Climate Enlightenments
Spring 2025
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What is climate? What is its history? What is the history of how we know it? The first of these questions leads to the history of the role that climate played in the new forms of "enlightened" history that, in the course of the eighteenth century, alternately attributed racial difference to climate variation (Montesquieu) and strove to identify the role of human action in planetary thermodynamics (Buffon). The Enlightenment conception of climate was, however, far more capacious, heterogeneous, ambiguous and conflicted than is apparent from its most influential writers. The physical climates of the Enlightenment era – from the Little Ice Age of the seventeenth century to the El Nino winds of the revolutionary era – varied enormously over time and space. To start a history of climate knowledge with the Enlightenment is not to suggest that all the problems of the present – from climate denialism to climate reductionism – can be attributed to the Enlightenment. The case could be made – and this is a theses that we will explore – that it was not until the nineteenth century that the *episteme* of the "human sciences" produced the conditions for climate science to take the form it eventually did. Fossil capitalism in colonial India and settler colonialism in North America combined with shifts in intellectual thought to shape the priorities, methodologies and knowledge economies of engineers, physicists, meteorologists, economists in the centuries after the Enlightenment. Climate, knowledge and empire together produced a lethal bind in which climate knowledge was extracted by the same empires which also extracted the resources that were produced by this knowledge.

What did the historical role of extraction in defining the very categories of knowledge that are assumed to create the truth of "climate" mean for the history of the knowledge which was not in fact "enlightened" – knowledge which slipped between the Enlightenment's framework for defining what "knowledge"? How does the history of climate modeling, climate skepticism, climate debt, climate statehood, climate imperialism and climate warfare change what is required of historians? In the second part of the course, we'll explore how historians have measured the *heat of history* by tracking the labor and energy produced and exchanged between human and non-human actors. From the Columbia river to the "three poles," the heat of history was fueled not just by machines and human labor but also by Malthusian, neoclassical and planetary conceptions of scarcity buoyed by the disciplines of environmental law and economics. The case could be made that the discovery of global warming was, in some very real sense, an intellectual, political, and physical consequence of the "Cold War" and

"Nuclear Winter." What historical scholarship helps reveal is the radical fragility of the multi-scalar and multi-polar climate machine of the 21st century.

How does the counter-factual, the multipolar, the more-than-human, multisensory, the extra-sensory and thermodynamic make it possible to disrupt the historical ontology of this machine? How do the planetary movements of birds, fires or El Nino winds in through and around the space of a multi-polar climate machine change we imagine the "we" and "us" of "climate? How does the history of interaction, violence and resistance between human and non- human actors from the monsoon wind in the Indian Ocean to Artic fauna in the Bering Strait change how we think about the past and present of the multipolar climate machine? What does a spatio-temporally expanded sense of the climate present mean for the variables and parameters of climate models, the causal theories that are used to adjudicate climate debt, and the vocabularies that are - and might yet be - deployed by seekers of climate justice? The final projects for the course will build upon all these questions.

Requirements
30% One individual presentation
20% Weekly posts, reflections, participation and attendance
20% Two "further explorations" as group assignments. You are not required to do all the readings for your "further exploration" topic during the semester, but you are asked to dip into them enough to be able to see what a deep plunge would feel like, to convey the scope of the topic to the class and to connect it to the general themes for that week's readings, as defined in the general question. Further description in email and overview of part 2 (on Moodle)
20% Final Project. A 7–10-page Youtube video, research paper, theoretical essay, grant proposal or the equivalent drawing on all your work – starting with the symposium video – and plunging one step deeper into the question of climate art, climate science, and climate justice.

Further Explorations
The product of this exercise should be a visualization of the historical space and/or processes these readings cover situated in the historical space of the main readings, a brief description of the visualization and a 5-minute informal presentation of what they do or don't add to the conversation from the week. Please also gather a compilation of abstracts, TOCs and any useful graphs and diagrams. We'll then spend some time looking over these during class, and considering how we can use them to answer the broader question.

Some basic questions to ask about all the readings: What is the period covered by these readings and what are the processes which they emphasize within that period? What are the different ways that they promise to expand on, deepen, crystallize, sharpen or contradict the larger picture that you get from the core readings about the long trajectory of climate knowledge?

