FROM SONGBIRDS TO WARHAWKS: CLIMATE CHANGE AS THREAT (& OPPORTUNITY) MULTIPLIER

ENV 381 SPRING 2020

Professor Meera Subramanian Office: Guyot Hall M44 (PEI) E-mail: meeras@princeton.edu Cross-listings: JRN 381/URB 381 Wed. 1:30 p.m. – 4:20 p.m. Class Location: Guyot Hall 154

Office Hours: Tues. 10:00am - noon (and by appt.)

Course listing: <a href="https://registrar.princeton.edu/course-offerings/

details?term=1204&courseid=015409

NOTE: This semester was interrupted by the Covid-19 pandemic, so the second half of the class was partially adapted to respond to the changing situation.

"RISING GLOBAL TEMPERATURES ... WILL INTENSIFY THE CHALLENGES OF GLOBAL INSTABILITY, HUNGER, POVERTY, AND CONFLICT. IN OUR **DEFENSE** STRATEGY, WE REFER TO CLIMATE CHANGE AS A 'THREAT MULTIPLIER'" $\sim DEFENSE$ **SECRETARY** CHUCK HAGEL



"WE SEE GLOBAL WARMING NOT AS AN INEVITABILITY BUT AS AN INVITATION TO BUILD, INNOVATE, AND EFFECT CHANGE. A PATHWAY THAT AWAKENS CREATIVITY, COMPASSION AND GENIUS. THIS IS NOT A LIBERAL AGENDA, NOR IS IT A CONSERVATIVE ONE. THIS IS THE HUMAN AGENDA" ~AUTHOR PAUL HAWKEN

Credit Loop by Maldoit via Flickr

DESCRIPTION

The US Department of Defense has called climate change a "threat multiplier," referencing military bases inundated by sea level rise and increased global political instability from extreme weather events, especially in vulnerable countries already struggling with poor governance and impoverished populations. Likewise, among conservation biologists and urban designers, farmers and social justice activists, there is acknowledgement that perennial challenges are all exacerbated because of a rapidly warming planet for these same

reasons. Every aspect of life on earth, for humans and other living creatures, is changing. This class will explore everything from the state of songbirds to the national security concerns of war hawks to agriculture to urban design to storytelling to social justice. The aim is to understand how, while climate change aggravates existing struggles, innovative climate action solutions might also help ease them. Visiting professor and award-winning journalist and author Meera Subramanian will bring her on-the-ground experiences reporting on environmental issues in India and the US to the classroom. There will be abundant guest speakers and one field trip to a local farm. Students are welcome to take a journalistic approach to their final paper.

REQUIRED READING

Books:

- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming, edited by Paul Hawken
- The Archipelago of Hope: Wisdom and Resilience from the Edge of Climate Change by Gleb Raygorodetsky
- A River Runs Again: India's Natural World in Crisis, from the Barren Cliffs of Rajasthan to the Farmlands of Karnataka by Meera Subramanian

Other readings will be available on Blackboard. Readings may change from what's listed here but will always be finalized at least one week before class.

LEARNING OUTCOMES

In this course, you will gain a broad understanding of the multiple ways that climate change is affecting the planet and how they interact with one another. You will gain recognition of the complex relationships between environmental problems and socio-cultural structures in both the rural and urban setting, learning how to analyze scientific and public policy issues from an environmental humanities perspective. You will also develop skills in communicating these issues within and across various disciplines, including for the general public. While understanding climate science isn't the objective, you will attain basic knowledge during the course.

REQUIREMENTS

1. Attendance and Participation (15%). This course is run as a conversation. Please come to each seminar with a thorough comprehension of the reading and be prepared to discuss it. Bring physical copies of the reading to class each day. You will not be able to participate fully without the text in hand. Students with more than one or two unexcused absences should expect poor class participation grades. Active participation, which means speaking as well as engaged listening to others, is rewarded.

