

INTRODUCTION TO ENVIRONMENTAL STUDIES



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Introduction to Environmental Studies

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Environmental Studies and Sustainability

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This text was compiled on 10/23/2026

TABLE OF CONTENTS

Acknowledgements

Licensing

1: Environmental Studies

- 1.1: Environmental Texts and Questions
- 1.2: Personal Narrative
- 1.3: Sustainable World Building Activity
- 1.4: Definitions
- 1.5: Response
- 1.6: Works Cited

2: Water

- 2.1: Ecocritical Context
- 2.2: Environmental Working Group (EWG) Exercise
- 2.3: Case Study, California**
 - 2.3.1: Case Study, California
- 2.4: Case Study, Colorado River
- 2.5: Water Solutions Negotiation
- 2.6: Works Cited

3: Oil

- 3.1: Case Study, Venezuela
- 3.2: Case Study, U.S. (Texas/Permian Basin)
- 3.3: Case Study, U.S. (the Bakken)
- 3.4: Analysis and Research
- 3.5: Works Cited

4: Land

- 4.1: U.S. and Land
- 4.2: Land Ethic(s)**
 - 4.2.1: Indigenist Ethics and Land Ethic
- 4.3: Local Land Use
- 4.4: Observation--Field Notes Activity
- 4.5: Additional Observation Activities
- 4.6: Works Cited

5: Our Role and Solutions

- 5.1: Take Apart Activity
- 5.2: Solutions Presentation
- 5.3: Revisiting Sustainable World Building
- 5.4: Works Cited

Index

Glossary

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Acknowledgements

Thank you to the **Illinois State Library** for funding this project, to **Aurora University** for supporting it, and to **Sarah McHone-Chase** for guiding it and in her role as Copyright Coordinator and Proofreader for this text. Thank you to **Evangeline Reid** in her role as Accessibility Coordinator, as well as general stability and sane-keeper during the project when so many links to EPA pages were cut, and to **Deanne Pawlisch** in her role as Instructional Designer. Additionally, thank you to peer reviewer **Gregory Goalwin**. I am also thankful to AU students **Dax Newkirk** and **Blace Reinbold-Whitt** for their work with me on the project in AU's Student Partners in Academic Research and Knowledge (SPARK) Program at AU, a way for early undergraduate students to work with professors on research. SPARK Coordinator **Libby Escobedo's** work in that program is meaningful to this project and to others. I'm also thankful to **Mark Soderstrom**, **Pegeen Reichert Powell**, and **Paaige Turner** for their support in creating this text and in teaching Environmental Studies courses at Aurora University. And thank you to **Michaela Ensweiler** for using it in her Introduction to Environmental Studies course at AU.

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1: ENVIRONMENTAL STUDIES

Learning Objectives

This chapter will help you accomplish the following:

- Articulate the interdisciplinary nature of environmental studies
- Use key terms in Environmental Studies
- Apply this learning to a world-building activity

Definition: Environmental Studies

The interdisciplinary study of environmental issues that engages with humanities, sciences, and policies.

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A central concept of Environmental Studies is asking and researching how we can be informed enough -- scientifically, socially, and politically -- to see the connections among disciplines, to ask meaningful questions of ourselves and others, and to create positive change for the world we inhabit, other species, other humans, and ourselves.

The Importance of Narrative in Environmental Studies

What stories we are told about the world shape us, and this is important in Environmental Studies. Creation myths, for instance, impact how we see the human role in the natural world. Do we see ourselves as separate or part of all? In fact, the ways in which we interpret scientific observations matter. For instance, the “Euro-Christian Edenic narrative” often evokes “problematic narratives of human dominion over animals and plants, naturalized heterosexuality, equations of women with nature, and [perhaps] colonization and whiteness” (Barclay and Tidwell ix). Alternatively, Robin Wall Kimmerer addresses this well in her introduction to *Braiding Sweetgrass* and in [her account of the Sky Woman Falling creation story](#). Kimmerer invokes the creation story of Sky Woman Falling, which sets up nonhuman creatures as primary occupants of creation, helping Sky Woman by softening her fall to Earth and building land for her to stand on. This creation story, “shared by peoples throughout the Great Lakes,” is “like a compass,” according to Kimmerer, offering “an orientation but not a map” because “the work of living is creating that map for yourself” (*Braiding Sweetgrass* 7).

Because of that, imagination is important. Kimmerer writes that in her classroom discussion about positive relationships between humans and nonhumans, she realized students “could not even imagine what beneficial relationships between their species and others might look like” and asks, “How can we begin to move toward ecological and cultural sustainability if we cannot even imagine what the path feels like” (*Braiding Sweetgrass* 6). A narrative that deems humankind as in dominion over all nonhuman species sets up a different relationship to the nonhuman world than does a narrative that sets up a kinship. To talk over this in more depth, we will revisit the Investing in Futures World Building Exercise to talk over how to expand our environmental imagination.

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The kinship and material narrative that Kimmerer writes about is echoed in significant environmental humanities texts. Serenella Iovino and Serpil Oppermann write in the introduction to *Material Ecocriticism*, “The world’s material phenomena are knots in a vast network of agencies, which can be “read” and interpreted as forming narratives, stories. [...] All matter, in other words, is a “storied matter” (1-2). Such a material enmeshment requires that we tell the stories of interconnectedness appropriately, and that telling has power to change human relationship with the nonhuman (Iovino and Oppermann 9).

1.1: Environmental Texts and Questions

1.2: Personal Narrative

1.3: Sustainable World Building Activity

1.4: Definitions

1.5: Response

1.6: Works Cited

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1.1: Environmental Texts and Questions

Exercise

To further understand the interconnections environmental humanities emphasizes and to prepare for upcoming discussions and assignments, please read and watch the following texts and answer the questions below. Please read Donna Haraway's "Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin" and Robin Wall Kimmerer's *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* "Introduction" and watch the video full video below on *slow hope* below from "New Directions in Environmental Humanities."

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Answer the following questions:

1. What connections do you see among these texts? What patterns or messages emerge?
2. What passage or comment stands out to you as significant? Why?
3. How can you apply the concepts in the readings and video clip to your understanding of environmental issues?
4. What questions are you left with that you would like to discuss?

1.2: Personal Narrative

Personal Narrative Activity

Personal Narrative: For this activity, either write a 2-3-page essay or create a 2-3-minute video about your experiences, including the following:

- What is your interest in environmental studies?
- What experiences in natural environments or other species do you have (gardening, plants, pets, hiking, etc.)?
- What environmental issues interest or engage you (for example, the natural world, conservation, gardening, animals, a love of mushrooms or of the ocean, extinction, water rights, etc.)?
- What questions you have for this semester (for example, how are policies and politics entangled with environmental issues, how are climate change and extreme weather related, how does observation and field work tie in with conservation, how does Environmental Studies overlap with other disciplines, etc.)?

1.3: Sustainable World Building Activity

What we have covered is how narrative impacts environmental issues. Not only does being able to articulate a world we want help us create it, but the scientific questions we ask and research we prioritize change the policies we build out of that science. After the work in this chapter and after defining your own relationship to other species and to the natural world, **please take time to watch the video below, "Imagining Climate Change Futures" to inform the Sustainable World Building Activity to complete in groups in class. Please also keep all of your solo and shared work below so that we can revisit it at the end of this book.**

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Sustainable World Building Activity: Solo Work

Imagining and articulating ideal futures helps not only reveal what needs to change in our current environment but also helps us dream of what is possible. We often imagine catastrophic environmental futures, but as we will study, opening our minds to possibilities and working for those creates positive change.

To put this into practice, try this Investing in Futures World Building Exercise, adapted from the [Investing in Futures card game](#).