- You can divide the readings or do the visualization together. If you can't find a time to work together, you can divide the articles and make two visualizations and/or maps and then come together and combine them in the end.
- The two hours of prep does not include the time spent gathering the material you're covering. That you should do as soon as you sign up, and ILL anything that is not immediately available.
- The two hours of prep also doesn't include the time you'd spend doing the main reading, which you still have to do those weeks. But as long as you clearly link your further exploration visualization to the main question for the week in your visualization and explanation, you won't have to write a weekly reflection.
-For articles (in general), you should extract as much as you can from the titles, subtitles, abstracts, intros, conclusions and section headings.
-For books, you should look at the reviews, the tables of contents, the introductions and the indexes.
-With any time left, you can start skimming to see what you might want to read closely to get a *microscopic* lens on the subject.
-The reading length varies with the complexity of the readings and the question.
- After around one hour, you should start thinking about how to map out whatever information that you've gathered.
- For the visualization, you can use an analog map, draw out a concept map, or you can use mapping software like Timeline JS, or ArcGIS. The format isn't that important as long as you visualize kinds of connections these readings establish between and within places, accounting also for abstract processes.
-**Please pick your topics by Thursday of Week 8** (our first post-break class). Write your name next to the topics, which I've moved to the end of the syllabus, so the center doesn't look so crowded.
-Whoever is the second person that signs up will be your partner.

Final Project Options

Option 1: Expansion of Symposium Video

-A video for a Youtube channel called "Climate Enlightenments: The Gen Z Chapter"

In this video, you will expand on the Baker video while focusing on how the readings for the second part of the semester expand on Baker's insights on climate politics as they relate to the making of climate art, including the telling of climate stories, climate science including but not restricted to climate modeling, and climate law/advocacy/activism including but not restricted to the litigation of climate debt.

Option 2: Research Paper or Scholarly Project

The historical and historiographic portion of a research paper, theoretical essay or a similar project in your major that you might submit to a scholarly journal. Doesn't have to be a history

journal – in fact I would love for you to incorporate historical material and themes into a paper framed for a Music, Biology or Engineering journal. But the paper (or paper section) should be historical – i.e. drawing on our readings and the arguments they make about historical processes in climate history. In conceptualizing this project, you are strongly encouraged to use your work from the whole semester – including but not restricted to Baker's video. The starting point is the same question as above. What does climate history tell us about the possibilities of climate art, including the telling of climate stories, climate science including but not restricted to climate modeling, and climate justice including but not restricted to the litigation of climate debt?

Option 3: Grant Proposal
-A grant proposal for a summer or post-grad project to create a "more-than-humanities laboratory", a "multipolar climate machine" or a "counter-factual arboretum."
These can be addressed to Swarthmore and Tri-Co based funding pools: Aydelotte, Cooper, Lang, Haverford Humanities Center and CPGC, Bryn Mawr College's Project for Peace.
are all possible options, but so are larger pockets of funding ex: National Institute of Health: https://researchtraining.nih.gov/career/undergraduate
Happy to discuss and explore if you're aware of opportunities closer to your discipline.

You can also craft a proposal for the role that an undergraduate research team might play in a much larger project like this one from the Kauffman Foundation:
https://kaufman.pittsburghfoundation.org/new-initiative-research
While you can't yourself apply for this one yourself (you have to be faculty), you can certainly lead the undergraduate research team of a "more-than-humanities laboratory" creating a "multipolar climate machine" or a "counter-factual arboretum."

Books to Purchase
This is just the list of books that you will need to have hard copies of. There are other books available for the class on the bookstore which you can purchase using the TAP funds – *Fossil Capital*, *Green Imperialism* -- especially if you think you might explore that topic further in this class or the future.

Vladimir Jankovic, *Reading the Skies: A Cultural History of English Weather, 1650-1820* (2011)
Zeke Baker, *Governing Climate: How Science and Politics have Shaped our Environmental Future* (2024)
Richard White, *The Organic Machine: The Remaking of the Columbia River* (1996)
Bathsheba Demuth, *Floating Coast: An Environmental History of the Bering Strait* (2019)

Disability Accommodation

If you believe you need accommodations for a disability or a chronic medical condition, please visit the Student Disability Services website for details about the accommodations process. Since accommodations require early planning and are not retroactive, contact Student Disability Services as soon as possible. You are also welcome to contact me [the faculty member] privately to discuss your academic needs. However, all disability-related accommodations must be arranged, in advance, through Student Disability Services."

Week 1: Overview: How Climate Makes History

In-class handout and videos.