- 2. Weekly reading responses/short exercises (15%). Each week, in response to the reading(s) for the upcoming class, you will write a 500-word reflection, due at 5:00 p.m. on the day before class via Blackboard. This allows time for everyone to read each other's responses before class the next day. It should be clear and grammatically correct, but it should also be informal and conversational, like an email or a blog post. The goal is NOT to summarize the reading(s) but to interact with and respond to them, exploring your criticisms or agreements, questions they inspired or other ideas that you were reminded of, perhaps from other classes. Be inspired by the words of author Joan Didion: "I write entirely to find out what I'm thinking, what I'm looking at, what I see and what it means. What I want and what I fear." Content is not graded but you will receive credit for posting and lose credit for failing to do so. Please respond to the Weekly Reading Response thread I set up and do not upload your response as a word doc. There may be short writing exercises in class.
- 3. Oral Presentation (10%). Each student will be responsible for leading the discussion on a class's readings. It should start with a short (5-7 minutes long) opening statement, noting key concepts and terms used in the reading(s) and explaining the main arguments the author(s) made. Please also find a complementary piece (it could be a book review, scientific paper cited in the reading, a critique, a parallel piece on the same subject but by a different writer, or even a podcast or video) and speak about its connection to the reading(s). Please post this complementary piece to the same Blackboard thread as for the reading responses by 5:00 p.m. two days before class so your fellow students can read/listen/watch it as well. It will be your responsibility to lead the discussion, so have questions prepared for the class to guide the conversation. There will also be a presentation about the in-progress final paper on the last day of class, although the final version is not due until Dean's Date.
- 4. Midterm Exam (25%): one-hour, in-class exam consisting of short written answers.
- 5. Final Paper (35%): Referring back to your weekly responses, think about which part of the class has inspired the most curiosity. Here is your chance to take this interest and expand upon it. The final paper can take the form of a reported journalistic feature article or an academic research paper, although it should be clear which one. It should be 12-14pp, double-spaced, and a maximum of 4,000 words. A two-page (double-spaced) prospectus of your piece is due on April 8, providing the general argument and structure of your piece and the sources it will draw upon. The final paper is due on Tuesday, May 12, 2020 at 11:59 p.m.

GRADING

Attendance and Class Participation:	15%
Weekly Reading Responses/Short exercises:	15%
Oral Presentation:	10%
Midterm Exam:	25%

Final Paper: 35%

Grading Standards for Papers:

Papers will be graded considering organization, spelling and grammar, argument, evidence, and style:

A: Superb. Paper is elegant and clearly organized, contains no grammatical or spelling errors, presents a clear and convincing thesis, which is supported by relevant evidence. Moreover, this thesis contains original insights and provocations.

A-: Excellent. Paper is clearly written and organized, contains no more than one or two grammatical or spelling errors, presents a clear and convincing thesis, which is supported by relevant evidence.

B+: Very good. Paper is well written and tolerably well organized, contains no more than a few grammatical or spelling errors, presents a clear and convincing, though fairly predictable thesis, supported by reliable evidence.

B: Very good. Paper is adequately written and may be somewhat haphazardly organized, contains no more than a few grammatical or spelling errors, presents a clear, though perhaps fairly predictable thesis supported by some evidence.

B-: Good. Paper is not particularly well written and may be somewhat haphazardly organized, contains a handful or more of grammatical or spelling errors, presents a thesis that is either unclear or unconvincing or both supported by some evidence.

C+ and below: Subpar. Paper is difficult to read and to follow, contains various grammatical or spelling errors, presents no clear thesis.

Late Papers/Makeup Exams Policy:

The midterm exam will not be rescheduled. If the final paper is handed in late, it will be marked down one third of a letter grade for each day or portion of a day it is late. Please let me know if you will be late. Exceptions only for illness with doctor's note or death/sickness in the family.

PLAGIARISM: DON'T DO IT.

