a fluent speaker. There were many, many stories that she wished that she could tell me, but she didn't have the skills and English to do so. And I didn't have the skills in Hul'q'umi'num' to hear them for her. Especially now that I'm studying the language, I wish I had recorded my grandmother anyway. But I didn't have the foresight to know that I would be able to read, to hear, to translate and transcribe the stories that my grandmother was to share with me. And so that's when I think that's what I think of personally. And I think that's what many Indigenous people think of when they think of the field of linguistics, is that there are stories that are documented, there is history that is documented. And it's about one of my

current mentor, my mentor right now my granny Sarah Modeste always tells me that “you’re a bridge rayon, you have to act as a bridge” and and bring people together and bring things together. So I like to think of it that way.

Margaret Grant: And find any materials that could be brought back to the community then.

Rae Anne Claxton: Yeah, and not only that, but to make it accessible. Because there are many things that are publicly accessible, but it’s about delivering it in a way that is meaningful to where we are in revitalizing our language. I just wanted to say also that my own individual experience with linguists has been… I’m very grateful for the opportunities that I’ve had. And for the people that have helped me along within the field of linguistics. I just wanted to add that.

Margaret Grant: Is there anything else that you would like linguistics students, and introductory linguistics, students to know about your work and your language?

Rae Anne Claxton: I want linguistics students to know that I believe our people had a culture of understanding linguistics, and that we had a strong appreciation for linguistics. I wants Indigenous linguistics students to know that many of our people were fluent in many languages, and we spoke to each other in the language that we were comfortable with. We never forced others to conform to other languages. And many times, I’ve heard of our people say a couple was married from two different areas, and it was quite commonplace for the one the one partner to speak in one language, and the other to respond in the other language. So that’s something that I hope that is brought back to our people is a greater understanding of linguistic diversity, and acceptance. And what I would like linguistics students to know about our language is that it is live. And that as long as we are here, that it will remain alive. It can be intimidating to take on learning your Indigenous language, or the linguistics of your Indigenous language. But I do really find that the field of linguistics really helps break it down into manageable chunks. And just as I had made the parallel to education, I make the parallel to medicine. With breaking breaking down in different fields, it’s it’s quite similar.

Margaret Grant: So looking at different systems within the language.

Rae Anne Claxton: Mmmhmm yeah.

Margaret Grant: Yeah. Well, thank you very much for your participation today. And you know, for all the wonderful information you’ve given us about your personal journey and also about your communities journey. I can’t thank you enough for being part of the project.

Rae Anne Claxton: Thank you. Thank you for having me.

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11.9: Growing up speaking Nishnaabemwin

Mary Ann Corbiere

Mary Ann Corbiere grew up in Wiikwemkoong unceded territory on Manitoulin Island. In 2021 she retired from her long career teaching Nishnaabemwin at Université de Sudbury. In this unit Dr. Corbiere talks about growing up in Wiki and about how she became a language teacher.

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My name is Marianne Corbiere. I'm originally from Wiikwemkoong unceded territory at the east end of Manitoulin Island. It's one of the bigger Nishnaabe communities in Ontario, um, perhaps, um, in both Ontario and in the States. And the 1960s, which is when I started school, I was in grade one in 1961, our community was still, yeah, every household spoke the language. That was our first language. So I was very fortunate to grow up at that time.

Um, learned English through basically immersion before we threw around the term *immersion*, because we were just taught in English. Um, yeah. So Wiikwemkoong is, like I said, among might be the biggest or at least one of the biggest Nishnaabe communities. At the time it might've had a population of on Reserve of maybe a few thousand, maybe 2,500 or so I'm just roughly estimating. So we had our own schools up to grade eight. So I went to school for the first eight years in my home community. So I, we learned English only in the classroom, used it only with the teachers. Um, otherwise I would, at recess time out in the school yard and after school hours playing with friends, we all spoke the language.

So, uh, that's why it has survived so long. Although our, our parents or, and our grandparents had gone to the residential school in Spanish. Um, I mean, we hear a lot about how, uh, the major role that residential schools played in destroying the languages, many of the languages, so Wiikwemkoong and also M'Chigeeng, another, the other bigger, bigger community on Manitoulin which is, uh, population-wise is a bit smaller than Wiikwemkoong.

Likewise, there the language survived in the households. So it might have been just the notion of critical mass, right? That although the students who are over in Spanish, uh, presumably around from September to June, two months back home, um, it seems, was sufficient to, for the kids to get their language back and to keep that up because certainly my mother and the woman who became my mother-in-law, who had both gone to Spanish, like both our households, that's all we spoke. It was our first language.

Can I just clarify one thing, when you say "Spanish", that's the name of the place where the school was?

That's the community where the residential school was. I see the actual name of the school in, um, writings about it. I can't remember offhand.

And the kids would have been speaking, or the schools would have been run in English.

Yeah. That's where my mother learned English and my mother-in-law, or whoever went there. Yeah. So, um, we were very lucky in that regard. Yeah. Yeah. So that's right from, uh, I ended up teaching the language in 1989, very much by happenstance. That's the last thing I ever expected to be doing in my life because, um, in, in grade seven I discovered I really liked science.

I can actually remember with a little science experiment our teacher had us do, that I found very intriguing. And after that, and I grew up on a farm, so it was always outdoors, which might have been, like also explained my interest in the love of natural things, you know? Um, yeah, so I majored in science in university, Earth and Environmental Sciences, and then did some, found a job back home, totally different, for four years.and I wasn't very good at that job. So I thought, okay. I think some business administration training might be good. So I applied for an MBA program and I got in on the second try. They didn't let me in the first time. I said, well, I really need to do, learn to, need to learn some useful skills. And I'm not in the sciences, working in the sciences anymore.

Yeah, anyhow. So after I finished my MBA, ran into an old friend from my grade eight days in Wiki (Wiki is what we call Wiikwemkoong for short). And this other position came up, contract job, And then coincidentally, the interviewers were, it was for a program at Laurentian, Native Social Work jointly created by the Department of Native Studies, as it was then known and the School of Social Work.

So the interview committee included members from both programs. So one of them asked me about my language and it turned out and I said, oh yeah, I love it. That's why I came back home after all these years away for high school and university I missed hearing it every day and it turns out they were also feeling me out for, okay, we need a part-time language teacher here to teach at least one course in the evenings.

So after I was offered the contract job with the social work feasibility study, uh, they asked me, oh, would you also teach the language? Oh, I don't know about that. I never imagined myself teaching university. It seemed like a really it's like, wow, you need to be a genius to be teaching university. It does help to have some brains but you don't have to be a genius, like Einstein. So anyhow, so I said, okay, well, and they said, well, you speak the language. You'll yeah, you'll figure it out. And I said, oh, okay. I'll give it a shot. And I fell in love with it. I thought, oh, this is fun.

Now, this might be the good thing about not having taken linguistics. And I don't know what state linguistics was at the time in terms of the research on Indigenous languages, or Ojibwe, my own language. This is 1989. I do see that Richard Rhodes had produced a dictionary in 1985 and Rand Valentine filled me in, on some of the linguists who had worked on our language.

And actually one of them, I discovered, had actually come to Wiki when I would have been maybe in grade eight or grade nine. Grade eight I was still in Wiki, grade nine I was in North Bay for high school. Um, and Piggott, I think is the, the linguist. And apparently he had been interviewing or working with a farmer two or three miles down the road from our farm, Sam Zelmick

With that work, that's how Piggott figured out why these changes, um, changes like, you know, when we say "he's eating", *wiisini* becomes *niwiisin* for "I'm eating". Piggott worked out the, I guess, phonological basis for that, through his talk with Sam Zelmick apparently. So, but I didn't know that I didn't know what linguistics was out there in the journals or wherever.

So I was trying to figure out, organize the language on my own, like for teaching purposes. Okay. Where do I start? This is introductory course I'm teaching. Where do I begin. Yes. Yeah. So that's what made it so much fun, you know, that problem solving. Hey, how do I? Yeah, rather than just talking at students to say, okay, repeat after me.

And just like, um, sort of like spiels of conversations, snippets to memorize eh, my name is so-and-so I come from this place, I like to do this or whatever, you know, I have stuff like that. It's like I could, I decided, okay. Um, I just figured out, like by trial and error. Okay. I'll do it. I'll try teaching this way.

Give them the patterns and being scientific with a science, more of a scientific, I guess, inclination that's like perhaps if that was why I gravitate to that kind of more like in a sense, a formulaic approach, like what's like word methods, like yeah. You know this pattern, you just need to change the verb to say, "I want to go skating tomorrow",

"I want to go skiing tomorrow", "I want to go for a walk". Here's what stays the same, but what are you changing? The action! So we'll find the verb and I figured out a way to explain, okay, these verbs, nothing, if the verb ending doesn't change, you know, but these words, the verb ending disappears, and this happens with long, the thing disappears with short vowel endings, when the end of the verb is a short vowel. It doesn't disappear if it's a long vowel! So I sort of figured that out on my own, just from like looking at a bunch of examples that would come up, eh, I don't, I didn't know why it was happening, but at least I could see that there was some kind of consistent pattern that made it somewhat predictable for learners.

So that that's what made the thing really fun. And I guess that's part of why I fell in love with the job of trying to teach it

The year after teaching part-time, um, uh, at the same time, the university like this, the, the social work program, the Native social work program, they had committed to making it available by distance for, especially for First Nations, because many can't relocate readily to go to university.

So, and people had said, well, any, uh, Native social worker, uh, should ideally know the language of the community. This is a professional program. There's so many other things you have to learn as a social worker, You can't reasonably expect people to also gain at least advanced proficiency during four years of social work training.

So they figured we'll at least have them make sure they take at least one course on Cree or Ojibwe. Since they committed to offering it by distance at the time. This was before all these fabulous technologies of course. it was correspondence eh?

So they mail you the tapes?

Yeah. So they asked me to be the writer of the distance course on Ojibwe. So I worked with an instructional designer, which is another really good thing for me to learn because I did the usual thing, I said, okay, Lesson One, here's the spiel. He says, okay, let's backtrack. We can start. Okay. That's the lesson. Let's just have the students start with these patterns. So anyway, so that was really useful for me.

Yeah. So yeah, after that, you know, that was just for that one course. But so the person that I was filling in for, why I was teaching part time, decided not to come back to the university. So they now needed a full-time faculty member and they decided a full-time faculty member should also be somebody also able to teach the language. But that's how I ended up lucking into that position. And at the time there were not very many first language speakers of our language who happened to have a graduate degree as well, I

already had an MBA. So totally unrelated to language but at least it was a Master's. So, um, yeah, so that's how I got that position. So that really was helpful to have the time to think through and, um, flesh out a curriculum beyond introductory. I decided, okay. At the time there was just two courses in our program. There was an intro Ojibwe course, and then there was an advanced Ojibwe course.

Well, I also had taken French, a couple of courses in French on the side while doing my MBA, because I do have an interest in languages and French had, of course, logically you can't jump from intro to advanced. There should be an intermediate, okay, let's create an intermediate course. And then since we're offering distance courses in the intro course, well, let's also enable them, those who really want to learn the language, let's give them an intermediate course and an advanced course by distance. So that was like my, those were the projects for basically the first ten or fifteen years of my teaching career.