Week 2: How to Argue About Climate History

- Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* (2009)
--Mike Hulme, "Reducing the Future to Climate: A Story of Climate Determinism and Reductionism," *Osiris* 26:1 (2011), 245-266
- Mark Carey, "Science, Models, and Historians: Toward a Critical Climate History," Enviornmental History (2014)
- Fabien Locher and Jean-Baptiste Fressoz, "Modernity's Frail Climate: A Climate History of Environmental Reflexivity," *Critical inquiry*, 2012-03, Vol.38 (3), p.579-598
-Vladimir Jankovic and James Rodger Fleming, "Revisiting Klima," *Osiris* 26:1 (2011), 1-15
-Françoise Vergès, "Racial Capitalocene," *Futures of Black Radicalism* (2017)
-Robert Emmett and Thomas Lekan, "Whose Anthropocene: Revisiting Chakrabarty's Four Theses," *Environment and Society Portal* (2016)

Question: What are Chakrabarty's four theses in your own words? In what way do the other pieces echo them or offer fifth, sixth and seventh theses? Having read all these pieces, what do you see as the most essential three theses that you would want to pursue in the class?

Week 3: Why Climate Changes: The Little Ice Age

-Franz Mauelshagen, "Redefining Historical Climatology in the Anthropocene," The Anthropocene Review (2014)
- Francisco J Tapia or and Andrés Navarro, "Coupling Human Dynamics with the Physics of Climate: A Path Towards Human Earth Systems Models," Environmental Research: Climate (2024)
-Dagomar Degroot, "Climate Change and Society in the 15th to 18th Centuries," *Wires* (2018)

-Wolfgang Behringer, “Cultural Consequences of the Little Ice Age,” in *A Cultural History of Climate Change*
-David Lieberman and Elizabeth Gordon, Chapters 5, *Climate Change in Human History* (2018), 101-133

Question: According to historian Franz Maulschagen, the discipline of “Global Change Analysis” “still suffers from an elementary deficit in understanding human collective agency and the social dynamics underlying it.”
He defines the “sociosphere” as “ that part of the Earth System (or the global sphere) inhabited, worked, and changed by human societies” the amplification or diminution of which depends on the “ecodynamics developed by human social systems and the limits of the surrounding ecosystem” which in turn are “relative to specific modes of societal growth, i.e. the way in which human societies make use of energy and material resources.”

If the task of historical climatology is to “identify those sociogenic forces and their emergence within the history of social systems that have become the drivers of global climate change,” how can it gain from a more precise integration of physical processes into human history, as proposed by Tapia and Navarro? What does the case of the Little Ice Age – as described by Behringer, Degroot, and Liberman/Gordon– suggest about the potential benefits and challenges of either approach?

Possible Lecture by David Cohen.

Week 4: The Climate of Enlightenment and the Enlightenment of Climate
-1786 weather observations
https://archives.tricolib.brynmawr.edu/repositories/7/archival_objects/300329#!#add_desc
http://triptych.brynmawr.edu/cdm/search/collection/SC_JohnHunt/
-John Hunt weather diary from 1776
-J.R. Fleming, “Climate and Culture in Enlightenment Thought”, *Historical Perspectives on Climate Change*
-Jan Golinski, “Introduction, “Forecasting by the Heavens,” “Sensibility and Climate Pathology,” “Climate and Civilization,” “Conclusion,” *British Weather and the Climate of Enlightenment* (2007)
-Vladimir Jankovic, “Public Meteors”, “Laboratory Atmospheres,” *Reading the Skies,*

Question: What was the role of secular history – as developed in the European Enlightenment - in identifying the role of humans in driving global warming Anthropogenic climate change – the human ability to shape the temperature of the planet – was not, as we learn, in fact

"discovered" by the European Enlightenment. Arab, Hindu and Creole astrologers, Mughal painters, Native American weather diarists and African botanists all created the foundations for what has been called "environmental reflexivity." At the same time, the Enlightenment period – even in Europe – was defined by multiple possibilities – the imperial and colonial future of climate science was not necessarily pre-ordained by climate Enlightenment.

Supplemental exploration: Primary Source Exploration – Eighteenth Century Collections Online.