In keeping with Princeton University's policies, plagiarism will be penalized severely. Don't do it. Please know that I refer cases of suspected academic misconduct to the Dean's Office, and follow Princeton's Honor Code: https://odoc.princeton.edu/curriculum/academic-integrity

ELECTRONIC DEVICES IN THE CLASSROOM: NO CELL PHONES OR LAPTOPS

In this course, you may not use a laptop, tablet, smart phone, or any other electronic device during class, unless it is specifically for a presentation of multimedia to the entire class or you have accommodation needs. Please do not take this course if you are not willing to follow this policy. Why this rule? This seminar is run as a conversation and conversations require everyone to be fully engaged. Forays online or onto your cellphone distract those around you and your instructors. The research is abundant: multitasking is impossible. When we think we are multitasking we are just toggling back and forth from one task to another and becoming unproductive at each. See Adam Gorlick, "Media Multitaskers Pay Mental Price, Stanford Study Shows," *Stanford News*, August 24, 2009, http://news.stanford.edu/news/2009/august24/multitask-research-study-082409.html; Peter Bregman, "How (and Why) to Stop Multitasking," *HBR Blog Network*, May 20, 2010,

http://blogs.hbr.org/2010/05/how-and-why-to-stop-multitaski/; Cindi May, "A Learning Secret: Don't Take Notes With a Laptop," *Scientific American*, June 3, 2014, https://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/; and Princeton Class of 2023 Pre-Read *Stand Out of Our Light* by James Williams, https://president.princeton.edu/princeton-pre-read

ILLNESS

We all want everyone to stay as healthy as possible, so please stay home and take care of yourself if you are ill, even if you think you're "over it." Let me know by email. But please do not use the excuse of illness as an opportunity to skip class, because you may become ill later, and that will entail missing too many classes. Regular class attendance is mandatory. And please strictly follow the latest university guidelines regarding the coronavirus: https://emergency.princeton.edu/what-to-do/public-health-alerts/2019-novel-coronavirus

ACCOMMODATIONS

Students with disabilities who need accommodations should speak with me directly as soon as possible as well as contact Princeton's Office of Disability Services for guidelines and assistance: https://ods.princeton.edu/

STUDENT RESOURCES

- Counseling & Psychological Services: https://uhs.princeton.edu/counseling-psychological-services
- McGraw Center Digital Learning Lab: https://mcgraw.princeton.edu/
- Office of Disability Services: https://ods.princeton.edu/
- Office of Undergraduate Research: http://undergraduateresearch.princeton.edu
- Reference Librarians: http://library.princeton.edu/hours/information
- Writing Center: http://writing.princeton.edu/center

CLASS SCHEDULE & ASSIGNMENTS:

Week 1 / Feb. 5: Introduction

- Introductions
- IN CLASS: Watch *Drawdown: Is it possible to reverse global warming?*: https://www.youtube.com/watch?v=RlowjpqY8QQ
- GUEST 3:30 4:00: Crystal Chissel, Project Drawdown VP of Operations and Engagement: https://www.drawdown.org/staff/crystal-chissell (via Zoom)

Week 2 / Feb. 12: Water

- GUEST 3:00 4:00: Erica Gies, independent journalist: http://ericagies.com/ (via Zoom)
- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming: Foreward (ix), Language (xiii), and Numbers (xiv-xv), Solar Water (p. 36), Water Saving-Home (p. 170).
- Meera Subramanian, A River Runs Again, Ch. 2 Water (pp. 69-113)
- Erica Gies, Sponge Cities, *Scientific American*: http://ericagies.com/wp-content/uploads/2018/12/Sponge-City-Revolution-Gies-SciAm.pdf
- Erica Gies, "The Radical Groundwater Storage Test," Scientific American: http://ericagies.com/wp-content/uploads/2018/01/Groundwater-Storage-California Gies Scientific-American.pdf
- Erica Gies, "Fortresses of Mud," *Nature*: http://ericagies.com/wp-content/uploads/2018/11/Fortresses-of-Mud Gies Nature.pdf

Week 3 / Feb. 19: Women & Girls

- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming: Women and Girls section (pp. 75-82)
- Aimee Jakeman, "At the Eye of the Storm: Women and Climate Change," *New Security Beat*: https://www.newsecuritybeat.org/2016/07/eye-storm-women-climate-change/
- Jessica Olson, "Women on the Front Lines of Change: Empowerment in the Face of Climate and Displacement," New Security Beat: https://www.newsecuritybeat.org/2018/02/women-front-lines-change-empowerment-face-climate-displacement/
- Meera Subramanian, *A River Runs Again*, Chapter 5 Ether (pp. 233-274)
- IN CLASS: "Weathering Change" (film), PAI: https://pai.org/videos/weathering-change/