So I'm just thinking about you. So, so you grew up speaking the language, you had all this, you had your, your mental grammar. This unconscious knowledge about the language

Yeah I had acquired the patterns.

Right. And then to be able to teach it, you kind of had to figure out how to do the phonological and morphological analysis yourself to teach to your students. Yeah. So you had to learn how to do linguistics without ever taking linguistics.

I think a very rudimentary linguistics. Some of them anyway, like I said, like Piggott, sorted out the explanations for some of the things for me.

Yeah. Neat. But then you could use that for teaching your students.

Exactly. Yeah, exactly. Yeah.

So most of those students would have been, so they were seeking a professional degree and they wanted to be able to communicate with their clients.

Um, well, the communities wanted them to, but they were expected to. They had to know the basics of the language, whatever "the basics" are …

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11.10: Learning Nishnaabemwin at University

Mary Ann Corbiere

Mary Ann Corbiere grew up in Wiikwemkoong unceded territory on Manitoulin Island. In 2021 she retired from her long career teaching Nishnaabemwin at Université de Sudbury. In this unit Dr. Corbiere talks about what it meant for her students to learn Nishnaabemwin in university.

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So you started off teaching these students who needed it for their professional qualification and has the, the makeup of your students changed over time?

Sort of, um, it's always been like, a language course was also needed of course, for a BA in Native Studies. So most of the students were, um, would have been people, uh, seeking a concentration. We just had a three-year BA at the time, when I first started, a concentration in, in Native Studies, and then once the Native Social Work program was established, then those students were also in it. And then there's always the usual, you know, whatever other program you're taking, if you're sciences, you need to take a humanities like I had to, when I was doing earth and environmental science, and a social science credit. So always, uh, um, at least a few students from who were just needing this for their overall degree requirements.

In terms of, um, their backgrounds, I think on average, I would say it was typically half and half. Like half of the enrollment would be Native students or at least like what I would figure. Well, some of them clearly were Native. They would be from the same community I was from, or they would be from communities I know in the area. And then, um, and then some of them would like, although they might have non-Native last names, they would point out, oh yeah, like my mother's Native from wherever, some community. Um, and then half, would just be yeah, like non-Native students, some of them like with an interest in an Indigenous language. Yeah. So I think like, um, that was the pattern that, ever since I started teaching.

The class size, um, changed, increased, um, hugely about six or six or five years ago, I can't remember, because Laurentian added a new require-, modified the BA requirements, that all students needed to take a course, um, designated as Indigenous content. Um, and there was another one, oh, linguistic awareness because being a bilingual area like, uh, Laurentian is officially bilingual. Um, but it wasn't necessarily to take French if you were a Anglophone or vice versa.

Uh, at the time, uh, Laurentian also offered courses in Spanish. And, um, um, I think for a time, like when I first started there, there were also courses in German. Um, so the idea was that people should at least learn, learn something about another language, whatever language courses are available. So, and students are very smart so they figured, oh, these two different requirements I can take, then I can meet both with one course.

So your courses got really popular!

So, uh, up until then the average enrollment in total for the on-campus course, uh, would maybe we'd start out with maybe 20, 22 students each year. And then as students found out that, um, Nishnaabemwin, as we, as we began calling it instead of Ojibwe, was not as easy. It was a bit harder than they anticipated! Yeah. Always a bit, dropped down a bit by exam time and maybe 15 or so would show up for the exam.

And then the distance course, same idea, roughly, maybe 15 or 17 students starting out and then maybe 12 or 13 students showing up for the exam. Um, so that was the enrollment annually each session. Yeah. Up until this new requirement, I never thought to check the numbers in advance after the new requirement kicked in, new requirements kicked in, but late July, I said, okay, let me see how many students I have in my class, or whose names I might recognize, like the last names as there were 40 or over 40 students registered already!

I thought, oh, in the on-campus course alone! It's kind of hard to teach a language with 40 students. So the university fortunately agreed to create a second section on very short notice and we managed to find a teacher to do the second section of the same course that year. Yeah.

Yeah, that changes the classroom quite a bit to have double the students.

Yeah. Yeah. And it changes the dynamics a bit too, because with that kind of requirement, and there's already like, as I, as maybe others have mentioned or you've come across reference to yeah. Like, I mean, not everybody is keen to learn about the Indigenous aspect of Canadian history or something about Indigenous people. They come in at these, whatever negative preconceived notions. Oh, you have now a body of some students who are in it thinking, first of all, okay, "I have to take this thing and this is the only

thing I can fit in my timetable". And second. Yeah. "Well, this is probably an easy course and I'm an A student, so why am I not getting an A" you know, so it complicates things a little bit on that side, but always, there's always a small number who are really genuinely interested in learning the language and committed to it, despite discovering that it didn't come as easily to them. So that makes all the difference. As long as you have a few students like that.

So did you have some students who, um, who were from the community who were Native students who wanted to become speakers?

Oh, yeah. Yeah. Usually that is a good number of them in the class. Now, the other, um, I guess hard thing it is for students to learn is that, I mean, just like, I mean, you have an aptitude for certain kinds of subject matter, right? It's like, I wish I could be an astrophysicist, but I just don't have a head for physics. Some students, um, and of course with language learning, there's basically four kinds of skills, right: the pronunciation, um, the comprehension of what's said, and then the reading comprehension and then the ability to write. So, um, yeah, and it's rare that a person has, uh, the same level of skills or aptitude for all four skills.

So, um, and so for some, and then, and then there's this sort of added sort of, um, I guess just part of the situation that I guess in a similar way that somebody with French ancestry might assume, or at least wants to believe that "I'm French, French will come readily to me", even though they may not have been raised in it, they discover, well, it doesn't come readily. I just don't happen to have an aptitude just because I'm French doesn't mean it comes readily. So now and then I would detect the same kind of thing that there'd be expectations from Native students, that, "I won't need to have to work as hard on this one because I'm Native, I'm Ojibwe, I'm Nishnaabe."

And unfortunately they would find that no, it doesn't guarantee that you have that kind of aptitude and they would really struggle, right. Some would really have a hard time. I remember in my earlier years, and then conversely, and this is where we, when you talk about these power dynamics and this history of colonial colonialism, extraction of knowledge, all this, all these other dynamics that compound things for a person at an individual level, not only do you feel that, okay, "the language will come easily to me because I'm Ojibwe," there's also this thing that, oh, what are, and I said about 50% of the class would be typically non-Native and coincidentally, sometimes you can't help it. If you have a knack for languages. I mean, you have some good linguistics students in your class, I'm sure, and then some who have a hard time with the linguistics.

I would have non-Native students who happen to be good at the second language. And they would do really well on the written test. And some of the Native students would not do well on the written tests. So I remember one student at one time, I guess, happened to see their non-Native classmate's mark and the non-Native classmate was always doing really well. And this native student was not doing all that well, usually, really struggling.

Well, yeah. And this is the university's system of, of assessing knowledge is this power structure. So you've got a student who's, who's unhappy about their mark on the one hand and also struggling with what that means about their identity.

Exactly, exactly. And that's, and that's what I find the hardest is that, um, some, like many of the Native students, um, they want to learn the language, not so much as a thing of linguistics interest. Oh, isn't this a neat language. Here's how it works. It's a way, because they were deprived of the language because their parents either hadn't learned it, um, for various social factors, like residential schools being part of it, but not exclusively. The other thing was, many of these communities are very small and they didn't have schools like we did where you could stay in the community up until grade eight. Like when the Spanish school was closed, then they, you have these tuition agreements with school boards provincial school boards. So if you're in a little town like Shawanaga, a little First Nation, you're being bussed to Parry Sound to go to a non-Native school, I think from what I understand, basically from day one. You're never in a context where you're, where you can hear your, your language during recess time. So there's, uh, some of the students are coming in with that real need to reconnect with who they are by taking the language. And unfortunately for some of them, it doesn't come easily. So it's a real struggle. I feel now.

And then what other opportunities are there for people to practice using the language? So of course, you know, you, you, you go to class and you learn from your teacher and your, your curriculum and your, I dunno, are there textbooks even? But then are there opportunities to practice using it outside of class?

Exactly! It's a complex issue, like these learners who really want their language back, they, they have so many barriers. So that certainly is one of them. I mean, um, those students from my own community, um, a good number of them would had a good ear already because they'd heard it quite, most of them heard it, like their parents or grandparents are using it regularly, you know? So they're at least recognizing a good amount of it and they've picked up the rhythms of it. But for those from the really small communities, you know, they don't have, they never had that kind of extensive exposure. So they're really struggling. So all these compounding factors.

Now, even from, even those coming in from Manitoulin, where you would have this language taught, like up to Grade 12, basically, if they went to the high school on the island, the teachers who teach, there's not the resource system there. Like when I took French, there was the Bescherelle handbooks, to help with the the grammar patterns, there was, there's been nothing like that.

Thanks to the instructional designer, Cheryl Cranley, who, where I learned by doing with her, she basically mentored and coached me, um, like examples, explain what's going on, give them a chance to practice this little concept, move on to the next level. Examples, explain what's going on, give them a little learning activity. At the end of a lesson, give a self test. So that's a pattern. That's a template that I followed, but forever after.

So it was very structured and very like step-by-step and they could see the pattern. They saw this, the students, I remember one of them remarking, "This is the first time I've seen the language, explained, shown in that way. And I feel like I'm able to use it to actually communicate because I, I can see the patterns and I know what I need to change to change my sentence. I never had that, all the way through High School."

So that's the unfortunate part of that. The teachers being so overloaded that they are not only because they don't have resources, they're forever coming up with stuff to use in their classes, secondly, not having much in the way of linguistics background.

Yeah. It sounds like that might be, um, that it would have been valued to have some, someone with some linguistics training to, you know, to partner with the people who were teaching the language.

Exactly. And one of the courses that we developed in Native Studies was a general course, on, uh, Native, Native language issues. Like not only like, why are they under threat, but also what's being done. And I remember, whereas in certain communities or there's, I guess there's an openness to relying or working with linguists. In my community, there seems to be not that openness of that. There seems to be, and it's not, I don't think it's a real animosity per se, I might have, part of been, um, is I think, as we discussed briefly, part of just coming up from the history of knowledge extraction by scholars, where the scholar gets the name on the book, like Piggott. And what does the, the Native person get? An acknowledgement as being an "informant". Period. You know? Um, so that kind of, yeah, just, uh, I guess impatience is a mild term for it, annoyance at that kind of treatment, eh, by, um, academia at large.

Um, and then, coupled with that, the sense of that, well, like the notion that Elders have all the knowledge, so therefore anybody wanting to learn the language, uh, Elders are in the best position to help them. It's not to say that Elders can't help — certainly if I hadn't heard the language from my parents, my mother, and her peers and the people of that generation, uh, I would not have acquired what I did, you know, but at the same time, it's like, yeah, I was fluent in the language, but I didn't know how to teach it. And as an adult learner, as a teacher of adults, now we are teaching, we're trying to facilitate learning by acquisition as much as possible. We have immersion programs, but again, funding issues and so on and, um, having a hard time coordinating, how do we do these and so on and so forth. Yeah. There's only very limited things, uh, that we're able to do now to foster an acquisition type of learning, we're teaching, you know?

