

Racism, Colonialism, and Extraction in the Geosciences

Spring 2022 // M/W 10-11am (starting Feb 2, 2022)

This syllabus was initially created in 2021 by Mara Freilich, Lyssa Freese, Michaela Fendrock, Meghana Ranganathan, and Julia Wilcots.

Updated in 2022 by Megan Gillen, Lyssa Freese, Michaela Fendrock, Meghana Ranganathan, and Julia Wilcots.

Course run in 2022 by Megan Gillen, Lyssa Freese, Zoe Aarons, Meghana Ranganathan, and Julia Wilcots.

In each reading group, we will read a combination of foundational texts in feminist science and technology, critical race studies, and the decolonizing science studies along with studies that apply these ideas to the geosciences specifically.

In this course we will read about and discuss the philosophy of science, extraction, and environmental justice, in both a historical and a modern context. We will apply concepts and practices like feminist theory and two-eyed seeing that we read about to our own science via a series of activities and a semester-long project. Through reading a combination of foundational texts in feminist science and technology, critical race studies, and decolonial science studies along with geoscience specific literature, we will take a critical eye to the history, context, and current approaches of the geosciences. This class will have one term project with multiple check in points along the way to help you get feedback on your work. One class each week will focus on discussions of readings, while the other will be activity based.

This course is best suited for students and postdocs who are interested in studying issues of race, decolonization, critical science studies and/or environmental social sciences. Previous URGE participants are encouraged to participate. If you participated in this seminar last year, you are welcome to join us again.

Expectations:

Sign up to lead one discussion focused class in the semester

Participate in the weekly activities

Complete readings and reflections before class

Create a final project and share it with the class

Inclusivity and Accommodations:

We aim to foster a sense of community in this classroom and consider this classroom to be a place where you will be treated with respect. We welcome individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. If this standard is not being upheld, please feel free to speak with us. If you need disability-related accommodations, we encourage you to reach out

to us, and we will work with you to make sure this class is something you can participate in.

Leading a discussion

Sign up to lead a discussion here. When you lead the discussion, please:

1. Prepare a few slides reviewing each assigned reading (usually 1 slide per reading goes well) and talk through these (usually you shouldn't need more than 5 or so minutes to do this, feel free to keep it brief!). Here is an [example](#).
2. Have some discussion questions prepared ahead of time to guide the conversation
3. Decide if you want people paired, grouped, or left in one large room on zoom
4. *Only if you are interested, find additional material to help guide your discussion!*

Projects

Please check out the final page of the syllabus for more detailed information about the projects.

Want a project partner? Fill out this link by Thursday, February 17th at 12pm [link removed].

Feedback on the course

Please provide any feedback you have throughout the course to this jamboard [link removed].

Pre-reading (Feb. 2)

[Reading with Reciprocity](#) by Max Liboiron (Métis) and Deondre Smiles (Ojibwe) (2 pages)

Assignment

Write a short reflection about the piece, some prompts include:

How do you read?

How does this piece make you think about the way you read?

Have you had any experiences with reciprocal reading, such as close, constructive, positive or other types of reading as proposed by Dumit?

We will ask you to keep this reading in mind, and to refer back to it as you engage with further readings in this course, and with each other's term projects, so that you are engaging with reciprocity.

Week 1: Philosophy of Science (Feb. 7 + 9)

Learning goals: Rethinking the approach to the way we do science

1. Roy, D. (2004). [Feminist Theory in Science: Working Toward a Practical Transformation](#). *Hypatia*, 19(1), 255-279. doi:10.1111/j.1527-2001.2004.tb01277.x (25 pg)
2. Bartlett, Cheryl, Murdena Marshall, and Albert Marshall. "[Two-eyed seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing](#)." *Journal of Environmental Studies and Sciences* 2.4 (2012): 331-340. (9 pg)

Week 1 Activity: Project Ideas and Brainstorming

Come to class with ideas for your term project, and we will do brainstorming and feedback activities.

Week 2: Institutional Science (Feb. 14 + 16)

Learning goal: Contemplate the role of the University and other institutions in the history of science and how we do research today

1. [Burn It Down: The Incommensurability of the University and Decolonization](#) Mayorga et al. 2019 (19 pg)
("From A Definition of Settler Colonialism" through "A Decolonial Alternative to the University")
2. Liboiron, Decolonizing geoscience requires more than equity and inclusion
<https://www.nature.com/articles/s41561-021-00861-7>

Week 2 Activity: Critical thinking about how to write a land acknowledgement (Feb. 16)

Check out the resources and readings below, coming to class prepared to discuss land acknowledgements and write one yourself.