Possible session at FHL with Jordan Landes and Celia Caust-Ellenbogen

Week 5: Climate Knowledge and the Human Sciences

-Mark Cousins, "The Human Sciences" in Mark Cousins and Athar Hussain, *Michel Foucault*
-Michel Foucault, "Labor, Life, Language," *The Order of Things: The Archaeology of the Human Sciences*
-David Livingstone, "Weather, Wealth and Zonal Economics," in *The Empire of Climate*
-Carl Wennerlind and Frederick Albritton Johnson, "Enlightened Scarcity" in *Scarcity*
-Deborah Coen, "The Advent of Climate Science," Oxford Research Encyclopedias (2020)
-M. Heymann, "The evolution of climate ideas and knowledge," WIREs Climate Change, 1(4), 581–597

Question: How did the gap between climate experience, climate perception and climate knowledge - between the epistemics of climate models and the actual nature of the climate crisis -- expand or contract in the centuries since the Enlightenment? What did the imperial, settler colonial and military priorities and agendas of climate scientists mean for the future parameters of climate models and the qualities of climate data which are still being entered into these models? What does the narrative of the "human sciences" – in which life, labor and language were claimed by biology, economics and linguistics (broadly conceived as the fore-runner of fields that range from Anthropology to Data Science) help explain about the history of climate science and the climate state in the modern era?

Supplemental exploration: Chapter summary

Climate Knowledge Before the Enlightenment

-Matthew D. Therrell and Makayla J. Trotter, "Waniyetu Wówapi: "Native American records of weather and climate."
-J.T. Olsson, "The World in Arab Eyes: A Reassessment of the Climes in Medieval Arab Scholarship," Bulletin of Soas (2014), 487-508
-Michael Dove, "Introduction: The Anthropology of Climate Change: Six Millenia of the Study of

the Relationship Between Climate and Society," and -" How Long-Standing Debates Have Shaped Recent Climate Change Discourses

Renaissance Climates- Arika
-Mark Maslin and Simon Lewis, "the Hidden History of the Anthropocene," "The Meaning of the Anthropocene"
-Sam White, "Unpuzzling American climate: New World experience and the foundations of a new science," Isis, 106, 544–566.
-Sara Miglietti, "Climate Theory: An Invented Tradition?," Spreading Knowledge in a Changing World, ed. Charles Burnett and Pedro Mantas-España (2020), pp. 205-224.

Week 6: Climate Archives of Colonial India
-Vinita Damodaran, "Climate, Environment and Crisis in Eighteenth-Century India," *The Oxford Handbook of the Seven Years War* (2024)
-Adrian P. Thomas, "The Establishment of Calcutta Botanic Garden: Plant Transfer, Science and the East India Company, 1786-1806," *Journal of the Royal Asiatic Society* (2016)
-Richard Grove, "Colonial Conservation, Ecological Hegemony and Popular Resistance: Towards a Global Synthesis," *Imperialism in the Natural World* (2013)
-Debjani Bhattacharyya, "A River is not a Pendulum: Sediments of Science in the World of Tides," *Isis* (2021)

Supplemental Exploration: Archive Maps of Climate Empire (details to follow)- Arika
-Garden History Records Held by Other Archives, https://www.nationalarchives.gov.uk/help-with-your-research/research-guides/garden-history-records-held-by-other-archives/
- Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism*, 1600-1860 (1996)
- Richard Drayton, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World* (2000)
- John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution* (2002)
- Judith Carney, *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World* (2009)
-Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (2007)
-Sarah Easterby-Smith, *Cultivating Commerce: Cultures of Botany in Britain and France, 1760-1815* (2018)
-James Fisher, *The Enclosure of Knowledge: Books, Power and Agrarian Capitalism* (2022)
- Carey McCormack, *Claiming Indigenous Plant Knowledge: From Botanical Exchanges to Resource Extraction in the Indian Ocean World* (2024)

- Banu Subramaniam, *Botany of Empire: Plant Worlds and the Scientific Legacies of Colonialism (Feminist Technosciences)* (2024)

Week 7: Climate Enlightenment Comes to America

-Georgina h. Endfield, "Illusory Prosperity," *Climate and Society in Colonial Mexico: A Study in Vulnerability* (2011)

-Ben Cullen and Christina Leigh Geros, "Constructing the Monsoon: Colonial Meteorological Cartography, 1844–1944," *History of Meteorology* (2020)

-J.R. Fleming, "The Great Climate Debate in Colonial and Early America," *Historical Perspectives on Climate Change*

-Zeke Baker, "Governing Climate in Early America, 1770-1840," and "Meteorological Frontiers: Climate Knowledge, Territory and State Formation, 1800-1850," *Governing Climate*, 1-102

Mid-Semester Symposium

Eris

Zeke Baker Ch 1, "Governing Climate in Early America"

Sherry Johnson, "The Violence Done to Our Interests," "In a Common Catastrophe all Men Should be Brothers," *Climate and Catastrophe in Cuba*

Georgina h. Endfield, "Illusory Prosperity", *Climate and Society in Colonial Mexico: A Study in Vulnerability* (2011)

Question: What does the case of Cuba and Mexico in the age of the American Revolution add to how we understand Baker's account of the specific experience that North America had of climate?