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11.11: Resources for teaching and learning Nishnaabemwin

Mary Ann Corbiere

Mary Ann Corbiere grew up in Wiikwemkoong unceded territory on Manitoulin Island. In 2021 she retired from her long career teaching Nishnaabemwin at Université de Sudbury. In this unit Dr. Corbiere talks about the importance of culture and materials to language teaching and learning.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/?p=3110#oembed-1

Um, what I find problematic is like, when you look at culture, what is culture from a general sense? It's like, it's, it's, um, it can mean many things. you think of say, mainstream or whatever, European-based culture and you, when you hear *culture*, um, you don't think of knights and King Arthur and chivalry. You think of things like, um, the arts, uh, film, um, theater, ballet, opera, like it's a huge thing. But when the term *culture* is applied to Indigenous peoples, it's this static thing about the notion of authenticity and authenticity is thought of in terms of what was the Native lifeway, what was the Native worldview, and so on, in this time that people consider "traditional times" before contact. So that shapes what ends up being covered in the classroom. So it's like people getting, to do, okay, moccasin-making, beadwork, and so on, which of course is an aspect of material culture. Uh, and there are people who do those things, but certainly it's not something that everyone automatically does.

Hockey is a major part of our community life now. Although it's considered a culture, cultural aspect per se, it's a sport, but it's a major part of community life. We have baseball as well. So the spoken language talked about not … you talked about beadwork, if that's what you did, you talked about moccasin-making if that's what you did. But if you didn't do those things, I grew up with a hefty store of farming terminology because my father was a farmer, you know, um, others or their parents or their grandfather or whatever it was were did a lot of hunting, did a lot of fishing. Yeah. And those two particular, yeah, they sort of aligned with people's conceptions of Indigenous culture, Indigenous lifeways, but then there were also Nishnaabeg who worked in the mines. We have a term for mining. We have a term for going on strike.

Uh huh, that's part of mining! So are there, Ojibwe terms for hockey and baseball for the, you know, the equipment and the, and the rules of the game and stuff?

Some terms, for some of them, but not for all of them, you know, it's like you score a goal, we have a verb for that, being hit, yeah, you know? Um, but you can talk about it. It's like, like who won? Yeah. "Oh, they were beaten. Oh, they were skunked." Both kinds of verbs are in the lexicon. I created to go with a manual and it's like, so that's why in the, like in the, when I was teaching, I would say, I'm not going to say you should learn these particular 10 or 15 or whatever, 20 verbs by the end of this course. You use whatever verbs are relevant to you. I'm just going to show you the patterns to enable, to equip you to talk about any hings that are more relevant to you, of interest to you. If you let me set the, the verbs to learn, you would just learn a bunch of things about figure skating, because that's my favourite thing to watch!

Um, but what I would detect when I, from what I see of the materials I've come across for K to 12, the content is focused on… It generally does not include those other kinds of aspects of life, eh. It's the term for *bear* the term for, um, , *birch*, *birch bark*, *birch trees* and so on. And again, and that's where the students who have remarked about the word list basis, that's where that comes in, they can say, "Oh yeah I know this term and I know that term", but can you say anything communicatively about it, right. My notion of language learning is helping learners make sense in the language, in, in, uh, communicatively, to use it in actual communication every day.

Yeah, yeah. For a language to be, to, um

…to revitalize it, to reclaim it or …

Right, for it to be vital, you need to be able to use it!

Yes, you can go down the dictionary and memorize all the terms and you know, the language, but can you do anything communicatively with it?

Right. And can you, um, adapt it to your everyday situation? You're not necessarily working with birchbark, but maybe you need a ream of printer paper.

Yeah. Yeah. And I mean, quilting was, is an activity of interest to some women in Wiki and it's mostly women, I mean, in case somebody thinks I'm being sexist, no, it was done mostly by women, you know? Um, yeah. My mother made quilts. I hope to get into quilting now that I'm retired and we have a verb for that, *badakiiga`ige*, you know, we can talk about a blanket being so

beautiful, you know, that person is such a good quilter, you know, if that's of relevance to you, you know the patterns and you get to talk about quilting, if you want, you know?

Um, yeah. So that's the, so that's why I find the way the language and cultural connection is often construed for curriculum development purposes, for K to 12 teaching purposes problematic.

Now of course, from the students' perspective, if a student is in the course, not only to, um, feel more rooted in who they are, they're individual identity. And did, when did they want the greater rootedness in their Indigenous identity? Of course, an integral part of that rootedness is where did we come from historically as a people who were we before contact, before colonialism. It makes total sense for that kind of approach to be appealing. It would serve their broader learning needs. I'm just not sure just to learn the language, how to make sense. It's part of their individual project and doing that is going to help them connect me to who I am.

Now, now the internet poses something interesting. We can form internet communities. Especially with zoom now, which is another like sort of new area to interrogate. That could be done! Because, um, especially now, like I mentioned, those learners, those really avid learners who email me sometimes to say, okay, about the language and they're emailing me in the language, of course they're making missteps because they don't have 100% grasp on the grammar. I mean, when you learn grammar, you sort of learn the basic patterns that seem by which proper sentence structure is gauged. Whoever the authority is that decides that's proper sentence structure. Conversationally, who gives a hoot? It's like, all you're concerned about is, do I make, make sense to the person I'm talking to? Yeah. Little mis-grammatically, patterns that don't conform to the examples presented in a grammar book, appear all over the place and you just let them ride. It's like, oh yeah, still make sense of what you were saying. So we're doing that by email. Yeah.

So did you get on a zoom call and just talk to them about the questions?

Yeah, exactly. Yeah. And people, they could form a community where they were just doing zoom just to visit each other. Just like you in the old days, when we all lived in the community, you would just go knock on somebody's door when you had not much to do in the afternoon and pop in and visit, you know, two or three hours, you know,

So that's the other aspect of this, what is a community? In that when we, when I was growing up, I mean, there was a family and then there were the neighbours and being a First Nation. Many of the neighbours I learned later were like, okay, that man was my father's second cousin. That's why they were hanging around together so much. They weren't just buddies, you know.

These learners, they come from different communities. They haven't grown up together. Their families didn't, weren't living together, like in the same community. So it's like, they have to sort of create a new kind of community. That's not rooted so much in actual blood kinship. Yeah. So it's a, it's a very interesting thing to sort of extrapolate. Okay. What will the Nishnaabemwin speech community look like or consist of fifteen years from now?

Because, um, speakers who could be resources to language learners, um, are in many communities there's no more of them first of all, some communities there's only a handful, like maybe four or five, so like you mentioned earlier about yeah, uh, students, um, if they have opportunities to hear the language outside of the classroom… For many learners, many Nishnaabe learners, they don't. They're, they're just not in a household or if they're living in Toronto or their, their grandmother might be living up in North Bay or wherever, they're not in contact with them regularly.

Um, so my sense is about, and language can survive. I mean, ideally we want it to survive as a spoken language, but a language can also survive as a written language. You know, it's like, we can read Shakespeare. It might not be our ideal of English, but for some people that might be their only connection, like 10, 15, 20 years from now, to their people's language. Um, if it were, if more and more of it were written.

So, uh, we, we fortunately do have a writing system that was devised by linguists, by Fiero. Um, and, uh, however, this came about, it was his system that was, um, adopted when they created the Native language instructors program that I think it used to be at the University of Western Ontario, but early on, back in the day. But at some point relatively early, it moved to Lakehead. That's where it's been ever since I was at the U of S, that's where I would hear about people going off to train to teach the language. So that's, that's, what's, that's what the teacher trainees are learning and it's, it's, it's quite straightforward.

It marks long vowels, which I think the linguistic consensus is it's really useful for a language like Ojibwe because of its, um, polysynthetic nature you have that can have such long words, you need to know which syllables get the accent. And that, and long vowels always get accented, the primary accent. Short vowels, this is from Piggott's analysis, short vowels get destressed or unstressed when you add certain morphemes. And the sh-, the short vowel syllable ends up in a particular spot in words. And he

brilliantly worked this out, that there's a, there's a metrical footprint, that basically short vowels are arranged in pairs. And like, again, this is the magical thing about a language, eh, that these rhythms evolve organically. So that, I'm trying to think of an example in Nishnaabemwin. Anyhow, if I think of an example, I'll mention it. But it's like when the word form has changed, um, yeah. Oh, the short vowel pairs, the second pair tends to get the accent. The second in the pair, if I recall correctly, but anyhow, there's a phonological logic to that.

And it's in the writing system that shows up?

Yes and no. It depends on the community and the writer's notion of what they are hearing, and then the other thing is because of our, um, the way we form sentences, not with separate pronouns, separate tense markers, like auxiliary verbs, and then the verb it's like, it's like it's all one word.

So what hasn't happened and again, because of the time pressures that K to 12 teachers have, uh, how scattered we are throughout Ontario and never having a chance to get together for any intensive series of sessions to work out how we're going to apply the system exactly to longer pieces of discourse. It's relatively to, easy to apply it to lists of isolated words.

Even there, like even a short word, like *mko*, learners, depending on who their teacher is, or what little booklet they're using from the Ojibwe Cultural Foundation or wherever. You'll see the word for *bear,mko* written in possibly three ways. M K O as I would write it, *mko*, and M A K W A as I've seen it in something this *makwa*, and then maybe M A K O perhaps from another source. So very hard on students, like "which is the correct spelling? And I would tell them, it's like, sorry, but they're all correct.

This spelling is how it sounds from my mouth, which is how it sounded from the mouth of the, those who were around when I was growing up. So, so there's quite a, so the challenge would be when we say we need more resources, it would be ideal if everybody decided, okay, here's how we're going to approach it. But how do you decide that when it varies within the community and the last thing like we, the last thing any of us I think wants to do is either appoint ourselves as, well, "I am the equivalent of the L'Académie Française."

"I decide what's correct!"

None of us wants to do that. And then people will say, well, the Elders are our authorities, they're our experts. But among Elders, again, many of them do not write much. And there's, uh, also on another, uh, another aspect is the resistance to writing the notion that, well, we shouldn't write our languages. Some people will, uh, in the past I've heard like ascribe, uh, sort of a spiritual component to that. It's like our languages and our Creator didn't mean for our language to be written. It was always oral so it should stay oral. Again, that worked fine when that's all we heard. But English intruded and so on and so forth.

> So if you want to preserve it…

We've found, I've, some of us have found writing very helpful.. So that's where we're at. And well, and teachers anyway, are familiar with the double writing, the double vowel system. They don't, they don't have any problems using that, but some Elders that's like gobbledygook to them.

Again, the K to 12, their opportunities to write the language is very constrained because they're writing for basically rudimentary-level learners. I'm writing more expansively because I'm reading for learners who, uh, whose interests I anticipate are widely varying. So I have to write about various things. Although I do write a bit about figure skating, I also write sample dialogues about hockey, because hockey is a big thing. It's like, have you heard of the Little NHL, the Little Native Hockey League?

No, I hadn't!

Big huge event! There's always a mass exodus from Nishnaabe communities, not just Nishnaabeg, Cree too, and Mohawk, Haudenoshonee. Um, it's, it's held in Brampton these days. You rotate, the host would rotate. Um, yeah. Minor hockey is a big thing. So these First Nations, all send this range of teams to compete at the Little NHL! So it's a natural part of our discourse. It's like, oh, you know, is your grandson competing with the Little NHL, uh, did his team win, did they win and so on and so forth? You know, uh, so and assorted things, I try to cover other things as well, besides sports, um, movies, again, who does not watch movies these days?