- **Work through the bullets below on your own first**

Environmental Studies is inherently interdisciplinary. Food and Agriculture impact governmental policies and Economy. Schools and Living Conditions impact Food and Healthcare, and so on. On your own, write down some things in the categories that would build your ideal world. Dream big. Do not hold yourself back with what is possible right now. Brainstorm your dream sustainable world. Then, as a group, talk over options for the different areas below and build your collaborative dream of a sustainable world. You will share these with the class and explain not only how you came to this decision and why but also how each of these impact others.

- Government (democracy, AI, matriarchy, monarchy, only people under 75 in government, only people voted by the majority of the entire nation, etc.)
- Economy (living wage for all, capitalism, self-sustaining, etc.)
- Schools/ Universities (voluntary k-12 education, free college tuition, education up until a certain grade and then trades/apprenticeships, etc.)
- Transportation (public transit, walking/ biking infrastructure in all cities and towns, shared rides, etc.)
- Living Conditions (communal living, rural/agricultural, mostly urban with natural spaces added and the rest of the country left for other species, children live separately, etc.)
- Healthcare (universal healthcare, health monitoring via tech, free medical training with 1/10 folks able to practice medicine, rewards for good health, get rid of insurance companies, etc.)
- Food (veganism, vegetarianism, no big agriculture, no chemicals, local and organic accessible to all, eating only in season, etc.)
- Arts (all arts publicly supported, art education for all, music/theater/exhibits available to all for free, sustainable art only, etc.)
- Work (80 hr/week half the year and leisure the other half, equal pay, jobs paid based on importance rather than market value, 20 hours of work/ week, no work and universal pay so that people do what they are passionate about without worrying about salary, etc.)

- Any other categories you would like to add?

Answer available at the end of this section.

Sustainable World Building Activity: Shared Work

Share your ideas from above with your group members

- Work with your group members to create a community-built sustainable world and take notes
- Share your community-built sustainable world with your full class, taking notes on their ideas
- After sharing, please work through questions below on your own to share with the full class in discussion

Discussion Questions

1. What were the insights from your peers' original answers and how you negotiated to come to a consensus as a group?
2. After all groups share their sustainable worlds, what patterns do you see?
3. What are the major areas of disagreement among groups?
4. How could we work towards some of these goals?
5. How is the interdisciplinary nature of Environmental Studies important to this exercise, and how did the inquiry into your own ideals and the negotiation with others' ideals impact your understanding of the field?
6. How is imagination important to "make possible" the "recuperation and recomposition" that Haraway calls for, and why is "mourning irreversible losses" important to that (Haraway 160)?
7. Research credible sources ([AU students can learn about credible sources here](#)) about your ideas in the Imagining Futures exercise and reflect on how what you wrote there is drawn from your own understanding of the natural world, what is possible, and what we are bound by. Does an understanding of how narratives shape us help address some obstacles in your dreaming?

Answer available at the end of this section.

Answers

Sustainable World Building Activity: Solo Work

Sustainable World Building Activity: Shared Work

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1.4: Definitions

Please familiarize yourself with these Environmental Studies terms. Note them in readings and apply them as you work through activities.

Definitions

Anthropocene:

Paul Crutzen's proposed geographical and cultural term for the era of human impact on Earth ([Crutzen and Stoermer 20](#)). It is widely accepted informally as a way of describing the human impact on the planet and its start date debated ([Keys, et al](#)), though its official term for an epoch is not approved by geologists ([International Union of Geological Sciences](#)). Along with others, Donna Haraway offers other terms to upend the binary language of "anthropo" that separates humans from other species, and sees the Anthropocene as "more a boundary event than an epoch," asserting it is "our job is to make the Anthropocene as short/thin as possible and to cultivate with each other in every way imaginable epochs to come that will replenish refuge" ("[Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin](#)," 160). Haraway suggests the term Chthulucene to define the "dynamic, ongoing [...] forces and powers of which people are a part" and in which "collaborative work and play with other terrans, flourishing for rich multispecies assemblages that include people will be possible" ("[Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin](#)," 160).

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Anthropomorphism:

attributing human characteristics to the nonhuman.

Bioaccumulation:

"the process by which a chemical substance is absorbed by an organism from all routes of exposures as occurs in the natural environment (i.e., dietary and ambient environment sources) and achieves a level that exceeds those in the exposed sources" ([Bjorkland, Tobias, and Petersen](#)).

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Citizen Science:

Also called "community science" or "participatory science," this is science in which "the public participates voluntarily in the scientific process to address real-world problems," including "forming research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, and solving complex problems" ("[Citizen Science](#)"). See [SciStarter](#) for Citizen Science Projects you can participate in.

Environmental Humanities:

The interdisciplinary “conception of the environmental as inextricably entangled with the social” (de Graauw and Fiore 184-187).

Environmental Justice:

“The just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment,” advocating for all to be free of environmental dangers and have equitable access to sustainable spaces and health ([EPA](#)).

Invasive Species:

“A non-native species that causes harm to the environment, economy, or human, animal, or plant health” ([National Park Service](#)).

Material ecocriticism:

Serpil Oppermann writes that material ecocriticism developed from “[t]he radical revisions of our ideas about the description of physical entities, chemical and biological processes, and their ethical, political, and cultural implications represented in recent discourses of feminist science studies, posthumanism, and the environmental humanities [...], and emphasizes that “we can read the world as matter endowed with stories” (21). This term highlights the ways in which scientists as observers and interpreters of the human and nonhuman world depend on their own narratives in “reading” the material world and need narratives to share their findings.

Nonhuman:

Plants, animals, landscapes, ecosystems.

Petrostate:

“A country with several interrelated attributes: government income is deeply reliant on the export of oil and natural gas, economic and political power are highly concentrated in an elite minority, and political institutions are weak and unaccountable, and corruption is widespread” ([Council on Foreign Nations](#)).

Posthumanism:

Thinking of humans as both technological and animal with permeable boundaries. Rosi Braidotti writes, “the common denominator for the posthuman condition is an assumption about the vital, self-organizing, and yet non-naturalistic structure of living matter itself,” specifically focusing on the “non-dualistic understanding of the nature-culture interaction” (Braidotti 2).

The Sixth Extinction:

our current era of human-caused extinction via climate change, ocean acidification, deforestation, invasive species, and other human causes ([Kolbert 2-3](#)).

Slow Violence:

“A violence that is neither spectacular nor instantaneous but instead incremental, whose calamitous repercussions are postponed for years or decades or centuries” (Rob Nixon, “Slow Violence”).

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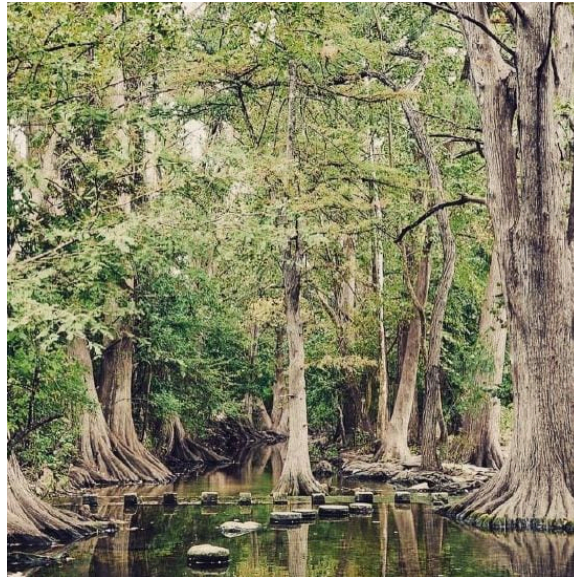
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Trans-corporeality:

“all creatures, as embodied beings, are intermeshed with the dynamic, material world, which crosses through them transforms them, and is transformed by them” (Alaimo, “Trans-corporeality,” 435-438).

1.5: Response



To critically think through, synthesize, and analyze the texts so far, please write a Response Essay in the format below. You will write these a few times throughout this book. This will not only offer a low-stakes assignment to process the concepts but also to prepare for a class discussion and for upcoming assignments, where you can (if your instructor allows) pull from these Responses for essays, exams, and presentations. Consider this assignment more formal than notes but less formal than higher-stakes assignments and a way to discuss and connect ideas for yourself and with your classmates.