Winnie

Zeke Baker Ch 2, "Meteorological Frontiers: Climate Knowledge, Territory and State Formation, 1800-1850"

Anya Zilberstein, "An American Siberia," and "Jamaicans in and Out of Nova Scotia," *A Temperate Empire: Making Climate Change in Early America*

Gregory Cushman, "Humboldtian Science, Creole Meteorology, and the Discovery of Human Caused Climate Change in South America" Osiris (2011), 19-44

Question: How does the case of Siberia, Jamaicans in Nova Scotia and Humboldtian science in South America illustrate what lies beyond the dynamic that Baker locates in the USA during 1800-1850?

Part Two: Stabilizing Climate, Economizing Weather

Arika

-Zeke Baker, Ch 3, “Climate Does not Change: Agricultural Capitalism, Climatology and the Stabilization of Climate, 1850-1920,”
-Mike Davis, “El Nino and the New Imperialism, 1888-1902,” *Late Victorian Holocausts: El Nino Famines and the Making of the Third World* (2000)
-Carl Wennerlind and Frederick Albritton Johnson, “ Socialist Scarcity” and “Neoclassical Scarcity,” in *Scarcity : A History from the Origins of Capitalism to the Climate Crisis* (2019)

Question: In what way might Baker’s account of agricultural capitalism in the USA exemplify a larger problem that appears at the intersection of the emergence of neoclassical economics and the new imperialism of the El Nino era?

Melissa
-Zeke Baker, Ch 4, “Economic Rationalization of Weather: Risk, Prediction and Normal Weather, 1870-1930,”
- Stuart Schwartz, “Nature and Politics at Century’s Turn,” *Sea of Storms: A History of Hurricanes in the Greater Caribbean from Columbus to Katrina*
-Eric Rutkow, “A Changing Consciousness” in *American Canopy: Trees, Forests, and the Making of a Nation* (2013)

Question: How does the contrast between the Caribbean hurricanes North American forestry in the same period of climate history expand how you see the consequences of the economic rationalization of weather in the USA?

Group Three: Climate Crisis and the Politics of Climate Expertise

Aimi
Zeke Baker, Ch 5, “The Climate State and the Origins of a Climate Science Field, 1930-1980s,”
-Matthias Dörries, “The Politics of Atmospheric Sciences: “Nuclear Winter” and Global Climate Change,” Osiris 26:1 (2011), 198-233
Adrian Howkins, “An Environmental History of Decolonization,” and “Antarctic Détente” in *Frozen Empires: An Environmental History of the Antartic Peninsula* (2020)

Question: How does the case of the Nuclear winter and the colonization of Antarctica – the first an event in Cold War history and the second in the history of decolonization – expand the scope of the problem that Baker describes in his chapter?

Julian
Zeke Baker, Ch 6, “Governing Climate Futures: Environmental Security and Security Technologies”
Sarah Grossman, “Ugly Data in the Age of Satellites and Extreme Weather,” in *Immeasurable Weather: Meteorological Data and Settler Colonialism from 1820 to Hurricane Sandy* (2024)
Paul Edwards, “Simulation Models and Atmospheric Politics, 1960-1992,” in *A Vast Machine*

Question: How do Grossman's and Edward's respective accounts of satellites and atmospheric politics expand on the relationship that Baker establishes between international regimes of security and the politics of climate data? Is there a larger picture that appears beneath, above or beyond all these readings about the three-way historical relationship between climate, data and power?

Ellie

-Zeke Baker, Ch 7, "Future Struggles: Climate Security Experts and the Depoliticization of the Climate Future,"
-Neel Ahuja, "Race, Insecurity and the Invention of the Climate Migrant" in *Planetary Specters: Race, Migration and Climate Change in the Twenty-First Century*
-Adrian Howkins, "Preserving Power", "Melting Empires," in *Frozen Empires: An Environmental History of the Antartic Peninsula* (2020)

Question: How do these two accounts of the post-colonial climate era – from Antarctica to Syria expand on what "depoliticization" might even mean in the context of the climate future?