So having to do that, create those kinds of things is it has given me lots of practice with applying that double vowel system and my decision that, and letting the students know, um, I'm spelling these the way they sound to me from what I heard.

So, so that's the other challenge. If, and I do premise my work on the language is going to survive largely as a written language. I don't know that many others premise language revitalization that way, I think many, most seem to be still sort of wedded to the ideal of "it will be spoken as we spoke it". Like I'm thinking, okay. Yes, that would be great. But for some people, some people are

adept at reading stuff, and that might be like, I mean, literature supplements what we hear on TV and in the movies, literature is an aspect of a culture, you know? So if we're preserving the language, let's also preserve it in that fashion, not just focusing on oral.

Yeah. So, um, so that's the litera- literacy aspect of it. If they're going to have written resources that are going to be helpful to second language learners, it would be great if they could all use it in one systematic fashion. So those are the things that ideally would have been great if us teachers had had time since 1972 to confer, have an opportunity to confer extensively enough, often enough, before we walked into any classroom. Of course like the language teaching theories evolve, of course you would have had to tweak what we did, but at least to have some good, solid basis to start with, rather than just throwing speakers into their individual classrooms throughout Ontario. Okay, well you go teach a language

And yeah, the Ministry did come up with a curriculum that was being reviewed several years ago. I got involved in the workshop to review it and it's like, yeah, I was very dismayed because it was like not, not much in the way of actual communicative use, in the curriculum. It was very grammar-structured, which shows its origin, like back in the day, back in the day the grammar-translation method was a common way of teaching a language and over the years, they've said, okay, That's not, that's not the best way. There's other ways we should try and experiment with. And they've got, they found a variety of ways.

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12: Test

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12.1: Test page

alndnasd;lfgknas;dlknfg

Linguistic Chauvinism and Intolerance

So if impressions like those of the speakers in the box above have no basis in fact, where do they come from? There are three possibilities. First, these people may have been told by an authority, for example, an English teacher, that certain usages are just plain wrong. Clearly, the reasoning would go, anyone who knows this should not be using those forms. We'll return to this issue in the next section. The fact is that what is "wrong" is all relative. The girls quoted in the conversation in the box would almost certainly find it wrong to say *it doesn't mean anything* when speaking to each other. If they wrote *it don't mean nothin'* in a school essay, on the other hand, that would be another matter (though it would still not be reason to call them lazy; it would just be evidence that they had not learned the rules of the variety of English that is appropriate in school). Second, these people may have a stereotype concerning the group in question, and they may be transferring that stereotype to the speech of that group. Third, what they hear differs from the English they speak, and people may be quite intolerant when it comes to speech. Especially if they belong (or believe they belong) to a political, economic, or intellectual elite, their view may be something like the following: "the way I speak the language is the right way; any other way is wrong".

Whatever the reason for the impressions of A and B in the box, a linguist would respond to them by saying that the two girls were simply speaking a different dialect of English, a dialect with its own grammar differing from the grammar of the dialect of A and B.

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Social Interaction Theory
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1.5: What grammars are and aren't
social justice in ESL
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1.1: Linguistics as a social science
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10.4: Evidence for ‘top-down’ effects of word knowledge on perception
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1.9: Doing good with language science
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7.12: Exercise Your Linguistics Skills
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4.9: Compounding
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8.3: Phonological change
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1.4: What even is language?
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2.10: Stress
3.2: Phonotactics and natural classes
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10.5: Evidence for phonemes as mental categories
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8.7: Syntactic and Lexical Changes
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8.3: Phonological change
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11.2: Learning Mohawk
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4.3: Roots, bases, and affixes
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2.10: Stress
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10.7: Aphasia
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10.7: Aphasia
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4.10: Structural ambiguity in morphology
5.5: Clausal embedding
5.8: Trees- Sentences as TPs
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11.10: Learning Nishnaabemwin at University
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6.3: The nature of lexical meaning
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4.10: Structural ambiguity in morphology
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4.3: Roots, bases, and affixes
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8.10: Writing Systems
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9.8: Learning Phonetics and Phonotactics in a Later Language
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9.2: Phonemic contrast
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5.4: Functional categories
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5.1: Syntax Terminology
5.2: Word order
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5.6: From constituency to tree diagrams
5.7: Trees- Introducing X-bar theory
5.8: Trees- Sentences as TPs
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7.5: Appalachian American English (AE)
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8.2: Reconstructions and Analysis
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7.2: Language varies
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3.8: Phonological derivations
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9.10: Exercise your linguistics skills
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11.9: Growing up speaking Nishnaabemwin
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10.2: Human Language versus Animal Communication
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5.7: Trees- Introducing X-bar theory
5.9: Trees- Embedded clauses
5.12: Exercise your linguistics skills.
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2.6: Describing vowels
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8.9: Language Families
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4.15: Exercise your linguistics skills
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4.4: Morphology beyond affixes
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8.3: Phonological change
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3.8: Phonological derivations
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3.7: Phonological rules
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1.9: Doing good with language science
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8.7: Syntactic and Lexical Changes
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3.9: Types of phonological rules
5.11: Grammaticality
9.2: Phonemic contrast
10.3: Evolution of Human Language
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3.1: Phonemes and allophones
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8.8: Typology
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11.9: Growing up speaking Nishnaabemwin
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4.10: Structural ambiguity in morphology
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1.10: Hallmarks of human language
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6.6: Pragmatics Definitions
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11.8: Reclaiming Hul'q'umi'num'
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6.7: What does this sentence "mean"? Entailments vs. implicatures
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7.2: Language varies
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2.4: Describing consonants- Place and phonation
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3.5: Phonemic analysis
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5.12: Exercise your linguistics skills.
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9.5: Growing up bilingual (or multilingual!)
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5.2: Word order
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3.10: Signed language phonology (optional)
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7.7: Sociolinguistic correlations - Social status
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11.9: Growing up speaking Nishnaabemwin
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7.7: Sociolinguistic correlations - Social status
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8.5: Stages of English
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6.3: The nature of lexical meaning
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4.15: Exercise your linguistics skills
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6.5: Why not the dictionary?
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4.2: What is morphology?
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9.2: Phonemic contrast
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10.4: Evidence for ‘top-down’ effects of word knowledge on perception
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6.7: What does this sentence "mean"? Entailments vs. implicatures
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10.6: Language Processing in the Brain
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5.3: Structure within the sentence- Phrases, heads, and selection
8.7: Syntactic and Lexical Changes
8.11: Arabic and Romance- A Comparison (Optional)
11.3: Mohawk culture and language
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4.13: How to draw morphological trees
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6.3: The nature of lexical meaning
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2.8: Signed language articulators
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1.4: What even is language?
8.10: Writing Systems
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11.11: Resources for teaching and learning Nishnaabemwin

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10.2: Human Language versus Animal Communication
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Glossary

Sample Word 1 | Sample Definition 1

13.1: Check Yourself Questions

This is a printable version of the interactive *Check Yourself* questions and answers from the end of each subsection.

Chapter 1: Human Language and Language Science

13.1.1: 1.1 What even is language?

13.1.1.1: Questions

Question 1.1-1. The sentence, "*Sam bumped the passenger with the rolling suitcase*," has at least two different meanings. It could mean that Sam had the suitcase and bumped the passenger, or that the passenger had the suitcase and Sam bumped them.

Which part of the grammar leads to these two different meanings?

- Syntax
- Phonology
- Phonetics
- Morphology
- Semantics

Question 1.1-2. Newfoundland English has some characteristics that are different from the varieties of English that are more common in the rest of Canada. The following sentences are grammatical in Newfoundland English:

I eats toast for breakfast every day.

You knows the answer to that question.

In these examples, what part of the grammar is different from that of standardized Canadian English?

- Syntax
- Phonology
- Phonetics
- Morphology
- Semantics

Question 1.1-3. Which of the following are examples of **implicit** knowledge?

- How to recognize your sister's voice on the phone.
- How to calculate the area of a circle.
- How to make your grandmother's famous chocolate babka.
- How to blink when you get dust in your eye.

13.1.1.2: Answers

Question 1.1-1. Syntax and semantics.

Question 1.1-2. Morphology.

Question 1.1-3. How to recognize your sister's voice on the phone and how to blink when you get dust in your eye.

13.1.2: 1.2. What grammars are and aren't

13.1.2.1: Question

Question 1.2-1. Given what you've learned in the first couple of sections of this book, which of the following do you predict you're going to learn in linguistics class?

- Why verbs come at the end of a sentence in Japanese but at the beginning of a sentence in Welsh.
- The true meaning of the word *literally*.
- Why podcasters should stop using vocal fry.
- Why all English students should study Latin.
- What Mandarin, ASL, and English all have in common.
- Why kids sometimes produce words differently from adults.

- How to use the word *whom* correctly.

13.1.2.2: Answer

Question 1.2-1.

- Why verbs come at the end of a sentence in Japanese but at the beginning of a sentence in Welsh.
- What Mandarin, ASL, and English all have in common.
- Why kids sometimes produce words differently from adults.

13.1.3: 1.3 Studying language scientifically

13.1.3.1: Question

Question 1.3-1. All of the following are statements people make about language. Check off all the ones that are descriptive statements and leave the prescriptive statements unchecked.

- In addition to singular and plural forms, some languages (for example, Inuktitut and Arabic) also have dual forms that refer to exactly two of something.
- English words that are derived from Latin should have Latin plural forms.
- A sentence like, “You ain’t going nowhere,” really has a positive meaning because two negatives make a positive.
- The English speech sound made with the tongue between the teeth, usually spelled ‘th’, is quite rare across the world’s languages.
- American Sign Language (ASL) and British Sign Language (BSL) are two distinct languages.
- It’s annoying when podcasters use so much vocal fry.
- Spending too much time texting destroys your writing skills.

13.1.3.2: Answer

Question 1.3-1.

- In addition to singular and plural forms, some languages (for example, Inuktitut and Arabic) also have dual forms that refer to exactly two of something.
- The English speech sound made with the tongue between the teeth, usually spelled ‘th’, is quite rare across the world’s languages.
- American Sign Language (ASL) and British Sign Language (BSL) are two distinct languages.

13.1.4: 1.4 Doing harm with language science

13.1.4.1: Questions

Question 1.4-1. This section describes some ways that language science has done harm to minoritized groups of people. Think about what you know about other social sciences (such as anthropology, sociology, psychology), life sciences (physiology, biology, neuroscience, etc.) or physical sciences (geology, physics, chemistry, etc.).

What are some ways that these sciences have done harm to humans, either inadvertently or deliberately?

What are some steps scientists in these fields could take to lessen or even repair these harms?

Question 1.4-2. These sites attempt to show the languages and language families that were Indigenous to various regions before colonization.

Native Land Digital: https://native-land.ca

Whose Land: https://www.whose.land/en/

Choose a region from one of these maps to learn about the language groups and/or treaties of that area. You might choose the region where you are right now, or a region where you have relatives, or just a region that interests you.

What name is currently used for the region you chose?

What languages are Indigenous to the region you’ve chosen?

13.1.4.2: Answers

Answers will vary.

13.1.5: 1.5 Doing good with language science

13.1.5.1: Questions

Question 1.5-1. Have you ever had trouble getting your phone or other voice assistant to recognize your speech? What might have been missing in the programming of that device that prevented it from understanding you?