Response

These three-paragraph essays are meant to a) hone your critical reading/viewing, b) demonstrate your understanding of and engagement with the texts, and c) help with writing the formal essays. They can be incorporated into drafts as you build your arguments, evidence, quotations, and questions. Please write full paragraphs (usually five-to-ten sentences but no fewer than four).

Please include the following elements in full paragraphs:

1. An answer to **one** of the following questions (unless you feel compelled to write for more than one, which is fantastic):
 - a. What was most interesting about the assigned reading/viewing for today? Why?
 - b. What connections do you see between today's reading/viewing and other texts from the course (or outside the course, for that matter) or conversations we have had earlier in the semester?
 - c. What was most difficult or challenging for you in today's reading/viewing? This might not just refer to things that are intellectually difficult but also to things that are emotionally difficult.
2. A properly integrated and cited quotation (or scene) from the text you are responding to and why you find it significant. Is this quotation/scene representative of a point you are making? Is this quotation an example of something in agreement or disagreement with another text (perhaps one you connect to in #1 above)? Is it a passage/moment that moved you, resonated with your own experience, or surprised you?
3. A discussion question to ask the class and that you answer in paragraph form (see examples below).

Examples:

How do the modes in which the science and policies are delivered in the Water texts impact your engagement?

At the end of the *Water and Power* video, we see a short-term solution for the couple that was interviewed earlier in the video. How useful do you think such solutions are in the long run, and how can larger policy changes improve those?

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2: WATER

Learning Objectives

This chapter will help you accomplish the following:

- Demonstrate understanding of environmental issues related to water
- Demonstrate understanding of environmental justice and apply it to current environmental issues related to water
- Demonstrate understanding of the specific examples of U.S. western states and water rights
- Apply your knowledge of water rights and negotiate the interdisciplinary complexities with your peers

Environmental Issues with Water

To familiarize yourself with the varied environmental issues with water, please view the following video exemplifying a particular issue, taking notes on your immediate impressions and what questions you have.

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The [United Nations' Climate Action site](#), “[Water – at the Center of the Climate Crisis](#),” culls information from various international studies on environmental water issues and notes, among other statistics, that “about two billion people worldwide don’t have access to safe drinking water.” Additionally, the site addresses that “Only 0.5 per cent of water on Earth is useable and available freshwater – and climate change is dangerously affecting that supply,” which along with population growth, “will put pressure on food supply as most of the freshwater used, about 70 per cent on average, is used for agriculture (it takes between 2000 and 5000 liters of water to produce a person’s daily food)” (United Nations’ Climate Action). The site also reminds readers that “Water and climate change are inextricably linked” and that “climate change affects the world’s water in complex ways” (United Nations’ Climate Action). Data from another UN environmental source, [UN Water and Climate Change](#), cites the following primary water-related environmental issues:

- Flooding and rising sea levels can contaminate land and water resources with saltwater or faecal matter, and cause damage to water and sanitation infrastructure, such as waterpoints, wells, toilets and wastewater treatment facilities.
- Glaciers, ice caps and snow fields are rapidly disappearing. Meltwater feeds many of the great river systems. Volatility in the cryosphere can affect the regulation of freshwater resources for vast numbers of people in lowland areas.
- Droughts and wildfires are destabilizing communities and triggering civil unrest and migration in many areas. Destruction of vegetation and tree cover exacerbates soil erosion and reduces groundwater recharge, increasing water scarcity and food insecurity.
- Growing demand for water increases the need for energy-intensive water pumping, transportation, and treatment, and has contributed to the degradation of critical water-dependent carbon sinks such as peatlands. Water-intensive agriculture for food production, particularly meat, and for growing crops used as biofuels, can further exacerbate water scarcity ([UN Water and Climate Change](#)).

The [Office of the Director of National Intelligence](#) has reports devoted to “[The Future of Water](#),” warning, “Countries that are unable to address water-related challenges” face “greater risk of disease, growing inequality, poor economic growth, and a heightened risk of internal political instability” (1). The Office of the Director of National Intelligence further asserts, “[s]hared water resources among states are increasingly likely to become flashpoints as water security diminishes and geopolitical competition grows” (1). Vital to human, plant, and animal life, water access is an often overlooked environmental justice issue that

many of us can find iterations of in our backyards, cities, and regions.

2.1: Ecocritical Context

2.2: Environmental Working Group (EWG) Exercise

2.3: Case Study, California

2.3.1: Case Study, California

2.4: Case Study, Colorado River

2.5: Water Solutions Negotiation

2.6: Works Cited

2.1: Ecocritical Context

Ecocritical Context



A number of beautifully written material ecocritical texts on environmental water issues have shaped the field of environmental studies, emphasizing the complex human-nonhuman relationship. In *Bodies of Water: Posthuman Feminist Phenomenology*, for instance, Astrida Neimanis writes, “we are bodies of water,” and as such, “[g]iven the various interconnected and anthropogenically exacerbated water crises that our planet currently faces – from drought and freshwater shortage to wild weather, floods, and chronic contamination – this meaningful mattering of our bodies is also an urgent question of worldly survival” (1). Neimanis argues that human water composition and environmental water issues caused by humans require a change in the narrative about our kinship with it (3). In *Wild Blue: Thinking Through Seawater*, Melody Jue writes about humans’ outside understanding of the oceans and places where humans are decentered and can imagine. Jue writes that “by offering entirely different conditions than on land – increased pressure, three dimensional movement, light refraction and magnification [...] – the ocean is a material and imaginative space for the conditions of perception that we have taken for granted” (3). Not only is Jue writing about the act of entering a body of water, which for humans is not a natural environment and one in which our terran breathing, speaking, moving, hearing, and seeing are altered but also one in which species offer more-than-human understanding of “what is natural.” Studying freshwater and saltwater species expands human imagination.

In addition to environmental texts asserting the permeability of human and nonhuman in water issues, water is also a topic that puts environmental justice issues into high relief. In *Racial Ecologies*, Leilani Nishime and Kim D. Hester Williams write, “The water pollution crisis in Flint, Michigan [...] stands as a glaring example of contemporary environmental and racial injustice,” citing the independent investigative task force findings that “race and economic status played an outsized role in explaining government neglect” (Gostin cited in Nishime and Williams 4). Flint is one example of many water-related environmental injustices locally, nationally, and globally. Looking at such case studies enables a complex look at the material ecocritical human and nonhuman interdisciplinary entanglements with water access and water rights. In this chapter, we will focus on ongoing regional case studies in water injustice.

Please watch the video below as an example, taking notes on your impressions and questions.

YouTube Video

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2.2: Environmental Working Group (EWG) Exercise

Exercise

Please go to the [Environmental Working Group Tap Water Database](#) and input a) your home zip code, answering the questions below, and b) your university zip code, answering the questions below:

- How many people are served in that zip code?
- When you click on the municipality, how many contaminants show up (both what shows up and what shows up as exceeding health guidelines)?
- Look through some of the contaminant details, making notes about the highest, most harmful, and most personally concerning. Why do these stick out?
- Do a Google search for credible sources about that zip code's water quality. What do you find?

Discuss these results for both zip codes in small groups and synthesize common threads and outlier results to share with the rest of the class.

2.3: CASE STUDY, CALIFORNIA

California offers a number of great examples of the environmental water issues outlined in this chapter so far. In order to understand those issues in more depth, we will take a few days to analyze different texts before synthesizing the problems and solutions that they bring up, culminating in a Water Solutions Negotiation exercise at the end of this chapter.