Daniel

-Zeke Baker, Ch 7, Future Struggles: Climate Security Experts and the Depoliticization of the Climate Future," in *Governing Climate*
-Paul Edwards, "Parametrics and the Limits of Knowledge," "Signal and Noise: Consensus, Controversy and Climate Change," in *The Vast Machine*
-Meritxell Ramírez-i-Ollé , "Rhetorical Strategies for Scientific Authority: A Boundary-Work analysis of 'Climategate'" Science as Culture (2015)

Question: How does the case of Climategate illustrate a larger problem that Baker is trying to describe about the "depoliticization" of the climate future. How does the politics of climate science - as described by Edwards and Ramírez-i—Ollé – require us to expand the terrain of "depoliticization" to the *internal* politics of climate science?

PART TWO: Overview

In the second part of the course, *The Heat of History: Expanding the Climate Machine* we will explore how the thermodynamic framework of history that is developed by Richard White in *The Organic Machine* – a book about the Columbia river – can be used to conceptualize the sociosphere of a climate machine that formed in the modern period USA but shaped the history of the global climate. Unlike "climate" or the "Anthropocene," the "organic machine" – as conceived by White – was governed by rules processes that were thermodynamic as well as historical – in which engineers, Native Americans, rivers, salmon, environmental lawyers and the EPA agencies all contributed to the distribution of labor and energy. How far can White's framework go in concretizing how we imagine the sociosphere of the multi-scalar climate machine that formed in post-Enlightenment centuries at the local, national and global scales of

the settler colonial U.S.A. and the global nexus of fossil capital? In what way does the "organic machine" that White locates in the Columbia river extend its logic to the Bering Strait and Antarctica?

The readings for Part Two are organized around a historical narrative that doesn't run parallel to Baker's so much as it surrounds it telescopically and then penetrates it microscopically. Behind this narrative is a question raised by Richard White's *Organic Machine* and the "tri-polar" moment in climate history. If the Columbia river – as White argues – was itself an "organic machine" can the same be said for the "Three Poles" of the Arctic, Antarctic and Himalayas? Are we all living inside a tri-polar organic machine, what does that mean for how we use historical knowledge and scholarship to address the problem of climate change whether it is through art, science, or advocacy and activism ? What White provides in *Organic Machine* is a model of how historians can incorporate "a more-than-human" perspective in the telling of environmental history. The physics of labor and energy creates the conditions, in his narrative, of a different reading of what *power* and *climate* really *are* than most of our readings from the first part of the semester. But this doesn't mean that it is the only way to do this. Bathsheba Demuth's *Floating Coast* – as we will see the following week - uses a very similar framework, but in many ways her conclusions are different. At the same time as we trace the historical expansion of White's picture to the "three poles" of climate history, we will also trace its conceptual expansion by considering its implications for climate art, climate justice and climate science. We will end by considering what this tri-polar climate model can mean for how we all imagine our own place in the time-space nexus of climate history. The relationship of the Arboretum to the planetary forest – as exemplified by SC Palmer's trips to the Arctic Circle and the influence of climate philosophies formed in the Indus valley on the political science of American forestry – underscores a much larger question that relates to all of us collectively and each of us individually. This is the question of how to relate the microscopic to the telescopic and, by extension, the individual to the collective.

What does historical scholarship mean for the potentials of climate art, climate science and climate laws that address the problem of climate justice? This is a conceptual path that we will trace from here on onwards. And your final projects can be centered broadly around the actual use of history for the related aims of climate science, art and justice.

Week 8: The More-than-Human Organic Machine (March 20)

- Emily O'Gorman and Andrea Gaynor, "More-than-Human Histories," *Environmental History* (2020)
-Richard White, *The Organic Machine: The Remaking of the Columbia River* (1996)

Main Question: Go back to your notes and Moodle posts from Weeks 2-3. How does "more-than-human histories" as defined by O'Gorman and Gaynor and embodied by *The Organic Machine* address or expand the problem of climate history as defined by Verges, Carey, Hulme, or Chakravarty? Would the "four theses" have looked different had Chakravarty read White's study?

Week 9 More-than-Human <-> Multipolar: The Transversal Organic Machine from the Columbia River to the Bering Strait (March 27)

- Rosi Braidotti, "Transversal Post humanities," in *Philosophy Today* (2019)
- Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc's Bay," J. *Law, Power, action and belief: a new sociology of knowledge?* London, Routledge, 1986, pp.196-223
- Bathsheba Demuth, Introduction, "Whale Country," "The Climate of Change," "Species of Enlightenment" and Conclusion to *Floating Coast: An Environmental History of the Bering Strait* (2011)
-Additional chapter of your choice

Main Question: What is the combined potential of the multipolar and more-than-human frameworks that are respectively offered each other in each of Demuth's chapters in *Floating Coast* for developing the "transversal posthumanities" or Michel Callon's actor-network theory of inter-species translation? How by extension does it conceptually and geographically expand the picture that White creates in the *Organic Machine*?