Question 1.5-2. Imagine you're trying to come up with a name for a new product you've invented. What factors would you consider in deciding whether the name works for your product or not?

Question 1.5-3. What drew you to studying linguistics? What problem(s) do you hope to be able to solve with language science?

13.1.5.2: Answers

Answers will vary.

Chapter 2: Language, Power and Privilege

13.1.6: 2.1 How are power and privilege connected to language?

13.1.6.1: Questions

Question 2.1. Think of a time when someone corrected or judged your language use. What role did power have in this interaction? What was your social status relative to the person correcting you? What kind of social status was the person enacting towards you? What was the effect of their correction or judgment?

13.1.6.2: Answers

Answers will vary.

13.1.7: 2.2 Language change and gender identity

13.1.7.3: Questions

Question 2.2-1. How recently has *they* been used as a singular pronoun in English?

- *They* has been used as a generic singular for centuries and now it's changing to also be used as a specific singular.
- *They* started being used as a singular around 2015.
- Never; *they* is always plural.

Question 2.2-2. How can people stop language from deteriorating?

- Teach correct grammar in schools.
- No one can stop language from changing!
- Correct people every time they make a mistake.
- Publish extensive dictionaries and make them widely available.

13.1.7.4: Answers

Question 2.2-1. *They* has been used as a generic singular for centuries and now it's changing to also be used as a specific.

Question 2.2-2. No one can stop language from changing!.

13.1.8: 2.3 Linguistic discrimination

13.1.8.1: Questions

Question 2.3-1. In a study published in a marketing journal, researchers reported an experiment that asked Americans to consider buying a product that was offered with a set sales script. The script was spoken in English by a salesperson with either a standardized American accent or a Greek accent. Which is true of this study?

- The product is the stimulus and the accent is the guise.

- The product being sold is the stimulus and the sales script is the guise.
- The script is the stimulus and the accent is the guise.
- The accent is the stimulus and the product is the guise.

Question 2.3-2. A Canadian study sent résumés to thousands of hiring managers in Montreal, Toronto, and Vancouver. The résumés all listed the same job experience and skills, but varied in whether the job-seeker's name was an English name, an Indian name, or a Chinese name. The researchers measured how many résumés led to a job interview. Which is true of this study?

- The job interview is the guise and the job-seeker's name is the stimulus
- The job-seeker's name is the guise and the résumé is the stimulus.
- The hiring manager is the guise and the résumé is the stimulus.
- The résumé is the guise and the job interview is the stimulus.

Question 2.3-3. Imagine you want to make friends with your new neighbour who recently moved to Canada and has been learning English for about a year. Which technique(s) would a linguist recommend to make it easier for you to understand your neighbour when she speaks?

- Watch some videos or listen to podcasts by other people who are L2 English speakers
- Correct your neighbour whenever she makes a mistake.
- Have lots of conversations with your neighbour so you get lots of opportunity to listen to her speak.
- Encourage your neighbour to speak more slowly.

13.1.8.2: Answers

Question 2.3-1. The script is the stimulus and the accent is the guise.

Question 2.3-2. The job-seeker's name is the guise and the résumé is the stimulus.

Question 2.3-3.

- Watch some videos or listen to podcasts by other people who are L2 English speakers
- Have lots of conversations with your neighbour so you get lots of opportunity to listen to her speak.

Chapter 3: Phonetics

13.1.9: 3.1 Modality

13.1.9.1: Questions

Question 3.1-1. Which of the following is the modality of signed languages?

- manual-auditory
- vocal-visual
- vocal-auditory
- manual-visual

Question 3.1-2. What kind of languages can be studied in phonetics?

- spoken languages only
- both signed and spoken languages
- signed languages only

Question 3.1-2. Which of the following subfields of phonetics are studied for both signed and spoken languages? Select all correct answers.

- articulatory phonetics
- perceptual phonetics
- acoustic phonetics

13.1.9.2: Answers

Question 3.1-1. Manual-visual

Question 3.1-2. Both signed and spoken languages. Other types of languages can be studied in phonetics, too! Phonetics is the study of modality, and every language has a modality.

Question 3.1-3. Articulatory phonetics and perceptual phonetics.

13.1.10: 3.2 Speech articulators

13.1.10.1: Questions

Question 3.2-1. Which of the following parts of the body is not considered part of the vocal tract, because it is not normally used for phones in spoken languages?

- pharynx
- oral cavity
- esophagus
- nasal cavity
- trachea

Question 3.2-2. Which of the following ways of producing sound with the body are known to be used to create phones in some spoken languages?

- clapping
- burping
- snapping
- clicking

13.1.10.2: Answers

Question 3.2-1. The esophagus. It connects the vocal tract to the stomach, but spoken languages do not ordinarily use airflow into or out of the stomach.

Question 3.2-2. Clicking. Although many languages do not have clicks as phones, some languages do, such as Hadza and isiZulu.

13.1.11: 3.3 Describing consonants: Place and phonation

13.1.11.1: Questions

Question 3.3-1. Which of the following are including in the tongue front? There are two answers. Select both.

- back
- hard palate
- root
- velum
- blade
- tip

Question 3.3-2. Which of the following are passive articulators in the vocal tract? Select all that apply.

- pharynx
- hard palate
- alveolar ridge
- glottis
- lower lip
- uvula

Question 3.3-3. How is a consonant's place of articulation ordinarily defined?

- a constriction in the oral cavity
- a combination of any two articulators
- a combination of an active and passive articulator
- a combination of a part of the tongue and a part of the roof of the mouth

Question 3.3-4. Which somewhat odd place of articulation uses the same articulators needed for phonation?

- palatal
- labiopharyngeal
- pharyngeal
- glottal
- bilabial

Question 3.3-5. What is another name for vocal fold vibration?

- articulation
- glottis
- voicing
- phonation

13.1.11.2: Answers

Question 3.3-1. Blade and tip.

Question 3.3-2. The hard palate, the alveolar ridge, and the uvula.

Question 3.3-3. A combination of an active and passive articulator.

Question 3.3-4. Glottal.

Question 3.3-5. Voicing.

13.1.12: 3.4 Describing consonants: Manner

13.1.12.1: Questions

Question 3.4-1. Which of the following manners of articulation have the widest opening in the oral cavity?

- approximant
- oral stop
- fricative
- nasal stop

Question 3.4-2. Which of the following manners of articulation are included in the class of obstruents? Select all that apply.

- fricative
- affricate
- nasal stop
- oral stop
- approximant

Question 3.4-3. Which of the following manners of articulation are included in the class of continuants? Select all that apply.

- nasal stop
- approximant
- oral stop
- affricate
- fricative

Question 3.4-4. Passive articulators do not normally move, though the upper lip is an exception. Which other passive articulator is also an exception, because its position determines whether a stop is oral or nasal?

- velum
- tongue back
- hard palate
- upper teeth
- alveolar ridge

13.1.12.2: Answers

Question 3.4-1. Approximant.

Question 3.4-2. Fricative, affricate, nasal stop, and oral stop.

Question 3.4-3. Approximant and fricative.

Question 3.4-4. Velum.

13.1.13: 3.5 Describing vowels

13.1.13.1: Questions

Question 3.5-1. Which aspect of vowel quality is determined by the vertical position of the tongue within the oral cavity?

- tenseness
- height
- length
- nasality
- rounding
- backness

Question 3.5-2. Because of how the human jaw moves, there is a relationship between vowel height and vowel backness. Which of the following best expresses that relationship?

- High front vowels tend to be backer than low front vowels.
- High back vowels tend to be fronter than low back vowels.
- Low front vowels tend to be backer than high front vowels.
- Low back vowels tend to be fronter than high back vowels.

Question 3.5-3. What articulation distinguishes an oral vowel from a nasal vowel?

- Oral vowels have a lowered velum, while nasal vowels have a raised velum.
- Oral vowels have a raised velum, while nasal vowels have a lowered velum.
- Oral vowels have a lowered nasal cavity, while nasal vowels have a raised nasal cavity.
- Oral vowels have a raised nasal cavity, while nasal vowels have a lowered nasal cavity.

13.1.13.2: Answers

Question 3.5-1. Height.

Question 3.5-2. Low front vowels tend to be backer than high front vowels.

Question 3.5-3. Oral vowels have a raised velum, while nasal vowels have a lowered velum.

13.1.14: 3.6 The International Phonetic Alphabet

13.1.14.1: Questions

Question 3.6-1. What is the IPA symbol for a voiceless velar plosive?

- [x]
- [t]
- [ɡ]
- [k]

Question 3.6-2. Which of the following IPA symbols represents a consonant with the same place of articulation as the consonant represented by [n]? Select all that apply.

- [m]
- [ʒ]
- [d]
- [s]
- [u]

Question 3.6-3. What articulatory properties do [θ] and [ʃ] have in common? Select all that apply.

- phonation
- place of articulation
- manner of articulation

Question 3.6-4. What is the IPA symbol for a mid front unrounded lax vowel?

- [ɪ]
- [ɛ]
- [æ]
- [e]
- [ɔ]

Question 3.6-5. Which of the following IPA symbols represents a vowel with the same height as the vowel represented by [u]? Select all that apply. Consider only a three-way height distinction (high, mid, low).

- [ɑ]
- [i]
- [ɔ]
- [ʊ]

13.1.14.2: Answers

Question 3.6-1. [k].

Question 3.6-2. [d] and [s].

Question 3.6-3. Phonation and manner of articulation. They are both voiceless fricatives.

Question 3.6-4. [ɛ].

Question 3.6-4. [i] and [ʊ].

13.1.15: 3.7–3.12 Coming soon!

Chapter 4: Phonology

Coming soon!

Chapter 5: Morphology

Coming soon!

Chapter 6: Syntax

Coming soon!

Chapter 7: Semantics

13.1.16: 7.1 Linguistic meaning

13.1.16.1: Question

Question 7.1-1. Which of these sentences describe **non-linguistic** meaning? Select all that apply.

- When my toddler is this quiet, it usually means trouble.
- I saw a double rainbow; what does it mean?!
- Giving you this gift means that I'm sorry.
- What does *swill* even mean?

13.1.16.2: Answer

Question 7.1-1.

- When my toddler is this quiet, it usually means trouble.
  - This one designates a relationship between the state of the toddler being quiet and some sort of outcome. This is not linguistic.
- I saw a double rainbow; what does it mean?!
  - This one designates a relationship between the double rainbow (the actual thing in the real world) and some sort of interpretation of the world. This is not linguistic.
- Giving you this gift means that I'm sorry.
  - This one designates a relationship between the act of giving the gift and some sort of sentiment. This is not linguistic.
- What does *swill* even mean?
  - Note that *swill* is italicized; this question can be interpreted as 'What is the sense of the word *swill?*'. This is linguistic meaning.

13.1.17: 7.2 Compositionality: Why not just syntax?

13.1.17.1: Questions

Question 7.2-1. What does the principle of compositionality predict? Select all that apply.

- That since there are two possible structures for the sentence *The raccoon thought about the food in that trashcan*, there should be two possible meanings for it.
- That language users have to memorize the meaning of most sentences and store them as wholes in their head.
- That in the word *unluckily*, the meaning of *un-*, the meaning of *luck*, the meaning of *-y*, and the meaning of *-ly* should be present.