Case Study Day 1: California Agriculture and Water Access

Water and Power: A California Heist

Before or during next class, depending on your professor's instructions, please watch Marina Zenovich's 2017 *Water and Power: A California Heist*, streaming on multiple services, to set up our first water justice case study. As you are watching, please answer the Critical Viewing Questions below and bring to class:

- What are some significant and/or surprising statistics about Kern County, agricultural water usage, etc.?
- What is the problem that the documentary sets up?
- Who are the key parties and who is being harmed?
- What are some of the causes of that problem, both historical and ongoing?
- What solutions does the documentary suggest?
- Paraphrase Rob Nixon's term *slow violence* and summarize how it applies here.
- What is your stance on the topic not only in terms of Kern County but on a more global scale when we consider water justice.

2.3.1: Case Study, California

2.3.1: Case Study, California

Case Study Day 2: California Agriculture and Water Access

While *Water and Power: A California Heist* focuses in-depth on the specifics of California's agricultural use from the Kern County water bank, ground water storage and use is a wider issue. Kern County was able to create a water bank from surface-level water--which varies seasonally and comes mostly from the northern portion of California. The bank stores in a depleted aquifer. Other aquifers are also depleted, and in other agricultural regions, depending on ground water rights, Kern County and the surrounding cities also dependent on that water are a case study for a larger issue that the rest of the United States (and many other places globally) are also dealing with or will be in coming years.

In order to think through and prepare for discussion on how Kern County is a case study for the more widespread issues, for the following class session (or following your professor's instructions), please read "America is Using up Its Groundwater Like There's No Tomorrow" before the next class and write a [Response Essay](#).

"[America is Using up Its Groundwater Like There's No Tomorrow](#)" (this link is direct for Aurora University students; students at other universities can likely access through their own library databases).

2.4: Case Study, Colorado River

Case Study: Colorado River

The Colorado River distribution is an example of major U.S. water distribution issues during a time of fresh water crisis, as well. Originating in Colorado, the river travels to Mexico and is an important water resource to many U.S. states. The [U.S. Bureau of Reclamation](#), explains:

The Colorado River is a critical resource in the West, because seven basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) depend on it for water supply, hydropower production, recreation, fish and wildlife habitat, and other benefits. Although agricultural uses depend on 70 percent of Colorado River water, between 35 and 40 million people rely on the same water for some, if not all, of their municipal needs. Moreover, the United States also has a delivery obligation to Mexico for some of the Colorado River waters pursuant to a 1944 Treaty with Mexico.

Because of a [two-decade drought](#), the Colorado River is extremely low. Tribes, U.S. states, and Mexico have been debating and negotiating the issue for a while. So much so that [the Biden Administration stepped in to help state disputes about Colorado River use in 2023 and 2024](#). Additionally, Colorado River water [rights are disputed](#).

Please read the articles below and write a [Response Essay](#). In small groups, read your Response Essays to one another. What patterns emerge from your Responses? Do a variety of things from the articles interest you? Do certain passages stand out? From your group's discussion question, choose one (or write a new one) to pose to the rest of the class for discussion.

Articles to read:

[“The Hardest Working River in the West: Common-Sense Solutions for a Reliable Water Future for the Colorado River Basin”](#)

[“With New Plans, Colorado River States Draw Battle Lines Over Who Should Bear the Brunt of Future Water Cuts”](#)

After the class discussion of your Responses to the texts, please research the library's databases to find local regional issues related to ground water, agricultural usage, rivers, or other bodies of water near you. Share these with the class and compare to the Kern County and Colorado River issues we read about.

- What environmental issues stand out?
- What [environmental justice](#) issues stand out?

Answer available at the end of this section.

Answers

Case Study: Colorado River

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2.5: Water Solutions Negotiation

Water Solutions Negotiation

For this activity, you will work with your half of the class to come up with solutions that you will negotiate with the other half of the class. Argue for your best water access/distribution solutions, considering the following interdisciplinary approaches to those solutions (try to have solutions that involve all of these, but it is okay if you don't cover each and every solution):

- Personal changes: finding ways to live more sustainably and prioritize sustainability in work and home life, personal choices, personal health and generosity, etc.
- Media focus: a change in the way all media covers environmental disasters, environmental solutions, sustainable filmmaking practices, etc.
- Cultural changes: cultural changes to worldviews, such as [transcorporeality](#), gift economy, consumption, and prioritizing sustainable practices (work flexibility, prioritizing sustainable practices in education, etc.)
- Community engagement: working with the community for local changes such as bike lanes, composting options, addressing local slow violence, working with local political and religious leaders, working with the local business and scientists, engaging with religious communities
- Policy changes: strengthening the EPA, committing to global reparations, banning certain items and practices, universal voter registration, etc.
- Economic changes: changing work week and pay scale practices; universal childcare, education, and/ or healthcare; creation of sustainable jobs in fields like environmental remediation, conservation/ preservation, etc.; changes in taxation and/or where federal dollars are spent

Advocacy and negotiation requires establishing common ground, respecting audience, and evidencing. Tone matters, as does listening to the other sides. Consider your audience and build authentic common ground:

- What is your audience expectation based on the medium(s) through which you are delivering your message? Is the audience voluntary or involuntary?
- What is your audience's knowledge of your topic? If it varies, how much does it? Who will likely read/listen to/watch your message? Who do you want to read/listen to/ watch your message?
- What is their attitude toward your topic? Especially for environmental issues, it will vary widely? Think again about what audience you want to reach and what their stance on the topic(s) will be?
- What demographics do you expect and hope to reach (sex, gender, age, socio-economic status, political leanings, nationality, religion, race, ethnicity, education level, etc.)?
- How will your message apply to your audience?
- How can you build common ground with that audience?

Pay attention to your own argumentative elements and appeals and to the other teams' as they present. Think about the organization of your argument (outline it) and consider how clear language builds your credibility. Work in class to prepare the following:

1. Intro and position/thesis: your intro should draw folks in (stats, a case study, a story, etc.), and your position/thesis should be clear and specific. Map out what you will go over (example: We propose personal, cultural and policy changes that will impact media, community, and economic shifts, specifically we advocate for x, y, and z because....)
2. Reasons for your position with multiple pieces of cited evidence for each reason (from course texts). The reasons should be the "because" portion of your position/thesis.
3. Be aware of the other position(s) and what they may argue so that you can include rebuttals to negotiate.

Answer available at the end of this section.

Answers

Water Solutions Negotiation

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3: OIL

Learning Objectives

This chapter will help you accomplish the following:

- Demonstrate understanding of environmental issues related to oil
- Demonstrate understanding of environmental justice and apply it to current environmental issues related to oil
- Demonstrate understanding of the specific examples of global and U.S. oil extraction
- Apply your knowledge of oil extraction and negotiate the interdisciplinary complexities with peers

Environmental Issues with Oil

Global dependence on oil, and its extraction processes and impacts, not only contribute to climate change but also have severe environmental justice issues. [Before 2025](#), the Environmental Protection Agency (EPA) defined environmental justice as an issue of rates of negative impact and access to positive aspects of the environment:

[T]he just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

- are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and
- have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices

Similarly, the [United Nations Development Programme](#) (UNDP) notes the environmental justice "crisis is intertwined with the crisis of inequality and is inextricably linked to the protection and fulfilment [sic] of human rights and sustainable development" (UNDP).

Just as environmental justice issues in terms of water use, access, and pollution are global, so are environmental issues with oil. This chapter will cover petrostates and oil extraction, specifically, focusing on Venezuela, the U.S. Permian Basin in West Texas, and the U.S. Bakken formation in part in North Dakota and Montana.

Definition: Environmental Justice

"The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies" ("[Environmental Justice](#)"); additionally, the understanding that social, cultural, and political biases have historically created inequalities among those who most suffer from environmental impacts.