Week 4 / Feb. 26: Security

- GUEST 3:00 3:45: Sherri Goodman, Senior Fellow at the Wilson Center's Environmental Change and Security Program and Polar Institute and former first Deputy Undersecretary of Defense (Environmental Security): https://www.wilsoncenter.org/person/sherri-goodman (via Zoom)
- Jared P. Scott, *Age of Consequences* (film): https://www.youtube.com/watch?v=Ltjua10RFy4 (possible group showing)
- CNA Military Advisory Board, "National Security and the Accelerating Risks of Climate Change" report: https://www.cna.org/CNA files/pdf/MAB 5-8-14.pdf
- David Hasemyer, "U.S. Military Precariously Unprepared for Climate Threats, War College & Retired Brass Warn," *InsideClimate News*:
 https://insideclimatenews.org/news/23122019/military-climate-change-unprepared-national-security-conflict-heat-risk-war-college-2019-year-review
- Sarah Light, "The Military-Environmental Complex," Wharton Public Policy Initiative brief: https://publicpolicy.wharton.upenn.edu/issue-brief/v1n12.php

- OPTIONAL: Office of the Under Secretary of Defense for Acquisition and Sustainment,
 "Report on Effects of a Changing Climate:"

 <u>https://climateandsecurity.files.wordpress.com/2019/01/sec 335 ndaa-report effects of a changing climate to dod.pdf</u> (good complement to *InsideClimate News* piece since it draws from this report)
- OPTIONAL: G7, "A New Climate for Peace" report: https://www.newclimateforpeace.org/

Week 5 / March 4: Better Cities

- GUEST 3:00 4:00: Anu Ramaswami, Princeton University Professor of Civil and Environmental Engineering, the Princeton Institute for International and Regional Studies, and the Princeton Environmental Institute, and Director, Chadha Center for Global India: https://engineering.princeton.edu/faculty/anu-ramaswami
- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming: Walkable Cities (pp. 86-87), LED Lighting (pp. 92-92), Heat Pumps (pp. 94-95), District Heating (p. 99), Insulation (p. 101), Building Automation (p. 106), Refrigeration (pp. 164-165)
- Brad Plumer, "The Biggest Climate Change Story in the World this Week is Quietly Playing Out in Rwanda," Vox: https://www.vox.com/energy-and-environment/2016/10/12/13250202/hfcs-air-conditioning-montreal-protocol
- Anu Ramaswami, "Meta-Principles for Developing Smart, Sustainable, and Healthy Cities," *Science*: https://www.researchgate.net/publication/303365203 Meta-principles for developing smart sustainable and healthy cities
- Anu Ramaswami, "Unpacking the Urban Infrastructure Nexus with Environment, Health, Livability, Well-Being, and Equity," One Earth: https://www.sciencedirect.com/science/article/pii/S2590332220300518#!

Week 6: March 11: Midterm & Final Paper Discussion

- Mid-term exam (one hour)
- Final paper brainstorm/pitch session



March 18: SPRING BREAK {PRINCETON UNIVERSITY SHIFTS TO ALL-REMOTE LEARNING}

Week 7 / March 25: Biodiversity {via ZOOM}

- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming: Land Use section (pp.107-134)
- Brooke Jarvis, "Insect Apocalypse," *New York Times*: https://www.nytimes.com/2018/11/27/magazine/insect-apocalypse.html

- Gustave Axelson, "Vanishing: More Than 1 in 4 Birds Has Disappeared in the Last 50 Years," Living Bird: https://www.allaboutbirds.org/news/vanishing-1-in-4-birds-gone/? https://www.allaboutbirds.org/news/vanishing-1-in-4-birds-gone/
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 534781276.1570124825161.4& <a href="https://www.allaboutbirds.org/news/vanishing-1-in-4-birds-go
- Emma Marris, "To keep the planet flourishing, 30% of Earth needs protection by 2030." *National Geographic*: https://www.nationalgeographic.com/environment/2019/01/conservation-groups-call-for-protecting-30-percent-earth-2030/
- Natalie Sauer, "How can the biodiversity and climate crises be tackled together?" *Climate Home News*: https://www.climatechangenews.com/2019/05/10/can-biodiversity-climate-crises-tackled-together/
- International Union for Conservation of Nature (IUCN) Climate Change page:
 https://www.iucn.org/theme/climate-change (explore the page and choose two aspects to focus on)