Question 7.2-2. True or false: All DPs are referential in their meaning.

13.1.17.2: Answers

Question 7.2-1.

- That since there are two possible structures for the sentence *The raccoon thought about the food in that trashcan*, there should be two possible meanings for it.
  - This one is true. Compositionality cares about *how* words combine in a sentence too, not just *which* words were put together. Structural ambiguity like this highlights the "how they combine" part of compositionality.
- That language users have to memorize the meaning of most sentences and store them as wholes in their head.
  - This is not predicted by compositionality. If you know the meaning of the subparts of the sentence (e.g., the meaning of the morphemes), then you shouldn't have to store sentences as wholes; you can just store the meaning of morphemes in your head. In fact, it would be impossible to store "all of the sentences in a language" in your head, because language can produce an infinite number of sentences. Exceptions include idioms (e.g., *raining cats and dogs*), which are not compositional, and thus must be stored as a whole unit.
- That in the word *unluckily*, the meaning of *un-*, the meaning of *luck*, the meaning of *-y*, and the meaning of *-ly* should be present.
  - This one is true. Compositionality says that the meaning of a complex linguistic unit results from what pieces got put together, and how they got put together. This statement highlights the "what got put together" part of compositionality.

Question 7.2-2. False.

7.3 What does this sentence "mean"? Entailments vs. implicatures

13.1.17.3: Questions

Question 7.3-1. Is (2) a regular entailment, a presupposition, or an implicature of (1)?

(1) The professor petted a cat again.

(2) The professor has previously petted a cat.

Question 7.3-2. Is (2) a regular entailment, a presupposition, or an implicature of (1)?

(1) The professor petted a cat.

(2) The professor likes cats.

Question 7.3-3. Is (2) a regular entailment, a presupposition, or an implicature of (1)?

(1) The professor adopted a brown cat.

(2) The professor adopted a cat.

13.1.17.4: Answers

Question 7.3-1. Presupposition.

Question 7.3-2. Implicature.

Question 7.3-3. Regular entailment.

13.1.18: 7.4 The mental lexicon

13.1.18.1: Questions

Question 7.4-1. Determine if the bracketed portion of the sentence has compositional meaning or non-compositional meaning.

You need to [prebake] the pie crust.

Question 7.4-2. Determine if the bracketed portion of the sentence has compositional meaning or non-compositional meaning.

Do you [brush] your cat daily?

Question 7.4-3. Determine if the bracketed portion of the sentence has compositional meaning or non-compositional meaning.

When Chenchen was talking about her plans for the new year, she [let the cat out of the bag]: she let it slip that she was quitting her current job.

Question 7.4-4. Determine if the bracketed portion of the sentence has compositional meaning or non-compositional meaning.

The [beige notebook on the table] belongs to me.

13.1.18.2: Answers

Question 7.4-1. Compositional meaning.

Question 7.4-2. Non-compositional meaning.

Question 7.4-3. Non-compositional meaning. Based on the context, this is most likely the idiomatic use of “let the cat out of the bag”, not a literal one — it’s an idiom in English that means ‘to reveal a secret’.

Question 7.4-4. Compositional meaning.

13.1.19: 7.5 The nature of lexical meaning

13.1.19.1: Questions

Question 7.5-1. For *chair*, “the purpose of it is to seat one person” is listed as a part of the necessary and sufficient conditions. Why do you think we need to specify it’s for one person? What might be miscategorized as a chair if we do not specify “for one person”?

Question 7.5-2. What does the “cup or bowl” type of experiment say about the nature of categorization?

13.1.19.2: Answers

Question 7.5-1. We need to specify “for one person” if we want to exclude *benches*! But are benches a type of chair? Something to think about.

Question 7.5-2. It shows that category boundaries are not so sharp, and that they can be fuzzy. The concepts attached to a word seems to be much more than just “necessary and sufficient” conditions.

13.1.20: 7.6 Events and thematic roles

13.1.20.1: Question

Question 7.6-1. Using event semantics in the style of (15), give the lexical meaning of the verb *frighten*, as in the following sentence.

The sound will frighten the child.

13.1.20.2: Answer

Question 7.6-1.

There is an event e &

e is a FRIGHTEN event &

x is the EXPERIENCER of e &

y is the CAUSER of e.

13.1.21: 7.7 Countability

13.1.21.1: Questions

Question 7.7-1. In the following sentence, is the bolded word used as a count noun or mass noun?

Cracking your egg against the coutner is risky; if you hit it too hard, you'll get ***egg*** *everywhere.*

Question 7.7-2. In the following sentence, is the bolded word used as a count noun or mass noun?

If you have a lot of ***idea****s, make sure you write them down somewhere.*

13.1.21.3: Answers

Question 7.71. Mass noun.

Question 7.72. Count noun.

13.1.22: 7.8 Individual- vs. stage-level predicates

13.1.22.1: Questions

Question 7.8-1. We said that some adjectives in Spanish are ambivalent, meaning they can take on a stage-level or individual-level interpretation depending on context. Given what you have learned about Spanish copulas, what might be a better paraphrase of what the following Spanish sentence means in English?

Tu hermano es inquieto.
your brother is restless.
'Your brother is restless.'

- 'Your brother is a restless person (i.e., he's generally restless all the time).
- 'Your brother is being restless (e.g., right now, in this particular situation)'

Question 7.8-2. We said that some adjectives in Spanish are ambivalent, meaning they can take on a stage-level or individual-level interpretation depending on context. Given what you have learned about Spanish copulas, what might be a better paraphrase of what the following Spanish sentence means in English?

Tu hermano está *inquieto.*
your brother is restless.
'Your brother is restless.'

- 'Your brother is a restless person (i.e., he's generally restless all the time).
- 'Your brother is being restless (e.g., right now, in this particular situation)'

13.1.22.5: Answers

Question 7.8-1. 'Your brother is a restless person (i.e., he's generally restless all the time).

Question 7.8-2. 'Your brother is being restless (e.g., right now, in this particular situation).

13.1.23: 7.9 Degrees

13.1.23.1: Questions

Question 7.9-1. Based on what you learned about degrees and scales, what might be the reason why (1) is a valid comparison in English, while (2) is a bit more strange?

(1) This shelf is **taller** than this table is **wide**.

(2) ?This shelf is **taller** than this music is **loud**.

Question 7.9-2. We saw that some languages like Washo have no overt comparative morphemes like *-er* or *more*. In these languages, 'x is taller than y' can be expressed as 'x is tall, y is not tall'. "Degreeless" languages like this also lack superlative morphemes like *-est* and *most* as well. Make an educated guess as to how people might express 'x is the tallest in this class' in a language like Washo.

13.1.23.2: Answers

Question 7.9-1. In (1), tallness can be compared to width, because both *tall* and width use the same kind of scale: some sort of length scale. Both the degree of tallness and the degree of width can lie on the same scale. In (2), tallness cannot be compared to loudness, because *tall* and *loud* use different kinds of scales: length and intensity of sound, respectively. The degrees that you are trying to compare would lie on different scales.

Question 7.9-2. In Washo, if you wanted to express 'x is the tallest in the class', you can say literally 'x is tall, everyone else (in the class) is not tall'! (Source: Bochnak 2015)

13.1.24: 7.10 Why not the dictionary?

13.1.24.1: Questions

Question 7.10-1. True or false: If a word that is used by a language community is not in the Oxford English Dictionary, then it isn't a real word.

Question 7.10-2. True or false: Dictionaries do not necessarily list all meanings/uses of a word.

13.1.24.2: Answers

Question 7.10-1. It is false. A dictionary does not decide what is a "real" word or not. If people use that word, then it is a word!

Question 7.10-2. It is true. Most words have so many different uses, it's impossible for lexicographers to list every single use of every single word in a dictionary! They only list enough information so that you get a general idea of how the word is used.

13.1.25: 7.11 Denotation

13.1.25.1: Questions

Question 7.11-1. What is the denotation of the word *purple* in the following sentence?

Josh's mug is purple.

- The set of all purple things in the actual world.
- T if Josh's mug is purple in the actual world, F otherwise.
- The individual Josh in the actual world.

Question 7.11-2. What is the denotation of the following sentence?

The CN Tower is in Toronto.

- The CN Tower in the actual world
- The city of Toronto in the actual world
- The set of things that are in Toronto in the actual world

- T
- F

Question 7.11-3. What is the denotation of the name *Sandra Oh* in the following sentence?

Sandra Oh is an actress.

13.1.25.3: Answers

Question 7.11-1. The set of all purple things in the actual world.

Question 7.11-2. T.

Question 7.11-3. The individual Sandra Oh in the actual world.

13.1.26: 7.12 Introduction to set theory

13.1.26.1: Question

Question 7.12-1. Consider the following sets. Which of the following are true statements in set theory notation? Select all that apply.

A = { **a**, **b**, **c** }

B = { **a**, **b** }

C = { **c**, **d**, **e** }

D = { **c**, **d**, **e** }

- C⊂D
- B⊆A
- C⊆D
- B⊂A
- **e**∈D
- B⊆C

13.1.26.2: Answer

Question 7.12-1.

- B⊆A
- C⊆D
- B⊂A
- **e**∈D

13.1.27: 7.13 Negative polarity items

13.1.27.1: Questions

Question 7.13-1. Consider the environment *Nobody* ___, as in *Nobody dressed up as a dinosaur*. Determine if this is a downward-entailing or an upward-entailing environment, following the steps that were described in this section. The first step has been given to you already.

Step 1: *Nobody dressed up as a dinosaur.* (**superset**)

Step 2:

Step 3:

Answer: Downward-entailing or upward-entailing?

Question 7.13-2. Consider the environment *I know that* ___, as in *I know that you own a broomstick*. Determine if this is a downward-entailing or an upward-entailing environment, following the steps that were described in this section. The first step has been given to you already.

Step 1: *I know that you own a broomstick.* (**superset**)

Step 2:

Step 3:

Answer: Downward-entailing or upward-entailing?

Question x.x2. Question

13.1.27.2: Answers

Question 7.13-1.

Step 1: *Nobody dressed up as a dinosaur.* (**superset**)

Step 2: *Nobody dressed up as a T-Rex.* (**subset**)

Step 3: The **superset** sentence entails the **subset** sentence, but not the other way around. (If nobody dressed up as a dinosaur, then it necessarily means that nobody dressed up as a T-Rex. But if nobody dressed up as a T-Rex, it doesn't necessarily mean that nobody dressed up as a dinosaur — perhaps someone dressed up as a pterodactyl!)

Answer: Downward-entailing.

Question 7.13-2.

Step 1: *I know that you own a broomstick.* (**superset**)

Step 2: *I know that you own a wooden broomstick.* (**subset**)

Step 3: The sentence with the **subset** entails the sentence with the **superset**, but not the other way around. (If I know that you own a wooden broomstick, then I necessarily know that you own a broomstick. But if I know that you own a broomstick, I don't necessarily know that you own a *wooden* broomstick — maybe it's plastic.)

Answer: Upward entailing.

Chapter 8: Pragmatics

13.1.28: 8.1 At-issue vs. non-at-issue meaning

13.1.28.1: Question

Question 8.1-1. Consider the following meanings that the italicized sentence produces in this context. Which of these are non-asserted meaning? Select all that apply.

(Context: Leela usually touches her hair frequently when she is stressed.)