While oil is a major contributor to climate change (covered in a later chapter), it is also extremely harmful to the communities that extract it. The United Nations notes that "[f]ossil fuels – coal, oil and gas – are by far the largest contributor to global climate change, accounting for over 75 per cent of global greenhouse gas emissions and nearly 90 per cent of all carbon dioxide emissions" ([United Nations Climate Action](#)). In addition, Jill E. Johnston, et al. writes, "Approximately 17.6 million people live near (<1.6 km) an active oil or gas extraction site, the majority of whom are living in rural communities in the continental U.S. UOG [unconventional oil and gas] extraction has been linked to worsened air pollution, contaminated ground and surface water, increased noise, more traffic, and disruptions to the local social fabric" ([Johnston, et al. 2](#)). But not all communities impacted are rural. Los Angeles County is a densely populated area with the same issues. Anakaren Andrade, et al. write that LA County "is home to over 5,000 active oil and gas wells," meaning roughly "one third of Los Angeles County residents live within one mile of a drilling rig and more than half a million live within a quarter mile, with people of color and low income residents suffering

the brunt of the health issues" ([Andrade, et al.](#)). Especially considering the ways in which engaging with environmental issues often requires a sense of empathy, a direct understanding of those impacted, the health issues with extraction may be especially compelling as opposed to an often abstracted climate change argument.

[3.1: Case Study, Venezuela](#)

[3.2: Case Study, U.S. \(Texas/Permian Basin\)](#)

[3.3: Case Study, U.S. \(the Bakken\)](#)

[3.4: Analysis and Research](#)

[3.5: Works Cited](#)

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3.1: Case Study, Venezuela

Case Study: Venezuela

While water is essential to human life, oil isn't, but we treat them equally. And there are a number of related environmental issues to investigate. Extraction and delivery of oil brings up similar issues of local environmental damage and human consequences of that damage. One way to consider these issues is to look at the role that oil use, trade, and extraction has in specific examples, especially in petrostates.

Definition: Petrostate

"A country with several interrelated attributes: government income is deeply reliant on the export of oil and natural gas, economic and political power are highly concentrated in an elite minority, and political institutions are weak and unaccountable, and corruption is widespread" ([Council on Foreign Nations](#)).

Please watch the video below, taking notes and posing questions.

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[View this YouTube Video online](#)



Answer available at the end of this section.

Answers

Case Study: Venezuela

Venezuela serves as a meaningful current case study of a petrostate, and the impact global and national policies of extraction can have on citizens. The Council on Foreign Relations defines a petrostate as "a country with several interrelated attributes: government income is deeply reliant on the export of oil and natural gas, economic and political power are highly concentrated in an elite minority, and political institutions are weak and unaccountable, and corruption is widespread" ([Council on Foreign Nations](#)). The council notes, "Countries often described as petrostates include Algeria, Cameroon, Chad, Ecuador, Indonesia, Iran, Kazakhstan, Libya, Mexico, Nigeria, Oman, Qatar, Russia, Saudi Arabia, the United Arab Emirates, and Venezuela" ([Council on Foreign Nations](#)). Considering Alexander Etkind writes that "oil is related to dictatorship, corruption, and aggression," it's important to understand the various ways in which "the oil curse," called "the Dutch disease" economists and "extractivism" by anthropologists, impacts nations not currently defined as petrostates by the Council on Foreign Nations and to question the position of oil in environmental injustices to a nation's citizens alongside a nation's governments and their foreign policies. Understanding the history and connections opens large questions of local and global impact of oil extraction and trade.

Read the following as part of this case study and write a Response.

- ["Venezuela: The Rise and Fall of a Petrostate"](#)
- [Human Rights Watch: "Venezuela: Events of 2023"](#)
- ["Oil, Climate, and War: The Curse of the Petrostate"](#)

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3.2: Case Study, U.S. (Texas/Permian Basin)

Case Study: U.S. (The Permian Basin)

Oil extraction is a major issues locally, regionally, and nationally in the United States. And oil use impacts climate change, species loss, and human health, as well. While the U.S. is not considered a petrostate, the Venezuelan case study can inform research in U.S. oil extraction. To understand this issue better, let's look at two oil-producing regions in the U.S.: the Permian Basin and the Bakken.

Please view/ read/ listen to the resources on the following for resources on The Permian Basin:

The Permian Basin (TX)

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[View this YouTube Video online](#)



- Read "[Boomtown](#)"
- Listen to *Boomtown* podcast, episodes "[Rise of the Permian](#)" (S1E2) and "[Dust to Dust](#)" (S1E3)

3.3: Case Study, U.S. (the Bakken)

Case Study: U.S. (the Bakken)

Like the Permian, the Bakken region (primarily Montana and North Dakota), is a hot spot for some of the oil-related environmental justice issues we have covered. Beyond just the nonhuman ecological impacts, the videos below emphasize the human socio-economic, gendered, racial, and policy issues that regions like this face.

Please watch the following resources on the Bakken, taking notes and posing questions.

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

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3.4: Analysis and Research

Oil Extraction Analysis and Response

Take some time to review the definitions of *environmental justice* and *petrostate*. Consider the direct local/regional impacts of extraction on the local communities, the issues of our use, the larger issues of global policies, and slow violence as you research extraction practices and their impacts.

Please read and/or watch 3-5 of the following and write a [Response](#) on this chapter.

- [Standing Rock Protests](#) in the Bakken
- [Dakota Access Pipeline](#) leaks (other coverage of [leaks](#)).
- [Federal policies](#) shifting
- [Enbridge in WI](#)
- [Louise Erdrich's piece on Enbridge in MN](#)
- ["This Used to be a Beautiful Place: How the US Became the Biggest Fossil Fuel State"](#)
- ["Fossil Fuel Racism in the United States: How Phasing Out Oil, Coal, and Gas Can Protect Communities"](#)
- ["Energy Accessibility"](#)

Answer available at the end of this section.

Answers

Oil Extraction Analysis and Response

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4: LAND

Learning Objectives

This chapter will help you accomplish the following:

- Understand the complexities of conceptual and real land and species on American identity
- Analyze Aldo Leopold's land ethic
- Research and evaluate local, regional, and/or national land use



How we relate to land involves all of the topics we have covered thus far. Our perception of land as object for use or subject to preserve changes our interaction with it. How we divert and dam rivers for agricultural or other uses, how we pollute or preserve waterways, and how we extract oil and gas resources are a part of this and demonstrate what we prioritize. Is the land around us for our use primarily--agriculture and oil and gas extraction--or is it valuable as is? These questions get at what [Aldo Leopold](#) called "land ethic" as he came to understand how we can relate to land as part of our community and learn from the spaces we inhabit.

Analyzing the history of the United States' relationship to land, as an example, offers meaningful insights into how perceptions have material effects on land and species. We were all taught about manifest destiny, the idea of dominion over land and the species inhabiting that land (though species were often left out of the conversation). Manifest destiny is the notion of a free expanse of land that drew European colonists to the portion of North America that would become the United States. An understanding of land and species (along with water and oil, of course) impacts how we relate to the land. As Jon Mooallem writes in *Wild Ones*, "the story of American wildlife would become a story of an infinitely receding Eden" (7).

4.1: U.S. and Land

4.2: Land Ethic(s)

4.2.1: Indigenist Ethics and Land Ethic

4.3: Local Land Use

4.4: Observation--Field Notes Activity

4.5: Additional Observation Activities

4.6: Works Cited

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4.1: U.S. and Land

Mooallem's assertion that the U.S. is an "infinitely receding Eden" draws on the results of westward expansion, land use, and extinctions (7). As Europeans colonized western territories, animal extinctions (and Indigenous genocide) simultaneously occurred. In the early to late nineteenth century, such extinctions influenced explorers like William Temple Hornaday (see the video below) and [Carl Akeley to create museum habitat dioramas](#) in order to preserve dying species and habitats for public viewing, giving rise to natural history museums, where many of us have exposure to species we may never see in their natural habitats (if either the species or the habitats still exist).

Please watch both of these videos, taking notes and asking questions.