Thursday, March 26: *Special event: Richard Powers, Robin Wall Kimmerer and Tim Ingalsbee, McCosh 10 {CANCELLED DUE TO PANDEMIC}

Week 8 / April 1: Environmental Justice (via ZOOM)

- GUESTS 3:00 4:00: Mary Annaïse Heglar, climate justice essayist and Writer-in-Residence at Earth Institute, Columbia University:
 https://blogs.ei.columbia.edu/2020/01/27/mary-annaise-heglar-writer-residence/
 and Emily Raboteau, novelist and essayist: http://emilyraboteau.com/index.html
- Mary Annaise Heglar, "Climate Change By Any Other Name," Drilled News: https://www.drillednews.com/post/climate-denial-by-any-other-name
- Mary Annaise Heglar, "Climate Change Isn't the First Existential Threat," Medium Zora: https://link.medium.com/4mnXr03zL4
- Mary Annaise Heglar, "After the Storm," Guernica: https://www.guernicamag.com/after-the-storm/
- Emily Raboteau, "Climate Signs," *The New York Review of Books*: https://www.nybooks.com/daily/2019/02/01/climate-signs/
- Emily Raboteau, "Lessons in Survival," *The New York Review of Books*: PDF on Blackboard
- Justine Calma, "Voices from the Global Climate Strike," *The Verge:* https://www.theverge.com/2019/9/20/20875505/global-climate-strike-protest-students-youth-voices-change
- OPTIONAL: Hot Take podcast: https://www.criticalfrequency.org/hot-take
- OPTIONAL: Mothers of Invention Lung of the North episode: https://www.mothersofinvention.online/arctic

Week 9 / April 8: Human Migrations {via ZOOM}

- DUE: 2-page (double-spaced) prospectus for final paper
- GUEST 3:00 3:45: Robert McLeman, Professor Department of Geography & Environmental Studies, Wilfrid Laurier University: https://www.wlu.ca/academics/faculties/faculty-of-arts/faculty-profiles/robert-mcleman/index.html
- Jonathan Blitzer, How Climate Change Is Fuelling the U.S. Border Crisis, The New Yorker: https://www.newyorker.com/news/dispatch/how-climate-change-is-fuelling-the-us-border-crisis
- Watch Robert McLeman's presentation for CPREE (Q&A part optional): https://youtu.be/SSUqLzh4vy4 or https://cpree.princeton.edu/events/virtual-coming-exodus-global-migration-flows-changing-climate
- Robert McLeman, "International migration and climate adaptation in an era of hardening borders," Nature Climate Change: file:///Users/meerasubramanian/Desktop/McLeman%20NCC%20climate%20intl%20migra tion.pdf OR Blackboard PDF
- John Podesta, "The Climate Crisis, Migration, and Refugees," Brookings Blum Roundtable: https://www.brookings.edu/research/the-climate-crisis-migration-and-refugees/

Week 10 / April 15: Two-part class, adapted based on pandemic {via ZOOM} PART 1: Agriculture

FIELD TRIP TO HONEY BROOK FARM, PENNINGTON: {CANCELLED DUE TO PANDEMIC} http://www.honeybrookorganicfarm.com/ HOST: Sherry Dudas, Farm Manager