Leela is touching her hair again.

- 'There is an event in which Leela is touching her hair.'
- 'Leela is stressed.'
- 'Leela has touched her hair before.'

13.1.28.2: Answer

Question 8.1-1.

- 'Leela is stressed.' This is an implicature, which is non-asserted.
- 'Leela has touched her hair before.' This is a presupposition, which is non-asserted.

Chapter 9: Reclaiming Indigenous Languages

Coming soon!

Chapter 10: Language Variation and Change

Coming soon!

Chapter 11: Child Language Acquisition

13.1.29: 11.1 Tiny, powerful language learners

13.1.29.1: Questions

Question 11.1-1. Which of the following is good evidence for the importance of the language environment to children's language acquisition?

- A child who is adopted at birth acquires the language of their adoptive parents.
- Deaf children naturally learn to sign because they don't have access to spoken language.
- A newborn can tell the difference between a child's voice and an adult's voice.
- Children who get a lot of screen time have slower language development.

Question 11.1-2.

In the child language literature, what is the conventional way of representing the age of a child who is two-and-a-half years old?

- 0;30
- 2;6
- 2.5
- 2:6
- 2, 1/2

13.1.29.2: Answers

Question 11.1-1. A child who is adopted at birth acquires the language of their adoptive parents.

Question 11.1-2. 2;6

13.1.30: 11.2 When does language learning start?

13.1.30.1: Questions

Question 11.2-1. In the high-amplitude sucking paradigm, what observation do researchers interpret to mean that a baby has noticed a difference between stimuli?

- The infant sucks at a high rate.
- The infant's sucking rate declines after being high.
- The infant's sucking rate increases after declining.

Question 11.2-2. Suppose a pregnant parent is bilingual in two languages that have similar prosodic rhythm patterns. Is it likely or unlikely that this parent's newborn infant will notice the difference between the two languages?

13.1.30.2: Answers

Question 11.2-1. The infant's sucking rate increases after declining.

Question 11.2-2. Unlikely

13.1.31: 11.3 Phonemic contrast

13.1.31.1: Questions

Question 11.3-1. The phonology of Thai contains a three-way contrast between voiced /b/, voiceless /p/, and aspirated /p^h/. Is it very likely or very unlikely that a six-month-old baby growing up in an English-speaking household would be able to hear the difference between Thai [p] and [p^h]?

Question 11.3-2. Arabic phonology includes a contrast between uvular and pharyngeal fricatives. Is it very likely or very unlikely that a two-year-old growing up in an English-speaking household would be able to hear the difference between these two places of articulation?

Question 11.3-3. In the various dialects of Chinese, there is no phonemic contrast between tense and lax vowels. Is it very likely or very unlikely that a four-month-old baby growing up in a Mandarin Chinese-speaking household would be able to hear the contrast between English [e] and [ɛ]?

13.1.31.2: Answers

Question 11.3-1. Very likely.

Question 11-3.2. Very unlikely.

Question 11.3-3. Very likely.

13.1.32: 11.4 Early language production

13.1.32.1: Questions

Question 11.4-1. Around age 0;6 both deaf and hearing babies produce vocal babbling. By age 0;10 hearing babies continue to babble vocally but deaf babies' vocal babbles are less frequent. What's the likeliest explanation for this difference??

- Deaf babies have less control of the articulators for speech.
- Deaf babies have signed language in their environment.
- Deaf babies don't have access to vocal language to shape their babbles.

Question 11.4-2. A child whose father has a bear refers to anyone with a beard as "Dada". Is that child's meaning for the word *dada (daddy)* overextended or underextended?

Question 11.4-3. A young child in a stroller heard a noisy motorcycle drive past and uttered [ætoʊ], his word for *vacuum*. Is his meaning for the word *vacuum* overextended or underextended?

13.1.32.2: Answers

Question 11.4-1. Deaf babies don't have access to vocal language to shape their babbles.

Question 11-4.2. Overextended.

Question 11.4-3. Overextended.

13.1.33: 11.5 The language environment and the so-called word gap

13.1.33.1: Questions

Question 11.5. Each of the following describes a metric that a researcher might choose for recording a child's language use. All metrics have biases. Of the ones presented here, some are biased towards overestimating a child's grammatical competence, and some are biased towards underestimating it. Rank these metrics in order from most generous to least generous.

- An audio or video device records all the child's utterances for the same one-hour period every day for a week.
- A researcher visits the child's home for one-hour periods selected randomly over the course of a week. They transcribe all the child's utterances during those periods.
- An audio or video device records all the child's utterances for one-hour periods selected randomly over the course of a week.
- A researcher visits the child's home for one-hour periods selected randomly over the course of a week. They transcribe all the child's recognizable words during those periods.
- An audio or video device records every utterance the child makes over the course of an entire week, both at home and at school/daycare.

13.1.33.2: Answers

Question 11.5.

1. An audio or video device records every utterance the child makes over the course of an entire week, both at home and at school/daycare.
2. An audio or video device records all the child's utterances for one-hour periods selected randomly over the course of a week.
3. An audio or video device records all the child's utterances for the same one-hour period every day for a week.
4. A researcher visits the child's home for one-hour periods selected randomly over the course of a week. They transcribe all the child's utterances during those periods.
5. A researcher visits the child's home for one-hour periods selected randomly over the course of a week. They transcribe all the child's recognizable words during those periods.

13.1.34: 11.6 Understanding word combinations

13.1.34.1: Questions

Image for Questions 11.6-1 and 11.6-2: A grid containing four vegetables: top left is an onion, top right is a summer squash, bottom left is a purple-polka-dotted onion, bottom right is an onion.

Question 11.6-1. If you showed this picture to a two-year-old and asked them to point to "the feppy one", which of the four pictures is the child likely to point to?

- top left (plain onion)
- top right (summer squash)
- bottom left (polka-dot onion)
- bottom right (plain onion)

Question 11.6-2. If you showed this picture to a two-year-old and asked them to point to "the fep", which of the four pictures is the child likely to point to?

- top left (plain onion)
- top right (summer squash)
- bottom left (polka-dot onion)
- bottom right (plain onion)

13.1.34.2: Answers

Question 11.6-1. Bottom left (polka-dot onion).

Question 11.6-2. Top right (summer squash).

13.1.35: 11.7 Syntax in early utterances

13.1.35.1: Questions

Question 11.7. None of the following sentences is typical of adult English grammar (in other words, they might count as "errors"), but some of them are likely to be uttered by children and others are not. Which sentences are **unlikely** errors? Check all that apply.

- My cereal is very milk.
- I'm filling some sugar into the bowl.
- Open me the door.
- Can you lotion my hands?
- The want babies some milk.
- I don't want a sweater. It always sweats me.
- I hate you and I'm never going to unhate you.

13.1.35.2: Answers

Question 11.7. My cereal is very milk.; The want babies some milk.

13.1.36: 11.8 Developing word meanings

13.1.36.1: Questions

Question 11.8-1. Researchers investigated whether young children could use the semantic restrictions of verbs to figure out the meanings of novel nouns. They presented a novel noun like blick in one of two contexts:

> Constrained context: The blick is **crying**.
> Unconstrained context: The blick is **right here**.

Notice that only animate things can cry, while any kind of object could be right here. The researchers used a preferential looking task with two images: one of a hedgehog and one of a bath sponge. If children can indeed use these semantic constraints, what results would we predict in response to the question, "Where is the blick?" in the constrained context?

- no difference in looks between the hedgehog and the sponge
- more looks to the sponge than to the hedgehog

- more looks to the hedgehog than to the sponge

Question 11.8-2. One of the earliest investigations of children's understanding of mass/count syntax in English showed children a bowl of noodles and described it with a sentence including a novel word. If children are sensitive to mass/count syntax, the sentence frame should affect their interpretation of the word. For each sentence, drag the answer that represents their interpretation.

- This is some corvel.
- This is a corvel.
- This is my corvel.
- bowl
- noodles
- no difference

13.1.36.2: Answers

Question 11.8-1. More looks to the hedgehog than to the sponge.

Question 11.8-2. some corvel: noodles / a corvel: bowl / my corvel: no difference

13.1.37: 11.9 Growing up bilingual (or multilingual!)

13.1.37.1: Questions

Question 11.9-1. One task used in cognitive assessments is a sorting task. A bin contains coloured shapes: red circles, red squares, blue circles, and blue squares. In the first stage of the task, the child has to sort out the bin by colour, grouping all the reds together and all the blues together. Then in the second stage, they mix up all the shapes again and sort them by shape, grouping all the circles together and all the squares together. To successfully complete the second task, children have to ignore the sorting rule they learned on the first task. If bilingualism does indeed have a positive effect on executive function, what results would we predict for this task?

- No difference between monolingual and bilingual children on the second task.
- Monolingual children will complete the second task more quickly and accurately than bilingual children.
- Bilingual children will complete the second task more quickly and accurately than monolingual children.

Question 11.9-2. Parents of deaf children who are considering cochlear implants for their child are sometimes reluctant to provide access to signed language, because they worry that it will delay the child's acquisition of spoken language. Given what you now know about language acquisition, do you think their fear is realistic?

- Yes, because the signed modality will interfere with the spoken modality.
- Yes, because bilingual children are often delayed relative to monolingual children.
- No, because the cochlear implant provides such high-quality input that the child will learn spoken language easily after receiving the implant.
- No, because acquiring a grammar for signed language will facilitate the child's acquisition of spoken language after receiving the implant.

13.1.37.2: Answers

Question 11.9-1. Bilingual children will complete the second task more quickly and accurately than monolingual children.

Question 11.9-2. No, because acquiring a grammar for signed language will facilitate the child's acquisition of spoken language after receiving the implant.

Chapter 12: Adult Language Acquisition

Coming soon!

Chapter 13: Psycholinguistics and Neurolinguistics

Coming soon!

Appendix 1: PSRs and Flat Tree Structure

13.1.38: A1.1 Phrase Structure Rules

13.1.38.1: Questions

Question A1.1-1. Match the words to the correct blank.

What is the function of each part of the following PSR?

XP → WP X (YP+) ZP

The XP is _____ of the constituent.

The WP is _____ of the constituent.

The X is _____ of the constituent.

The YP is _____ of the constituent.

The ZP is _____ of the constituent.

words to match:

- the head
- an optional element that can be repeated
- the label
- an optional element that cannot be repeated
- an obligatory element

Question A1.1-2. Match the words to the correct blank.

The following sentence has _____ embedded clause.
“The very fast red racecar crossed the finished line first in the final competition.”
The following sentence has _____ embedded clause.
“That the red racecar won surprised the judges.”
The following sentence has _____ embedded clause.
“One of the judges thinks that the driver cheated.”

Words to match:

- no
- a subject
- an object

Question A1.1-3. Match the words to the correct blank.

Consider the following sentence.
“The extremely loud child was demanding a large unhealthy candy.”
The word “extremely” is an _____ that modifies the word _____, not _____. The word ‘large’ is an _____ that modifies the word _____, not _____.

Words to match:

- adverb
- adjective
- ‘child’
- ‘loud’
- ‘candy’
- ‘unhealty’

13.1.38.2: Answers

Question A1.1-1.

The XP is **the label** of the constituent.

The WP is **an obligatory element** of the constituent.

The X is **the head** of the constituent.