Week 10: A Tale of Three Rivers: The Liquidation of Third Pole Glaciers and the Climate Art of the Indus, the Ganges and Brahmaputra (April 3)

-"A Tale of Three Rivers" (Symposium uploaded on Moodle)
- Amitav Ghosh, "Stories," *The Great Derangement*
- Ben Okri, "Artists must confront the climate crisis – we must write as if these are the last days" *The Guardian* (2022)
- Dan Smyer Yü , "Multipolar Clime Studies of the Anthropocenic Himalaya, Andes and Arctic: An Introduction" in Dan Smyer Yü and Jelle J.P. Wouters, ed, *Storying Multipolar Climes of the Himalaya, Andes and Arctic Anthropocenic Climate and Shapeshifting Watery Lifeworlds* (2023)
- Vandana Singh, "Not Just the Science: A Transdisciplinary Pedagogy for Cryospheric Climes" in Dan Smyer Yü and Jelle J.P. Wouters, *Storying Multipolar Climes of the Himalaya, Andes and Arctic Anthropocenic Climate and Shapeshifting Watery Lifeworld* (2023)

Main Question: A Tale of Three Rivers was a 2023 virtual webinar held in combination with a class I was teaching on the three rivers of the Indus, Ganges and Brahmaputra. What might a

multipolar and more-than-human conceptual framework offer "real-world" actors like climate scientists, climate artists and activists for climate justice acting in this particular part of the Third Pole? Conversely, what does the work of these activists add to how we think about how the history of the "Three Poles" literally melts into that of the Indus, Ganges and Brahmaputra? With all this in mind, what do you make of the relative power of *stories,* climate models and the transfer of legal instruments in thinking about Third Pole Governance? Finally, how would the Cruickshank piece suggest about the tri-polar consequences of this conversation?

Week 11: Microbe Selves, the Physics of Sand and More-than-Human Climate Models (April 10)

- Casey Bester, "The Physics of Sand," Lecture on Panopto (in class)
- Scott Gilbert etc, "A Symbiotic View of Life: We Have Never Been Individuals," *Rev Bio* (2012), 325-4
- Donna Haraway, "Tentacular Thinking: Anthropocene, Capitlocene, Chthulucene," in *Staying with the Trouble* Staying with the Trouble: Making Kin in the Chthulucene (2016)
- John McPhee, "Los Angeles against the Mountains," *The Control of Nature* (1988)
- Mark Carey et all, "Impacts of Glacier Recession and Declining Meltwater on Mountain Societies," *Annals of the American Association of Geographers* (2017)

Main Question:

Professor Casey Bester's lecture on "the Physics of Sand" is now up on Panopto. After watching this lecture, please read the two pieces by Scott Glibert and Donna Haraway, followed by McPhee and Carey thinking about the implications that the physics of sand might have for expanding the "more-than-human" to a "more-than-humanities" methodology. Gilbert, who was Emeritus professor of Biology was a close collaborator of the Feminist post-humanist scholar Donna Haraway who was also trained as a development biologist. What are the questions that these two pieces by development biologists add to the "more-than-human" problem that forms between the Columbia river and the Bering Strait? How does that problem expand beyond human and "non-human animals" to that between humans and mountains as described by John McPhee and Mark Carey et all's respective accounts of humans and mountains in fire-struck California and the melting glaciers of the "Third Pole." McPhee's is a classic work of creative non-fiction by a leading environmental writer of our time. His account of fires in California is also an account of a cognitive lapse when it comes to humans and mountains. Carey's work on the "Third Pole" reveals the expansion of the framework which he introduced in his earlier articles to the problem of glacial melt in the tri-polar region of the "Three Poles" of the Arctic, Antarctic and the Greater Himalayas-Tibetan Plateau. How does the "physics of sand" – as described in the Bester lecture – provide a solution to a conceptual or

practical problem of California fires or melting glaciers of the Himalayas, Karakorum and Hindu Kush.