YouTube Video

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Such education on habitats and potential extinctions changed cultural knowledge of evolution, extinction, and the age of the Earth, especially with the bone wars of the nineteenth century. Just as there were gold rushes in U.S. history, there were also dinosaur rushes in the nineteenth century as museum “bone wars” sought to lay claim to skeletal dinosaur remains for museum display, enabling the public to understand extinctions in a new way by the mid-twentieth century. Emily Alder writes that understanding “common ancestry” in the “evolution of species, and the ecological entanglement of life on earth set out in Darwin’s [On the Origin of Species](#) (1859) challenged humanity’s position as divinely created masters in the world, separate from other animals” (1084-85), and understanding contemporary land use and species extinction. Related, John Bruni writes, “according to *Scientific American* and *Popular Science Monthly* articles at the time, scientific practice became deeply enmeshed in an early-twentieth-century shifting worldview” of which evolution was one of the “dynamic components” (John Bruni 1-2). These brought on a paradigm shift by midcentury with an understanding that Earth hosted life well before humans, which grew along with human understanding of our own destruction after the world wars and with Leopold’s expanded view of community to include land and species.

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4.2: LAND ETHIC(S)

This legacy of a "receding Eden," in Mooallem's words, though, has inspired new relationships to land, notably Aldo Leopold's land ethic (see videos below). As Leopold writes in the "Land Ethic" section of *Sand County Almanac*, "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals; or collectively: the land" (204). Please complete the reading and viewing exercise below.

"Land Ethic" Reading and Video

Please read Leopold's "[Land Ethic](#)," taking notes for your Response and for Class Discussion.

After reading, please watch the video below for more background on Leopold's work.

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[View this YouTube Video online](#)



Answer available at the end of this section.

But the notion of an Eden receding is tied to particular worldviews, and those worldviews influence human relationship to land, [as discussed in the first chapter](#). The land ethic concept was not completely new but offered one way for many naturalists at the time, and still today, to understand complex issues of land and ecosystem subjectivities.

Answers

"Land Ethic" Reading and Video

4.2.1: Indigenist Ethics and Land Ethic

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4.2.1: Indigenist Ethics and Land Ethic

Many Indigenous communities had long held such land ethic worldviews, [as noted in the first chapter of this book](#). But Kyle Powys Whyte (Patawatomí) argues that we acknowledge "differences between Leopoldian and Indigenist ethics" for three specific reasons (2). Whyte notes the similarities in the ethics but asserts that 1) "Leopold's own work does not provide a model of environmental stewardship that many Indigenous peoples would identify with or find useful"; 2) "Leopold's history of ethics is based on a narrative the plot of which goes in the opposite direction of the narratives many Indigenous peoples would provide of their ethics"; and 3) "to prioritize Leopold as the interpreter and translator of Indigenous ethics" can "grant unsubstantiated and even offensive privilege to Leopold in relation to Indigenous ethics" (2). Putting Indigenist ethics into conversation with Leopold's land ethic enables broader consideration of land, the real and the conceptualized, in environmental studies.

Indigenist Ethics and Leopold's "Land Ethic"

Please watch the videos below and write a [Response Essay](#).

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[View this YouTube Video online](#)



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4.3: Local Land Use

So how do we apply the concepts of land ethics? One way is to take time to observe our surroundings to better understand the subjectivity of the land. Keeping an observation journal helps us pay attention to, articulate, and reflect on the world around us. What are the seasonal changes? What are the wildlife changes? How do we become intertwined with a place that we feel belonging with? Not only is this a practice that scientists have used for centuries, but also artists, writers, and all insightful thinkers. And, [research shows](#) that such observation and connection lends to our own mental health in positive ways (Weir). **Please do the following journaling exercise:**

YouTube Video

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[View this YouTube Video online](#)



Researching, experiencing, and/or working with local parks, preserves, arboretums, and community gardens enables analyzing and applying concepts. Below are some suggestions for how to choose a location and purpose for observational journaling:

- Analyzing how campus land could be used more sustainably
 - Proposing, building, or working in a campus community garden
 - Proposing, building, or working in a campus greenhouse
 - Working with student organizations to establish tree identification activities on campus
 - Working with student organizations to establish tree planting activities on campus
- Walks to local parks and trails
 - [Tree identification](#)
 - Field observation about changes in seasons, mushrooms, plant and animal species, or how folks use the space
- Class visits and interviews with local environmental education parks and preserves
 - Experiencing their programs (beekeeping, local plants and animals, prairie restoration, etc.)
 - Analyzing the importance of their educational facilities for various ages
 - Park or trail maintenance
- Field trips
 - In person (these are local to the Chicago region; if you are outside of this area, please explore areas near you)
 - [Garfield Conservatory](#)
 - [Morton Arboretum](#)
 - [Field Museum](#)
 - [Red Oak Nature Center](#)
 - [Lyman Woods](#)
 - [Aldo Leopold Nature Center](#)
 - Digital
 - [FermiLab](#)
 - [The Nature Conservancy](#)
 - [PBS Nature Lab](#)
 - [Explore LiveCams](#)
 - [The Virtual Field](#)

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4.4: Observation--Field Notes Activity

To practice some of the observational skills, **please take 30 minutes to an hour** to complete the following activity with no digital technology nearby (except your phone or camera if you are taking a picture instead of drawing). Taking the time away from tech communication and media is important in observation.

There are countless examples of how such field notes have advanced the natural sciences, environmental humanities, and artistic endeavors, but Jonathan and Roseann Hanson's Exploring site offers [great reasoning](#) with [historical references](#). Additionally, *John Muir Laws* has great resources on [the basics of wildlife drawing](#).

Please explore these resources to inspire and inform your Field Notes Activity below. You will share your entries with your classmates.

Field Notes Activity



Field Notes

Date:
Time:
Location:
Weather:

- What species do you see? You don't need to be able to identify them all. Describe them as best you can.
- In writing, describe as you observe, considering all of your senses. You don't have to have full sentences for this field activity. Are birds singing? Do you hear a woodpecker in the distance? Do you smell pines, dirt, exhaust from passing traffic? Do you feel the humidity on your skin? Are you sitting on moss?
- Draw and/or photograph something that you are observing. This could be the entire landscape, your bare feet in the mud, or a bee. Choose what you find significant.

- Reflect: what was your takeaway from this experience? What would you like to share with others? What did you learn, and what questions came up during the observation?

4.5: Additional Observation Activities

Please take a week to complete one of these exercises to share with your classmates.

Extended Field Notes Exercise

Choose a place to observe daily for at least fifteen minutes, without a phone. Keep the field notes from the previous page for each date and pay attention to seasonal, species, sensory, and your own changes in that space. Reflect on the extended experience at the end of your field research.



Walking Alone Together Exercise

[Marijke Hecht](#), [Michelle King](#), and [Shimira Williams](#) created this "Walking Alone Together" exercise during the pandemic as a way to pay attention to the world around us and to each other. It is similar to the observation Field Notes with a focus on joy. The exercise is to go on a walk every day for a week and take in what you're experiencing. This is more introspective than purely natural science. It's about how your time in the natural world impacts you.

Date:

Title (wait until after your walk to give it a title):

What did you notice?

What did you think about?

What do you wonder about?

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5: OUR ROLE AND SOLUTIONS

Learning Objectives

This chapter will help you accomplish the following:

- Analyze environmental solutions to the issues we have studied
- Research a solution in depth and articulate it to your peers
- Synthesize the environmental issues we have studied

Humans, as one of the most impactful species on the natural world, can create positive change. It can be overwhelming to consider our detrimental [impact in environmental issues](#). It's daunting. But, in thinking through human impact on the natural world and solutions, it helps to delve deeper into decisions we all make daily in our personal decisions and to be informed about our own consumption and think through the many solutions to environmental issues.

Take some time to look through at least one of the solutions below to share in class.