1. Land Acknowledgements meant to honor indigenous people too often do the opposite
<https://theconversation.com/land-acknowledgments-meant-to-honor-indigenous-people-too-often-do-the-opposite-erasing-american-indians-and-sanitizing-history-instead-163787>
3. [Land-grab Universities](#) (High Country News article)
Interactive website: <https://www.landgrabu.org/>
University of Cambridge article: <https://www.cam.ac.uk/stories/great-university-land-grab>
Op-ed about MIT: <https://thetech.com/2012/09/21/killeen-v132-n39>

Week 3: Who does Climate Change Science and Who is Impacted? (Feb. 22 + 23)

Learning goal: Understand the impact of who does science on the research that is done, and evaluate the role of those impacted by this science

1. [Climate change in context: putting people first in the Arctic](#) (6 pg)
2. The lack of diversity in climate science research <https://www.carbonbrief.org/analysis-the-lack-of-diversity-in-climate-science-research> 8
3. [Why aren't there more journal papers by African geoscientists?](#) (Eos)
+ Accompanying paper (if you have access):
<https://www.sciencedirect.com/science/article/abs/pii/S0012825220303081#!>

Optional:

- a. <https://journals.sagepub.com/doi/abs/10.1068/a45388>
- b. <https://www.popsugar.com/news/environmentalism-white-saviour-complex-47985241>
- c. [A global assessment of Indigenous community engagement in climate research.](#)
Dominique M David-Chavez and Michael C Gavin 2018 Environ. Res. Lett. 13 123005 (18 pg)

Week 3 Activity: Who does your research impact, and who do you cite? (Feb. 23)

We will have a discussion on who your research impacts and what those impacts are. During the second half of class, please come with a piece of work (by you or a work that is relevant to your field) to analyze who is cited in that work with others. Check out the best practices the group came up with [here](#).

Week 4: Rethinking our approach to Science (Feb. 28 + Mar. 2)

Learning goal: Rethink how we talk about our science and the role of inclusivity in our work? How do we frame the problems we want to tackle? How can we reframe them?

1. [Being a Scientist Means Taking Sides](#) (4 pages)
2. Beier P, Hansen LJ, Helbrecht L, Behar D. A How-to Guide for Coproduction of Actionable Science. *Conserv Lett* [Internet]. 2017 [cited 2021 Oct 23];10(3):288–96. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/conl.12300>
3. Firsting in Research. Max Liboiron. (Blog post) <https://www.heliotropejournal.net/helio/firsting-in-research>

Week 4 Activity: Share a rough outline of your project (Mar. 2)

Bring a rough outline of your project. We will split into breakout rooms and work together on editing them. You can use [this worksheet](#) to get your outline started.

Week 5: Geology, Extraction, Imperialism (Mar. 7 + 9)

Learning goal: Awareness of the role of extraction and imperialism in historical and current scientific practices.

1. Dinosaurs and Indians: Fossil Resource Dispossession of Sioux Lands, 1846 –1875 by Lawrence W. Bradley (2010). Pgs: 55-57, 66-end <https://digitalcommons.unl.edu/dissertations/AAI3397860/>
2. Excerpts from A Billion Black Anthropocenes or None (<https://manifold.umn.edu/projects/a-billion-black-anthropocenes-or-none>):
 - a. Preface
 - b. Opening 3 paragraphs of “Geology, Race, and Matter”
 - c. *Optional: “Earth Archives, Geologic Subjects, and the Race of Strata” (in the second chapter)*
3. [Recognizing Geology’s Colonial History for Better Policy Today](#) (Eos)

Week 5 Activities:

Virtual museum tour (Mar. 7)

Please find the website of a museum and look through it for how it discusses where its displays are from, and its history of extraction and colonialism. Be prepared to pair off and discuss/critique the way museums make this information available. (Burke Museum, Yale Peabody Museum [see Bradley 2010], and The Field Museum)

Values Statements and Land Acknowledgements (Mar. 9)

We will use this [worksheet](#) to write land acknowledgements based on our brainstorming three weeks ago,

or on values statements.

Week 6: Land Rights and Earth Observation (Mar. 14 + 16)

Learning goal: Discuss the importance of land/place in geoscience, implications of "basic science", data ownership and indigenous data sovereignty, legacies of colonialism in maps and top-down earth observation.