- GUEST: Edwin Muñiz, Assistant State Soil Scientist, Natural Resources Conservation Service, United States Department of Agriculture
- Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming: Food section (pp. 37-74)
- Erik Hoffner, "'Carbon farming' good for the climate, farmers, and biodiversity" Mongabay: https://news.mongabay.com/2016/07/carbon-farming-can-fight-climate-change-boost-diversity-and-feed-people-author-interview/
- Resource: ClimateCentral carbon farming factsheet: https://climatecentral.cmail19.com/t/ViewEmail/y/F352120A7F783E38/DC39CEF088972E
 https://climatecentral.cmail19.com/t/ViewEmail/y/F352120A7F783E38/DC39CEF088972E
 https://climatecentral.cmail19.com/t/ViewEmail/y/F352120A7F783E38/DC39CEF088972E
 https://climatecentral.cmail19.com/t/ViewEmail/y/F352120A7F783E38/DC39CEF088972E
 https://climatecentral.cmail19.com/t/ViewEmail/y/F352120A7F783E38/DC39CEF088972E
 https://climatecentral.cmail19.cma
- OPTIONAL: Meera Subramanian, A River Runs Again, Ch. 1 Earth
- OPTIONAL: Keith Paustian, et. al. "Soil C Sequestration as a Biological Negative Emission Strategy," Frontiers in Climate: https://www.frontiersin.org/articles/10.3389/fclim.2019.00008/full
- OPTIONAL: Valerie Brown, "Carbon Farming: Can agriculture help save us from climate change?" Columbia Insight: https://columbiainsight.org/carbon-farming-can-agriculture-help-save-us-from-climate-change/

PART 2: Coronavirus and Climate Change

- Listen to "Election Special: Coronavirus and Climate Collide," The Energy Gang: https://podcasts.apple.com/us/podcast/the-energy-gang/id663379413?i=1000469712297
- Eric Holthaus, "We aren't just stopping coronavirus. We're building a new world," The Correspondent: https://thecorrespondent.com/385/we-arent-just-stopping-coronavirus-were-building-a-new-world/50969842770-5f4ae7d8
- Coronavirus, Climate Change, and the Environment, Dr. Ari Bernstein, Harvard C-CHANGE: https://www.hsph.harvard.edu/c-change/news/coronavirus-climate-change-and-the-environment/
- Meehan Crist, "Climate Change Has Lessons for Fighting the Coronavirus," New York Times: https://www.nytimes.com/2020/03/27/opinion/sunday/coronavirus-climate-change.html?searchResultPosition=1
- Brentin Mock, "A Green Stimulus Plan for a Post-Coronavirus Economy" City Lab: https://www.citylab.com/equity/2020/03/coronavirus-economic-recovery-green-stimulus-climate-change/608650/
- Mary Annaïs Heglar, "What Climate Grief Taught Me About the Coronavirus," The New Republic: https://newrepublic.com/article/157059/climate-grief-taught-coronavirus [was optional for EJ class but please read now.]
- OPTIONAL: Emily Atkins of the newsletter Heated is doing a limited 6-episode, limited run series that shows how COVID-19 and the climate crisis cannot be separated. On the Drilled podcast channel: https://podcasts.apple.com/us/podcast/drilled-presents-the-heated-podcast/id1439735906?i=1000469993629
- OPTIONAL: Somini Sengupta, "Climate Change Has Lessons for Fighting the Coronavirus," New York Times: https://www.nytimes.com/2020/03/12/climate/climate-change-coronavirus-lessons.html?searchResultPosition=4

Week 11 / April 22: Visions Old & New {via ZOOM}

- Gleb Rgorodetsky, *The Archipelago of Hope: Wisdom and Resilience from the Edge of Climate Change*, (entire book)
- House Resolution 109 ("Green New Deal"): https://www.congress.gov/116/bills/hres109/BILLS-116hres109ih.pdf
- Naomi Klein, "The Battle Lines have been Drawn on the Green New Deal," *The Intercept*: https://theintercept.com/2019/02/13/green-new-deal-proposal/
- OPTIONAL: Green New Deal: Last Week Tonight with John Oliver (HBO)
- https://www.voutube.com/watch?v=IDcro7dPqpA
- OPTIONAL: A Message From the Future With Alexandria Ocasio-Cortez (short film): https://www.youtube.com/watch?time continue=444&v=d9uTH0iprVQ&feature=e mb logo
- OPTIONAL: A Green Stimulus to Rebuild Our Economy: https://medium.com/@green stimulus now/a-green-stimulus-to-rebuild-oureconomy-1e7030a1d9ee

Week 12 / April 29: Conclusion {via ZOOM}

• Presentations / Celebration

FINAL PAPER DUE DEAN'S DATE Tuesday, MAY 12, 2020 11:59pm