- New Designs

YouTube Video

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[View this YouTube Video online](#)



- Species Conservation

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



- Community

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



- Desalination (podcast)

YouTube Video

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[View this YouTube Video online](#)



5.1: Take Apart Activity

5.2: Solutions Presentation

5.3: Revisiting Sustainable World Building

5.4: Works Cited

5.1: Take Apart Activity

Exercise: Take Apart

For this activity, you will "take apart" something, literally and/or figuratively--a coffeemaker, a pen, sunglasses and/or coffee, sugar, chocolate, AI, etc.--to research mining, manufacturing, and consumption in the context of what we study in this class. This exercise will enable you to apply what we have studied this semester, reflect on the implications of the product, offer solutions, and present to the class.

For this assignment, the objectives are as follow:

Objectives for this assignment:

- To investigate the global environmental impact of a common item
- To evaluate scientific sources to analyze and critique the integrity of the information presented, realize how information/misinformation is distributed, research greenwashing vs. legitimate sustainable practices, address issues of slow violence, and articulate the contributions of how technology affects information exchange
- To develop a project involving writing, data collection, data analysis, data reporting and proposal presentation to demonstrate knowledge of how the scientific community functions using established methods

The trailer below highlights some of the consumption issues that get at what you have studied and what this exercise is about.

Please take a few minutes to watch it.

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Each group will research the questions below, working with credible sources through the library, and each student will then individually write an essay analyzing what you have found in light of environmental justice and sustainability issues we have discussed in class. You will have some class time to work but will often have to finish the research and writing outside of class. **Your answers to the questions below will come in as a group, but your Final Essay will be individual.**

Take Apart Day 1:

a) In groups, choose an appliance or object to take apart. Document the following about the process, including photos.

- Inventory: Take an inventory of the pieces that comprise your item, including images of each. Identify the components of the product and create a parts list (Bill of Materials, BOM) for the entire product.
- Analysis of Design and Design Alternative: Perform a functional design analysis of the product. This means after identifying the parts of the product, figure out what the product does and what each part does, as best as you can. Determine how a product accomplishes its function.
- Engineers often look to improve performance, increase marketability, decrease cost, and increase assembly efficiency, among other things. For this class, we are seeking to make the item more sustainable in some way. Identify one area that could be potentially improved to achieve that.

b) Where did the materials for this item originate and what is the life cycle and costs of the material? Answer the following questions in your essay (for three materials in your item):

- For each different object, determine how the material was made. For example, if you have screws in your pile of objects, you would determine that screws are made from metal, or more specifically zinc coated iron. For this example, you would need to determine why the iron screws were coated with zinc, in addition to where the iron and zinc come from. Some of this is hard to tell, but do your best.
- Where is the material mined/processed, and what are the human and environmental impacts in that area/those nations?
- What companies are involved, and what political/social factors affect production?
- What is the lifecycle of each material – starting with the raw material and ending with its disposal or reuse? Outline the process (for example, what socio-political issues and environmental justice issues surround mining the product, transporting it, and recycling or disposing of it?).

Take Apart Day 2: What scientific advancements have been made with or because of the materials used in this item and how is each scientific advancement related to environmental issues?

Begin by referring back to earlier, when your group was discussing essential and non-essential uses of each material/item., and answer the following questions in your essay (for each material):

- What major scientific advancements (e.g. polymerization or invention of steel) needed to happen to make this part of your item a reality?
- Why did these advancements happened (e.g. give the context to the advancement)? For example, steel could have been invented when people were trying to make more durable weaponry. The uses of steel were not only in weaponry, but methods of transportation, roadways, railways, appliances, and buildings, particularly after the 17th century.
- How does your material link to technology--both in the US and globally? The example of steel would be expanded upon in this manner by discussing how steel used in railways allowed for faster travel of people and things--allowing communication and item building to quicken. You could then go on and discuss how faster travel helped technology in trains and eventually airplanes. More travel requires more sophisticated communication systems (e.g. at the airport or at rail stations), again feeding into the technology that has benefited from the invention of steel.
- What two countries have either benefited most or suffered most with regards to the scientific advancements related the part?

Take Apart Day 3: What consumer concerns have you revealed in your research?

By this point in this assignment, your group will be familiar with the material, function, and related scientific advancements that occurred for your part to be fabricated or as a result of your part's fabrication. Answer the following questions in your essay (for five materials in your item):

- What consumer concerns, both locally, nationally, and even internationally, have you revealed in your research?
- What were you aware of before starting this project and what are you aware of now?
- Do any of the new items you are now aware of concern you? Why or why not?
- Are there any groups, national or international, that are concerned with the materials/parts you were given to research? What is their argument? Do you support it?
- List the two major recent consumer concerns for each part. Provide data to support each concern.

Take Apart Essay

For this individually written 3-4 page essay, you will summarize your Take Apart research and focus on a specific portion of the research to analyze more in depth in terms of environmental justice. For instance, you could focus on the amount of transport your item required from mining through manufacturing or you could focus on how the product could be designed more sustainably.

Please cite credible sources and integrate with our course's readings, activities, and lectures up to this point. I strongly recommend meeting with the Writing Center of your institution or with your instructor during office hours to go over a draft of your essay.

Possible topics are below:

- Why is the item essential or not? Think about if and how the technological advancements balance with the environmental or human rights costs.
- How does your research on this item connect with another text or news item from the course and what significant conclusions have you come to?
- How does informed consumerism change your approach to thinking about materials, engineering, or purchasing?
- How should we use technological innovations that you studied in the Take Apart Research and that we have looked at in class to alleviate environmental issues?
- Is it important for the general public to be informed about materials sciences, mining, the history of technological innovations and/or advancements, and engineering?
- What sustainable engineering design practices should be emphasized in future innovations?

5.2: Solutions Presentation

Take some time to think through hope. Human impact on the world can be wonderful and often has been. **Please read/view the following before completing your Solutions Presentation.**

- Rebecca Solnit: "Grounds for Hope"
- "Climate Change: A Crisis of Hope by Elin Kelsey"

YouTube Video

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[View this YouTube Video online](#)



Exercise: Solutions Presentation

Solutions Presentation

For your 4-5 minute verbal Solutions Presentation with slides or other visuals, you will choose an environmental issue that interests you--it can be one we have discussed in this class, one from your Take Apart Research, or a separate one that you find compelling--and research and present various solutions for that issue.

The presentation should include the following:

- Context: state the issue and provide data on why it's a problem
- Scholarly literature: briefly outline various books and articles that you used in your research
- Your argument/thesis: clearly state what your solutions are
- Evidence: argue for how the evidence on the issue suggests that your solutions are relevant and effective
- Visual: Prepare a PowerPoint presentation to enhance your presentation and help the audience follow its most salient points. Presentations will be followed by questions and comments. You will be assessed on your professionalism, the content of your presentation and responses to questions, and your presentation skills (eye contact, voice modulation, body language, keeping to the time limit, etc.). Be sure to rehearse your presentation before delivery.

Proposal

Your proposal should provide a brief (1-2 paragraph) overview of your planned project. Be sure to include the following: 1) a provisional title; 2) an introduction paragraph that describes the broad topic that your research will help us better understand; 3) a more specific paragraph that describes your planned research, articulates the research question you hope to address, and describes the contribution that you hope that your research will make; and, 4) a description of the methodology and sources that you plan to utilize.

As you brainstorm, try working with the following template to generate ideas, which you can then flesh out more fully in your proposal: I plan to study [brief description of topic]. What I hope to understand is [question that your research will address]. I will work to shed light on this question by analyzing [describe key sources here]. This topic is significant and worth pursuing because [describe what you see as the significance of the research].

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5.3: Revisiting Sustainable World Building

What would you change with your Sustainable World now? After learning about several environmental issues in depth, researching for your Take Apart Project, and analyzing some solutions, please go back to your own World Building Activity answers and the work you did with your group. **You don't have to re-watch the video below**, but it is below if it is helpful.