1. [A Native Hawaiian-led summary of the current impact of constructing the Thirty Meter Telescope on Maunakea](#) (12 pg)
2. [Dividing Lines](#)
3. [Why lakes and rivers should have the same rights as humans](#) Leonard 2019
4. *Optional:*
 - a. [Landscapes of Belonging: White Possession and Settler Subjectivity in Mashpee, Massachusetts](#) (introduction - link to local land rights issues)
5. Additional readings on this topic:
 - a. [Our Sea of Islands](#) (14 pg)

Week 6 Activity: Guest Speaker, Alvin Harvey (Mar. 16)

Modern space exploration and Indigenous world views may appear contradictory at first, as a mirror of the conflict between western science and Indigenous science, but within this dichotomy lies foundations for rich discussion and action on ensuring space is explored and developed for all. Traditional methods of education outreach and the intentional degradation of Indigenous science have enabled colonial and harmful practices in space-based industry and academia. For Indigenous scholars, concerned members of the space community, and others, there are emerging paths towards alternative approaches on how we imagine and work towards constructing interstellar futures. This talk will focus on one such path, starting with a grounded take on Indigenous experiences in STEM higher education, followed by an examination of space-based education and outreach in Indigenous communities, lessons learned from previous conflicts between Indigenous communities and the space community, and finally a discussion of how Indigenous science and western science can work together through relationality.

Week 7: Oceanography and Militarism and Funding (Mar. 28 + 30)

Learning goal: Understand intricate ties between military agendas/funding and modern oceanography (especially at WHOI), reflect on where our funding comes from and motives behind money

1. [An Orchestra of Instruments: Discovering the Sea at Scripps](#) - a history of Scripps as told by the Navy with information about modern programs
2. [Science on a Mission](#) by Naomi Oreskes
 - a. Introduction pages 1-6 (until 'Why Oceanography') [5 pages]
 - b. Chapter 3: The Palace Revolt

- p. 97-110 [14 pages]
- In the intervening sections, we learn about how scientists responded. One that I want to highlight is this passage, about Hank Stommel “Not all pure science was done by solitary individuals, Stommel argued, but most of it was, and this should remain the central focus of the institution: pure science, done primarily by individuals (or small groups) who decided for themselves what to do and how to do it.”
- p. 117-118 (from “Theoretical advance required rigor...” to “It’s really that simple”) [1.5 pages]
- p. 132-137 [4 pages]
- c. Conclusion
 - p. 469-471 [2 pages]
 - p. 494-502 [8 pages]
- 3. Science for the People: Documents from America’s Movement of Radical Scientists by Sigrid Schmalzer, Daniel S. Chard, and Alyssa Botelho
 - a. Chapter 3: Militarism p. 63-66 [4 pages]
- 4. *Optional*
 - If you have time to read more, read the section “The ‘Ghost’ of Military Justification” (p. 101-104), which includes discussion of sexism. Then read p. 118-132 which describes the scientists’ attempts to change the course of WHOI by appealing to the trustees.
 - To read more about acoustic oceanography and issues with public permitting, read p. 477-484 ([ATOC refers to a program to acoustically measure the ocean temperature](#))
 - [History of oceanography](#) as told by WHOI (Read the main page and if you would like, explore the website by clicking the arrows on the timeline to read about each era)

Week 7 Activity: Who funds you, and how can you change that? (Mar. 30)

Please read <https://eos.org/opinions/reframing-funding-strategies-to-build-reciprocity>. In class, come prepared to break off and discuss what organization is funding you and what are their motivations? In the second half of class we will discuss alternative funding sources.

Week 8: Environmental Racism (Apr. 4 + 6)

Learning goal: Get familiar with some of the foundational work on environmental racism, its history, and modern impacts.

1. [Environmental Justice in the 21st Century: Race Still Matters](#) (21 pg)
2. <https://atmospherictales.com/2020/07/18/environmental-justice-in-the-us-part-1-fighting-the-good-fight/> Part 1 of 2 interview with Mustafa Santiago Ali
3. *Optional*
 - [Confronting Environmental Racism: Voices from the Grassroots](#) Anatomy of Environmental Racism (first chapter, approx 20 pages)
 - <https://www.ucsdclimatereview.org/post/a-new-movement-intersectional-environmentalism>
 - <https://www.newyorker.com/news/news-desk/environmentalisms-racist-history>

– <https://www.youtube.com/watch?v=5bFXNRjExT8> interview with Julian Brave Noisecat

Week 8 Activity: Present updates on project (Apr. 6)

This will vary based on what your project is, but come with a rough/first draft of your project prepared, and we will break into rooms to share and give feedback.

Week 9: Environmental Justice & Land Exploitation (Apr. 11 + 13)

Learning goal: Expand on our understanding of environmental racism, concentrating on the role of land/place, and environmental justice.

1. https://www.huffpost.com/entry/national-park-service-anniversary-indigenous-people_n_55dcdd7ce4b0a40aa3ac9998
2. https://onlinelibrary.wiley.com/doi/full/10.1002/wcc.275?casa_token=MjzlKe0_cc8AAAAA%3AjOyTPscwLLSRBmGbG0Mox7MkbCSzsCMvHt9rtRvWqlmpWM81o3cR2kVBzc4XP4i5STg5FfLZHgwYaTJg
3. [A ghetto land pedagogy: an antidote for settler environmentalism.](#)
4. <https://www.science.org/doi/10.1126/science.abe4943>

Week 9 Activity: Decolonial environmental movements and advocacy (Apr. 13)

Either reflect on an environmental movement you have been a part of, or check out some of the prominent environmental organizations and the language they use ahead of time. We will discuss what does it look like to decolonize environmental movements and advocacy?

