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Co-Creating a Pedagogy of the Great Acceleration, the 6th Mass Extinction, and the Climate Crisis

Charles A. Hardy III
Brady Day
James Lingman

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Co-creating a Gen Ed Course on the Great Acceleration
Professor Charles Hardy
Honors College History Majors Brady Day and James Lingman

Sustainability Research and Practice Seminar, October 20, 2021.
Background

Fall 2016

HON 355-01:
Climate Change and Environmental Stewardship
TuTh 4:25PM - 5:40PM
Recitation 211
Prof. Charles Hardy

Climate change has had a profound impact on world and American history, from the global warming that ended the last Pleistocene Age through the Little Ice Age that drove the Norse out of Greenland soon before Columbus first crossed the Atlantic Ocean, to its current impact on world biosystems and nations.

This multidisciplinary course provides an introduction to:
- The history of climate change over the past 2.5 million years
- The science of climate change and the politics of climate science
- The economic, political, psychological, religious, and philosophical responses to it in the United States and other nations
- The ethical and moral challenges that it presents for individuals and nations

UNITS:

- Is Greenland Melting?
- Introduction to Climate Science
- The Politics of Climate Change
- Climate Change Deniers
- Fresh Water Ecosystems
- Deep History: The Big Picture
- Climate Change, Human Emergence, and Human Migration
- The Pleistocene Age and Migration to the Americas
- The Little Ice Age: Big Picture
- Little Ice Age Case Study: Vikings in the Americas
- The Industrial Revolutions: 1st, 2nd, and 3rd
- The Call to Action: Al Gore’s Inconvenient Truth
- The Ethical Dilemma, A Perfect Moral Storm
- Psychology, Communications, and the Press
- Deep Ecology and Ecotourism
- Personal Choice and Collective Action.
- Climate Change and Religion:
- Norway as Model for National Stewardship
So what didn’t work?

• To heavy an emphasis on Climate History
• Insufficient student engagement at beginning of the class
• Too much reading

And what worked?

• External Developments, inc. 2015 Papal Encyclical on Climate Change, U.S. adoption of 2015 Paris Agreement, release of new films
• Class Project


In fall 2017, WCU rolled out campus-wide implementation of Default Duplex Printing, an initiative begun by students in HON 355/HIS 399 Climate Change and Environmental Stewardship, and completed by History Major Shila Scott and History minor Breahon Scott.
WHAT TO DO NEXT TIME?

The Challenges:

• **WCU needs a one-semester multidisciplinary course that introduces students to the accelerating, multi-faceted global crises that will become increasingly dire as they grow older. (Climate change is too narrow a focus for the course)**

• **How to structure and teach this course**

• **At my advanced age I am out of touch with how students learn**

• **As an old historian I tend to err on the side of more is better rather than less is more. (i.e. I assign too much work!)**
Solution, Part 1: Refocus the Course around the Great Acceleration

The dramatic, continual, and roughly simultaneous surge in growth rate across a large range of measures of human activity on the Earth’s ecosystems and geology, first recorded in mid-20th century and continuing to this day, which are so great that geologists have proposed that we have entered a new geological epoch, the Anthropocene, which includes:

- **Anthropogenic climate change**
- **The 6th Great Extinction**
- **Diminishing biological carrying capacity**
How do scientists measure the Great Acceleration?

Earth System Trends
1. Carbon dioxide
2. Nitrous oxide
3. Methane
4. Stratospheric ozone
5. Surface temperature
6. Ocean acidification
7. Marine fish capture
8. Shrimp aquaculture
9. Nitrogen to coastal zone
10. Tropical forest loss
11. Domesticated land
12. Terrestrial biosphere

Socio-Economic Trends
1. Population
2. Real GDP
3. Foreign Direct Investment
4. Urban population
5. Primary energy use
6. Fertilizer consumption
7. Large dams
8. Water use
9. Paper production
10. Transportation
11. Telecommunications
12. International Tourism

1,500-page report by the UN on the loss of planetary biodiversity, 2020.

Current global extinction risk in different species groups

Source: International Union for Conservation of Nature
The Solution, Part 2:

• Have bright students from multiple majors work in pairs to design and then test drive lesson plans in front of their peers and me, then revise those modules for use by others
• Have them help me design a 200-level course that I can teach or pass off, in whole or in parts, to other instructors.
HON 451-80: Climate Change and Sustainability    Spring 2020
Instructor: Charles Hardy     Class: Wed. 4:25-7:05

DRAFT (will continue to change based on student input)

Course Outline:
This multidisciplinary Honors seminar provides an introduction to the science, history, and impact of natural and human caused climate change; an opportunity for students to explore economic and technological, political, psychological, pedagogical, religious, and philosophical responses to it; and the ethical and moral challenges that it presents for individuals, communities, and nations. In this seminar—not a lecture course!—you will work with the instructor to design and create a 100-200 level syllabus for an interdisciplinary course on Climate Change and Sustainability. To do this, we together will determine the course structure, content, workload, assignments, and learning objectives. As a group we will decide whether to create a course that will become a regular offering in Honors College, or a 100- or 200-level course that can also be part of a new Sustainability minor. We will decide whether the course is best offered, 1, 2, or 3 days a week. Working in groups of two, you will prepare and revise two instructional units. A writing emphasis course, this seminar also provides you an opportunity for semester-long personal reflection on the impact of accelerating global climate change on you, your family and community, your nation, and the world; and to contemplate the steps you should take in your own life in response to these planet and life-altering transformations.
Class Participants