The YP is **an optional element that can be repeated** of the constituent.

The ZP is **an optional element that cannot be repeated** of the constituent.

Question A1.1-2.

The following sentence has **no** embedded clause.
“The very fast red racecar crossed the finished line first in the final competition.”

The following sentence has **a subject** embedded clause.
“That the red racecar won surprised the judges.”

The following sentence has **an object** embedded clause.
“One of the judges thinks that the driver cheated.”

Question A1.1-3.

The word “extremely” is an **adverb** that modifies the word **‘loud’**, not **‘child’**. The word ‘large’ is an **adjective** that modifies the word **‘candy’**, not **‘unhealthy’**.

13.1.39: A1.2 Phrase Structure Rules in Other Languages

Coming soon!

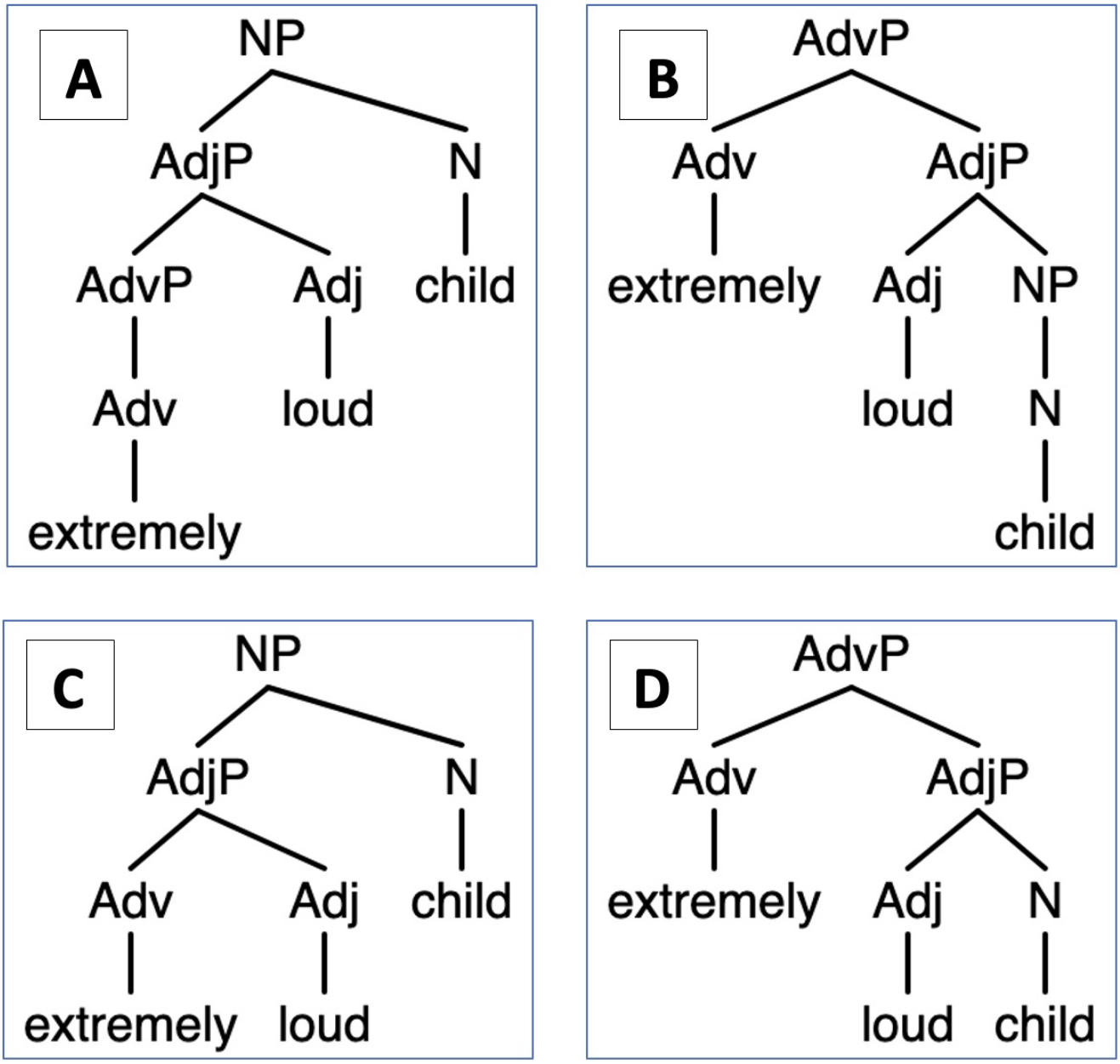
13.1.40: A1.3 Properties of PSR Trees

13.1.40.1: Questions

Question A1.3-1. Which of the following is NOT usually a property of heads?

- There is only one head per phrase.
- The label of a phrase is usually named after its head.
- The head is usually a phrase.
- The head is usually obligatory.

Question A1.3-2.



Which of the tree diagrams in the image above correctly represent the heads of the phrase *extremely loud child*?

- tree A: [NP [AdjP [AdvP [Adv extremely]] [Adj loud]] [N child]]
- tree B: [AdvP [Adv extremely] [AdjP [Adj loud] [NP [N child]]]]
- tree C: [NP [AdjP [Adv extremely] [Adj loud]] [N child]]
- tree D: [AdvP [Adv extremely] [AdjP [Adj loud] [N child]]]

Question A1.3-3. Which **two** of the following groups of rules are recursive?

- AdvP → (AdvP) Adv
- S → NP VP // VP → V CP // CP → (Comp) S
- VP → V NP PP // PP → P NP
- S → NP VP // VP → V NP

13.1.40.2: Answers

Question A1.3-1. The head is usually a phrase.

The head is never a phrase! However, most other things inside a constituent are usually phrases.

Question A1.3-2. Tree A.

Question A1.3-3.

- AdvP → (AdvP) Adv
- S → NP VP // VP → V CP // CP → (Comp) S

13.1.40.3: A1.4 Structural Ambiguity

Coming soon!

13.1.41: A1.5 Head movement in yes-no questions

Coming soon!

13.1.42: A1.6 Phrasal movement in wh-questions

Coming soon!

13.1.43: A1.7 Draw a Tree Step-by-Step

13.1.43.1: Questions

Question A1.7-1. Select the **main verbs** in the following sentences. Remember, there can be more than one main verb if the sentence has an embedded clause!

1. My family had spaghetti for dinner last night.

2. What did you eat for dinner?

3. My baby sister spilled pasta sauce all over the floor.

4. I hope that the sauce doesn't stain the carpet.

5. It is being scrubbed right now.

6. Will we find out whether it left a mark?

7. It somehow hadn't been ruined already.

Question A1.7-2. For each clause, identify whether it is a statement, a content question, or a *yes-no* question. There are 3 statements, 3 content questions, and 2 yes-no questions.

1. [What did you eat for dinner]?
This clause is a _____.
2. [My baby sister spilled pasta sauce all over the floor].
This clause is a _____.3. [Who hopes [that the sauce doesn't stain the carpet]]?
The main clause is a _____ and the embedded clause is a _____.4. [Will we find out [whether it left a mark]]?
The main clause is a _____ and the embedded clause is a _____.5. I asked [how long should we soak it for].
The main clause is a _____ and the embedded clause is a _____.

Question A1.7-3. Select the word that the bolded phrase modifies.

Here is an example:

1. Let's throw out the **ruined** carpet.

In sentence one, *ruined* modifies *carpet*, so you would click on *carpet*.

2. My family had spaghetti **for dinner** last night.

3. My **baby** sister spilled pasta sauce all over the floor.

4. I ate my spaghetti **with a fork** .

5. I ate the spaghetti **with basil** .

6. For dessert, we had strawberries with **large** dollops of whipped cream.

7. For dessert, we had strawberries with large dollops of **whipped** cream.

8. For dessert, we had strawberries with large dollops **of whipped cream**.

9. For dessert, we had strawberries **with large dollops of whipped cream**.

13.1.43.2: Answers

Question A1.7-1.

1. My family **had** spaghetti for dinner last night.

2. What did you **eat** for dinner?

3. My baby sister **spilled** pasta sauce all over the floor.

4. I **hope** that the sauce doesn't **stain** the carpet.

5. It is being **scrubbed** right now.

6. Will we **find** out whether it **left** a mark?

7. It somehow hadn't been **ruined** already.

Question A1.7-2.

1. [What did you eat for dinner]?
This clause is a **content question**.

2. [My baby sister spilled pasta sauce all over the floor].
This clause is a **statement**.

3. [Who hopes [that the sauce doesn't stain the carpet]]?
The main clause is a **content question** and the embedded clause is a **statement**.

4. [Will we find out [whether it left a mark]]?
The main clause is a **yes-no question** and the embedded clause is a **yes-no question**.

5. I asked [how long should we soak it for].
The main clause is a **statement** and the embedded clause is a **content question**.

Question A1.7-3. The modified words are underlined.

2. My family had spaghetti **for dinner** last night.

3. My **baby** sister spilled pasta sauce all over the floor.

4. I ate my spaghetti **with a fork** .

5. I ate the spaghetti **with basil** .

6. For dessert, we had strawberries with **large** dollops of whipped cream.

7. For dessert, we had strawberries with large dollops of **whipped** cream.

8. For dessert, we had strawberries with large dollops **of whipped cream** .

9. For dessert, we had strawberries **with large dollops of whipped cream** .

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SECTION OVERVIEW

12: PSRs and Flat Tree Structures (optional)

This appendix is provided as an alternative to the second half of the syntax chapter (Sections 6.14-6.21), teaching flat tree structures instead of x-bar. It is written to follow Section 6.13. It is recommended to use this alternative for one-semester introductory courses, as well as any introductory courses that have two weeks or fewer to cover syntax.

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15: Accessibility Statement

This textbook conforms to the Accessibility requirements of eCampusOntario's Virtual Learning Strategy. In addition, the authors understand the importance of accessibility and strive to not only meet the minimum accessibility standards, but to research and develop accessibility standards particular to linguistic diagrams, formalisms, and notation.

Below we list several of the measures we have taken to increase accessibility.

- Pages are navigable by screenreader. (Note: Firefox does not seem to work well.)
- Alt-text is provided for all non-decorative images and diagrams. For syntax and morphology trees, the alt-text is currently formatted as a bracketed diagram, but we are exploring ways to communicate the hierarchal structure in a way that is easier to interpret in audio format.
- A definition file for special characters from the International Phonetic Alphabet is available for screenreaders. (Coming soon!)
- Graphs, charts, and maps are described in writing in the body of the text.
- Many parts of the text are provided in parallel video format. In these cases, the text functions as a transcript of the video. (More coming soon!)
- Glossed linguistic examples are formatted in tables that can be navigated by tabbing, and are tagged as non-English when applicable for screenreaders.
- High contrast colour is used.
- This ebook is available to export as PDF or EPUB. PDF versions can be printed. All interactive content is available in the backmatter of the text for exported copies.
- Pressbooks supports zooming the font size by 200% across all of its platforms.

We welcome feedback both in terms of what is working well and for issues that we overlooked or can be improved. We can be emailed at teaching.in.linguistics@gmail.com.

Note: As of "soft launch" on February 28th, 2022, not all of these accessibility features have been implemented. However, we plan to continue working on them throughout the rest of 2022. We still welcome feedback at this preliminary stage!

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