Week 10: Environmental Justice in Boston (Apr. 25 + 27)

Learning goal: Awareness of environmental justice, its history and modern impacts in Boston, to make a local connection.

1. Introduction and Chapter 5 of Michael J. Brennan's dissertation "The Dream is in the Process:" Environmental Racism and Environmental Justice in Boston, 1900-2000.
<https://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?article=4179&context=etd>
 - a. Introduction PDF pages 11-28 (thesis pages 1-18)
 - b. Chapter 5 PDF pages 163-184 (thesis pages 153-174)
2. Article about the climate & EJ bill Charlie Baker just signed into law
<https://energynews.us/2021/04/29/environmental-justice-advocates-plan-to-hold-massachusetts-officials-accountable/>

Week 10 Activity: Guest speaker (Apr. 27)

Week 11: Practical Applications (May 2 + 4)

Learning goal: Bring together all of our previous coursework and reflect on your current understanding and gaps you want to better understand.

Pick an optional reading and bring it to share; written reflections

All optional readings are listed below:

- “Listening and learning from traditional knowledge and Western Science: a dialogue on contemporary challenges of forest health and wildlife” Mason et al.
- Colonialism, the climate crisis, and the need to center Indigenous voices
<https://www.ehn.org/indigenous-people-and-climate-change-2655479728/particle-7>
- [Are Glaciers ‘Good to Think With’? Recognising Indigenous Environmental Knowledge](#)
- [Making feminist points by Sara Ahmed](#)
- <https://journals.sagepub.com/doi/abs/10.1068/a45388>
- <https://www.popsugar.com/news/environmentalism-white-saviour-complex-47985241>
- [A global assessment of Indigenous community engagement in climate research](#). Dominique M David-Chavez and Michael C Gavin 2018 Environ. Res. Lett. 13 123005 (18 pg)
- [Confronting Environmental Racism: Voices from the Grassroots](#) Anatomy of Environmental Racism (first chapter, approx 20 pages)
- <https://www.ucsdclimatereview.org/post/a-new-movement-intersectional-environmentalism>
- <https://www.newyorker.com/news/news-desk/environmentalisms-racist-history>
- <https://www.youtube.com/watch?v=5bFXNRjExT8> interview with Julian Brave Noisecat
- If you have time to read more, read the section “The ‘Ghost’ of Military Justification” (p. 101-104), which includes discussion of sexism. Then read p. 118-132 which describes the scientists’ attempts to change the course of WHOI by appealing to the trustees.
- To read more about acoustic oceanography and issues with public permitting, read p. 477-484 ([ATOC refers to a program to acoustically measure the ocean temperature](#))
[History of oceanography](#) as told by WHOI (Read the main page and if you would like, explore the website by clicking the arrows on the timeline to read about each era)

Week 11 Activity: Project Presentations! (May 4)

Class Projects

The purpose of the class project is to give you the opportunity to apply what we have learned in this class to something you are interested in. This is a relatively open project, so we have broken it down into four components: 1. A brainstorm, 2. An outline, 3. A draft, and 4. A final product, to make it more manageable and to allow for feedback, which will come from your peers. You can choose to apply as many of the lessons from this course to your project, or as few. Below, we have listed some examples to make it clearer:

- Designing a module for an existing EAPS class or a module for [GeoContext](#)
- Incorporating the ideas discussed in this class into your thesis proposal/generals papers/research statements/teaching statements
- Writing an article for Eos or Scientific American like [this one](#) by geoscientist Dr. Tamara Pico.
- Creating an actionable, specific plan for incorporating local communities into your field research
- Designing diverse geoscientist cards (for use/dissemination in intro. EAPS courses)
- Designing a field trip or field course or field project (e.g. on public land using this funding: [BLM National Landscape Conservation System grants](#))

Resources:

- a. [A global assessment of Indigenous community engagement in climate research.](#)
Dominique M David-Chavez and Michael C Gavin 2018 Environ. Res. Lett. 13 123005 (18 pg)
- b. [The Darker Side of John Wesley Powell.](#) Pico, Tamara. *Scientific American*.

You should incorporate some of the materials from this course into your project– for example, if your thesis proposal does not already have aspects of feminist philosophy of science, you could work on a section that clearly incorporates that. Or if you need to work on a DEI statement for job applications, and want a thoughtful space to do that, please do so during this time.