HON 451: Climate Change and Sustainability, Spring 2020

14 Honors College and Honors Seminar Program students from the following majors:

- History (4 students), Poli Sci (3 students), Biology, Early Grades, Communication Studies, Mathematics, Nursing, Pre-Physical Therapy, and Social Work
Week 1: Course Introduction
Week 2: Introduction to Climate Change, Carrying Capacity, and the Anthropocene
   Case Study: Greenland is Melting
Week 3:1. Introduction to Climate Change, Part 2: Climate History, National Climate Assessments and Indicators, and Climate Activism
Week 4: 1. Introduction to Climate Science:
Week 5: 1. Human Emergence
   2. Human Migration to the Americas
Week 6: 1. Energy Regimes and The Fossil Fuel Revolution (Prof. Hardy)
   2. Industrial Pollution and Birth of the Modern Environmental Movement
Week 7: 1. The Politics of Climate Change
   2. Climate Change Denial
Week 8: 1. Health and Disease
   2. Climate Change and Religion: A Moral Imperative
Week 9: 1. Call to Action: Al Gore’s Inconvenient Truth
   2. Economic and Technological Fixes
Week 10: 1. International Climate Change Initiatives: From Berlin (1995) to the Present
   2. The Communications Challenge: Psychology, Communications, and the Press
Week 12: 1. Social Justice
   2. Teaching Climate Change
Week 13: 1. Where to From Here? Think Globally and Act Locally
Week 14-15: 1. Review of unit plan first drafts; discussion of HIS 220 course syllabus
   2. Review of HIS 220 course syllabus and class structure
Final Exam: Course debriefing and student discussion of and vote for best unit plans
Units not selected:

- Military Security
- Deep Ecology and Ecotourism
- The Ethical Dilemma: “A Perfect Moral Storm”
- Case Study: Norway as Model for National Stewardship
The Challenge:

Students agreed to produce two unit plans/teaching packets included the following:

• **Lesson Plan:** inc. Overview, Objectives, Directions
• **Materials for student review before class** (Homework!)
• **Note Sheet for Instructors, and for use of the PowerPoint**
• **Note Sheet for Students**
• **Student Activity**
• **PowerPoint**
International Initiatives:
What does the Paris Agreement mean for us?

HIS220 - Climate Crisis: Interdisciplinary Perspectives

Climate Change Deniers

Brady Day and Joshua Ciarrocchi
Tracking Climate Change Activity:

*How are some of the major countries around the world handling climate change?*

1. Look at the [Climate Action Tracker Map](#).
   a. **Discussion**: Do the number of insufficient countries surprise you? Do you agree with measuring sufficiency by the Paris Agreement?
      i. 1. Japan:
      ii. 2. Canada:
      iii. 3. India:

2. Find your country *(Japan, Canada, India)* and focus on reading the Country Summary.
   a. What is your country labeled (Highly Insufficient, Insufficient, or 2°C Compatible)? What are they doing right or wrong?
      i. 1. Japan:
      ii. 2. Canada:
      iii. 3. India:
   b. **Discussion**: Does your country’s label surprise you? Why or why not?
      i. 1. Japan:
      ii. 2. Canada:
      iii. 3. India:
   c. How does your country compare to the United States? What could we learn from this country? *(You can revisit the USA’s Country Summary if necessary).*
      i. 1. Japan:
      ii. 2. Canada:
      iii. 3. India:
Course Unit Plan Instructions (4-2020)

Before you test your unit with the class you must:

• Pay attention to and take notes on your classmates’ units, observing and building upon their successes and shortcomings.

• Review the source materials that I posted on the course syllabus under your unit to introduce you to the subject and determine which of those sources to include in the materials you assign your classmates. You may assign as many or as few of these resources as you want.

• Do your own research to identify the best materials to assign for your unit and the best source materials for the new course syllabus, design your unit, and create a Study Guide that you provide to classmates before you teach the unit.

• Virtually meet with Prof. Hardy to go over your plan, and do so leaving enough time for you to make necessary changes before emailing assignments to the class.
During class discussion of your unit you must
• Take notes during class review and critique that you will use to revise your unit.

Submit revised unit:
• Get back together on Zoom and use your notes to revise your Unit, Study Guide, and Sources. Load the revised Unit teaching package into GoogleDrive within 2 weeks of your presentation of the unit. Do this before your memory fades and end of the semester work in other classes piles up! Those presenting near the end of the semester will need to make their revisions more quickly, so plan accordingly.

• As you make your revisions, keep your intended audience in mind rather than write to yourselves. Pretend you are someone who did not attend the class and knows little about the subject matter.

• Within a week after you lead your unit load your revised sources, with brief annotations explaining to students the value of each into the new Course syllabus on Google docs.

• If you need additional time inform the instructor in advance.
Course Reflection Assignment:

Write reflections that you and others will find interesting long after you complete this course. To do you must:

- Draw from what you learned in each unit rather than focus just on the one or two that you found most interesting.

- Support assertions with evidence and examples.

- Cite your sources.

- Review and reference reading and viewing assignments for those units rather than rely upon your memory of what you think you saw and heard in the class. In order to do this you must:

  - Take good notes in class and take advantage of your short-term memory to jot down your initial thoughts as soon after the class as you can. (After class reflections are the best way for you to integrate and remember what you learned.)

  - If I return your reflection with a request for revision, resubmit the revised reflection within one week from the day that I post my comments in D2L. Failure to do so means I will grade the first draft.