Consider the following questions:

- What answers would you change and why?
- Do you see more issues than you did at the beginning of this text?
- Do you see more solutions?
- What stands out to you personally as the biggest environmental issue, and how hopeful do you feel about approaches to solve it (perhaps revisit your [Personal Narrative](#), as well)?

After considering all of this, please write a [Response](#) to share with the class.

What we have covered is how narrative impacts environmental issues. Not only does being able to articulate a world we want help us create it, but the scientific questions we ask and research we prioritize change the policies we build out of that science. After the work in this chapter and after defining your own relationship to other species and to the natural world, **please take time to watch the video below, "Imagining Climate Change Futures" to inform the Sustainable World Building Activity to complete in groups in class. Please also keep all of your solo and shared work below so that we can revisit it at the end of this book.**

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



Sustainable World Building Activity: Solo Work

Imagining and articulating ideal futures helps not only reveal what needs to change in our current environment but also helps us dream of what is possible. We often imagine catastrophic environmental futures, but as we will study, opening our minds to possibilities and working for those creates positive change.

To put this into practice, try this Investing in Futures World Building Exercise, adapted from the [Investing in Futures card game](#).

- **Work through the bullets below on your own first**

Environmental Studies is inherently interdisciplinary. Food and Agriculture impact governmental policies and Economy. Schools and Living Conditions impact Food and Healthcare, and so on. On your own, write down some things in the categories that would build your ideal world. Dream big. Do not hold yourself back with what is possible right now. Brainstorm your dream sustainable world. Then, as a group, talk over options for the different areas below and build your collaborative dream of a sustainable world. You will share these with the class and explain not only how you came to this decision and why but also how each of these impact others.

- Government (democracy, AI, matriarchy, monarchy, only people under 75 in government, only people voted by the majority of the entire nation, etc.)

- Economy (living wage for all, capitalism, self-sustaining, etc.)
- Schools/ Universities (voluntary k-12 education, free college tuition, education up until a certain grade and then trades/apprenticeships, etc.)
- Transportation (public transit, walking/ biking infrastructure in all cities and towns, shared rides, etc.)
- Living Conditions (communal living, rural/agricultural, mostly urban with natural spaces added and the rest of the country left for other species, children live separately, etc.)
- Healthcare (universal healthcare, health monitoring via tech, free medical training with 1/10 folks able to practice medicine, rewards for good health, get rid of insurance companies, etc.)
- Food (veganism, vegetarianism, no big agriculture, no chemicals, local and organic accessible to all, eating only in season, etc.)
- Arts (all arts publicly supported, art education for all, music/theater/exhibits available to all for free, sustainable art only, etc.)
- Work (80 hr/week half the year and leisure the other half, equal pay, jobs paid based on importance rather than market value, 20 hours of work/ week, no work and universal pay so that people do what they are passionate about without worrying about salary, etc.)
- Any other categories you would like to add?

Answer available at the end of this section.

Sustainable World Building Activity: Shared Work

Share your ideas from above with your group members

- Work with your group members to create a community-built sustainable world and take notes
- Share your community-built sustainable world with your full class, taking notes on their ideas
- After sharing, please work through questions below on your own to share with the full class in discussion

Discussion Questions

1. What were the insights from your peers' original answers and how you negotiated to come to a consensus as a group?
2. After all groups share their sustainable worlds, what patterns do you see?
3. What are the major areas of disagreement among groups?
4. How could we work towards some of these goals?
5. How is the interdisciplinary nature of Environmental Studies important to this exercise, and how did the inquiry into your own ideals and the negotiation with others' ideals impact your understanding of the field?
6. How is imagination important to "make possible" the "recuperation and recomposition" that Haraway calls for, and why is "mourning irreversible losses" important to that (Haraway 160)?
7. Research credible sources ([AU students can learn about credible sources here](#)) about your ideas in the Imagining Futures exercise and reflect on how what you wrote there is drawn from your own understanding of the natural world, what is possible, and what we are bound by. Does an understanding of how narratives shape us help address some obstacles in your dreaming?

Answer available at the end of this section.

Answers

Sustainable World Building Activity: Solo Work

Sustainable World Building Activity: Shared Work

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INDEX

E

environmental sciences

[Introduction to Environmental Studies](#)

Environmental studies

[Introduction to Environmental Studies](#)

GLOSSARY

Please familiarize yourself with these Environmental Studies terms. Note them in readings and apply them as you work through activities.

Definitions

Anthropocene:

Paul Crutzen's proposed geographical and cultural term for the era of human impact on Earth (Crutzen and Stoermer 20). It is widely accepted informally as a way of describing the human impact on the planet and its start date debated (Keys, et al), though its official term for an epoch is not approved by geologists (International Union of Geological Sciences). Along with others, Donna Haraway offers other terms to upend the binary language of "anthropo" that separates humans from other species, and sees the Anthropocene as "more a boundary event than an epoch," asserting it is "our job is to make the Anthropocene as short/thin as possible and to cultivate with each other in every way imaginable epochs to come that will replenish refuge" ("Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin," 160). Haraway suggests the term Chthulucene to define the "dynamic, ongoing [...] forces and powers of which people are a part" and in which "collaborative work and play with other terrans, flourishing for rich multispecies assemblages that include people will be possible" ("Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin," 160).

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Anthropomorphism:

attributing human characteristics to the nonhuman.

Bioaccumulation:

"the process by which a chemical substance is absorbed by an organism from all routes of exposures as occurs in the natural environment (i.e., dietary and ambient environment sources) and achieves a level that exceeds those in the exposed sources" (Bjorkland, Tobias, and Petersen).

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Citizen Science:

Also called "community science" or "participatory science," this is science in which "the public participates voluntarily in the scientific process to address real-world problems," including "forming research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, and solving complex problems" ("Citizen Science"). See [SciStarter](#) for Citizen Science Projects you can participate in.

Environmental Humanities:

The interdisciplinary “conception of the environmental as inextricably entangled with the social” (de Graauw and Fiore 184-187).

Environmental Justice:

“The just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment,” advocating for all to be free of environmental dangers and have equitable access to sustainable spaces and health ([EPA](#)).

Invasive Species:

“A non-native species that causes harm to the environment, economy, or human, animal, or plant health” ([National Park Service](#)).

Material ecocriticism:

Serpil Oppermann writes that material ecocriticism developed from “[t]he radical revisions of our ideas about the description of physical entities, chemical and biological processes, and their ethical, political, and cultural implications represented in recent discourses of feminist science studies, posthumanism, and the environmental humanities [...], and emphasizes that “we can read the world as matter endowed with stories” (21). This term highlights the ways in which scientists as observers and interpreters of the human and nonhuman world depend on their own narratives in “reading” the material world and need narratives to share their findings.

Nonhuman:

Plants, animals, landscapes, ecosystems.

Petrostate:

“A country with several interrelated attributes: government income is deeply reliant on the export of oil and natural gas, economic and political power are highly concentrated in an elite minority, and political institutions are weak and unaccountable, and corruption is widespread” ([Council on Foreign Nations](#)).

Posthumanism:

Thinking of humans as both technological and animal with permeable boundaries. Rosi Braidotti writes, “the common denominator for the posthuman condition is an assumption about the vital, self-organizing, and yet non-naturalistic structure of living matter itself,” specifically focusing on the “non-dualistic understanding of the nature-culture interaction” (Braidotti 2).

The Sixth Extinction:

our current era of human-caused extinction via climate change, ocean acidification, deforestation, invasive species, and other human causes ([Kolbert 2-3](#)).

Slow Violence:

“A violence that is neither spectacular nor instantaneous but instead incremental, whose calamitous repercussions are postponed for years or decades or centuries” (Rob Nixon, “Slow Violence”).

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Trans-corporeality:

“all creatures, as embodied beings, are intermeshed with the dynamic, material world, which crosses through them transforms them, and is transformed by them” (Alaimo, “Trans-corporeality,” 435-438).

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