Week 12: Justice, Law and the Liquidation of the Climate Debt (April 17)

- Wennerlind and Johnson, "Planetary Scarcity," "Towards an Age of Repair?" *Scarcity: A history from the Origins of Capitalism to the Climate Crisis* (2019)

-Andreas Malm, "Who Lit This fire? Approaching the History of the Climate Emergency," Critical Histories

-Ian Kurnekawa, "Measuring the Cost of Pollution: Economic Life, Economic theory, and the Origins of Environmental Economics," *The Journal of Modern History* (June 2024)'

-Rikard Warlenius, "Decolonizing the Atmosphere: The Climate Justice Movement on Climate Debt" Environment and Development (2017)

Main Question: Climate history – as we have studied it – can only take us so far in providing the methodologies for calculating and litigating the climate debt. For that, we have to think about a problem that Foucault, Wennerlind-Johnson and many other readings have raised: the role that was played by economic thought and Economics as a discipline in shaping the actual history of climate. This is a problem that is both treated in and embodied by Richard Walrenius's study of the "climate debt" debt movement. There is, in other words, a complex relationship between law, debt, and justice. And at least one part of this complexity lies in the assumption that economic laws are *just*.

The three other articles for this week offer different ways of addressing this question. The final chapter from Wennerlind-Johnson really is the payoff for having followed the book since its Enlightenment chapter, since it is here that they really address the role that a theory of scarcity that formed in the Enlightenment context continued to play in *limiting* as well as *shaping* the possibility of "climate Enlightenment" well into the 21st century. Inasmuch as Walrenius's piece challenges the promise of repair that Wennerlind-Johnson conclude with, how does Malm's account of the role that irrational passions played in the shift from coal to steam and Kurnekawa's highly focused account of the origins of Environmental Economics make it possible to address the limitations of litigation in a historical environment shaped by at least one legacy of the "human sciences"?

Whether or not you do a "Further exploration," do take a look at the Climate Litigation database. -The Climate Litigation Database, https://climatecasechart.com/

Week 13 – Age of Katrina: Can Music Change an Actual Climate? (April 24)

- Lawrence Powell, “What Does American History Tell us about Katrina and Vice Versa?” Journal of American History, Volume 94, Issue 3, December 2007, Pages 863–876 - https://archive.ipcc.ch/publications_and_data/ar4/wg2/en/xccsc3-4.html
-Wai Chee Dimock, “World History According to Katrina” States of Emergency: The Object of American Studies, 143-60, 2008]
-Clyde Woods, “Do You Know What it Means to be Miss New Orleans: Katrina, Trap Economics and the Rebirth of the Blues” *American Quarterly* (December 2005)
-Clyde Woods, “Katrina’s World: Blues, Bourbon, and Return to the Source,” in *American Quarterly* (September 2009)
-Spike Lee, *When the Levees Broke*

Main Question: The relationship between the climate state, the racial capitaloscene and military empire was not just revealed but remade at the intersection of Katrina and the War in Iraq exactly 20 years ago. The musical legacy of Katrina – as described by Clyde Woods – will serve, this week, as a starting point to consider two related questions: what Katrina tells us about climate politics two decades later (our present) and what it reveals about the place of music in the history of climate justice.

Week 14 – Gardening through the Anthropocene: Labor, Life and Multisensory Knowledge at the Swarthmore College Arboretum (May 1)
- Richard B. Primack etc, “The growing and vital role of botanical gardens in climate change research” First published: 23 April 2021
- Sections from Copeland-Palmer Bird Diaries, Polar Ice Journal and Autobiography
- Jamaica Kincaid, “The Disturbances of the Garden”, *The New Yorker* (2020)
- Leslie Marmon Silko, Selections from *The Turquoise Ledge*
- Robin Wall Kimmerer, Selections from *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teaching of Plants* (2012)
- Mary Siisip Geniusz, Selections from *Plants have so much to give us, all we have to do is ask: Anishinaabe botanical teachings* (2015)
- Beronda L. Montgomery, Selections from *Lessons from Plants* (Harvard University Press, 2021)

Main Question: What do plants know? How do we know what plants know? How do we know we know what we know and, relatedly, how does what we *think* we know constrain what we *might yet* learn from plants? Answers are suggested by these selections from the garden memoirs of Jamaica Kincaid and Leslie Marmon Silko and three major works in plant studies – *Lessons from Plants, Plants Have So Much, Braiding Sweetgrass.* In how they establish plant ontology as a subject of tremendous importance, they are also highly suggestive of the many

forms of knowledge contained in the space of the Arboretum. What is the story? How can it be told?

- Possible meeting with Arboretum staff
- Arboretum Staff
- Possible Event with Brent Michael Davis, Nora Thompson Dean, Touching Leaves Woman: For 4 Voices and 4 Birdroars, https://tripod.swarthmore.edu/discovery/fulldisplay?&context=L&vid=01TRI_INST:SC&search_scope=SC_All&tab=Everything&docid=alma991019474961004921