

# June 22 Workshop: Teaching Ethics in Science

**Dr. Cameron Brewer**, assistant professor of philosophy at Central Connecticut State, will be visiting UGA. He has offered to lead a workshop about strategies for incorporating ethical discussions into ecology, environmental science, and other biology courses. He currently co-teaches an honors course on environmental ethics using invasive species as a theme and a course on philosophy of science. His interest in highlighting the ethical responsibilities of scientists has led him to develop case studies of individuals (mainly politicians) making large-scale societal decisions without using the available scientific data.

RSVP to [Brickman@uga.edu](mailto:Brickman@uga.edu) if you plan to drop in for either or both sessions.

## Introduction to Teaching Bioethics

🕒 9:00 am to 12:00 pm

📍 Room 145 Science Learning Center

Dr. Brewer will introduce himself and provide an overview of some of the projects he has used to teach bioethics. All participants will be encouraged to discuss the types of topics they are interested in as a starting point, and then Dr. Brewer will discuss strategies for integrating content and projects. Participants will use the remaining time to view reading materials on Google drive and select projects for their own courses.

## Incorporating Bioethics into Science Classes

🕒 2:00 pm to 5:00 pm

📍 Room 326 Biological Sciences Building

In this session, instructors will collaborate to develop teaching materials for their courses.

## Pre-Workshop Reflection Activity

**Reflect on the areas in which you would like to integrate one or more of these ethical issues into your course:**

- Scientists and autonomy: How much freedom should scientists have? When should their freedom be limited by those outside of science (if ever)?
- What is the difference between good science, bad science, and pseudoscience? (I connect this to the evolution vs creationism debate).
- Why is pseudoscience dangerous? (Here, I usually use evidence based medicine vs. non-evidence based medicine as my example. I sometimes will tie this to climate science too.)
- What are the dangers of dogmatism in science?
- How might gender bias affect science? What are the social ramifications of gender bias in the sciences? Can the content of science (e.g., the theories we currently accept) be warped by gender bias?
- What sort of moral obligations do we have to future generations? (I tie this to climate change.)
- Why think we might have moral obligations to the planet?
- What ethical issues arise when dealing with non-indigenous “pest” species (aka invasive species)? What are our duties (given that we are commonly the means of introduction), and what are some of the practical issues that arise with proposed eradication programs?
- Should data that was obtained unethically be allowed to be cited? (I usually articles concerning the Nazi hypothermia studies here.)

# June 22 Workshop: Teaching Ethics in Science

- How ethical are scientists and how damaging is their self-reported unethical behavior? (I often use the short *Nature* article “Scientists Behaving Badly”)
- Autonomy vs. public safety-Is it ethical to move from opt-in to opt-out testing for HIV in Africa?
- What is the role of bioethical theories in guiding biological research?
- Drug testing on humans (i.e., human guinea pigging): What are the ethical problems that arise when individuals are paid to participate in drug testing and IRBs become for profit?
- Should doctors inform patients of disorders that currently cannot be treated?
- What procedures should doctors/surgeons be barred from performing (if any) on a patient who requests that procedure? (I usually use Xenomelia—also called BIID—as my example).
- What are the moral responsibilities of scientists/public intellectuals in public discourse? When the scientific community has reached a consensus on an issue and an opposing position does not appear to have valid evidence supporting it, how much should scientists engage with the opposition? What are the positive and negative effects of such engagement, and does the answer change when those holding the alternative (unsupported view) are in positions of power?

## Readings Posted on Google Drive

<https://drive.google.com/drive/folders/0B2fnd43H5oGCdkptd1Q5a21Pd1U?usp=sharing>

### Folder “Ethical Responsibilities of Scientists”

- “Scientist as Citizen” by Read Bain-This is an older article (from the 30s) written by a sociologist who demonizes those in the sciences. It is quite short, and often ruffles feathers. I generally use it to show my students how not to argue. He uses invectives and makes sweeping generalizations without much justification. I make the students try to construct the best argument that can using the material he provides, but I also want them to see how strong language may sometimes seem convincing on the surface, without evidence an argument tends to fall apart. I also have them read “The Moral Responsibility of Scientists” and I juxtapose the arguments of the authors. Douglas provides reasoning and examples to support her claims.
- “The Moral Responsibility of Scientists” by Heather Douglas-This article argues that scientists must accept general moral responsibilities if they are to have their autonomy preserved. She tries to outline some of those responsibilities (comparing general vs. role responsibilities) and provides some examples to help make her case. She also defines recklessness and negligence and maintains that scientists have a general responsibility to avoid reckless and negligent behavior. She claims that their role responsibilities as scientists (which stem from the search for truth) do not lessen their general responsibilities as citizens. I also give the students an activity (“Negligence and Recklessness Activity”) to consider the social responsibilities of scientists.
- “Negligence and Recklessness Activity”-I use this to get students to think about how large scale scientific discoveries may have important societal impacts. Those discoveries may be used by politicians, entrepreneurs in ways the scientists did not anticipate or the discover itself may have moral implications.
- “The Social Responsibilities of Scientists” by Bertrand Russell-This is an article I have used in the past. It mainly calls for scientists to speak out against possibly immoral uses of science. I am thinking about including it again and tying it to the Negligence and Recklessness Activity.

# June 22 Workshop: Teaching Ethics in Science

- “Might a laboratory experiment destroy planet earth? by F. Calogero” I included this because it is referenced in the 3<sup>rd</sup> case study in the Negligence and Recklessness Activity. I did not require students to read it, I just read it for background information.

## Folder “Evolution as a Science”

- “Believing Where We Cannot Prove” By Philip Kitcher—This is an excerpt from Kitcher’s book *Abusing Science: The Case Against Creationism*. The selection does not argue against creationism (so it may be more palatable to some students). Rather it argues that many of the claims against counting large-scale evolutionary theory as a science are problematic. Kitcher provides an overview of what counts as a successful scientific theory and considers what types of theories fail to be a science. In class, I have the students highlight what Kitcher considers to be features of successful science. I then ask them if his criteria for successful science are correct. Finally, I ask them to consider whether or not large-scale evolutionary theory has the features of a successful scientific theory. In the past, I have also given them some of the tenants of creationism and asked the same question.

## Folder “Gender and Bio Sciences”

- “Caster Semenya: Gods and Monsters” by Brenna Munro—Among other things, this article uses Caster Semenya as a case study showing how biological categorizations have important societal effects. I have also used it in the past to raise issues about fairness in sports vs. privacy and basic human rights.
- “From gender bias to gender awareness in medical education” by Petra Verdonk et. al—This article highlights how gender bias may have an effect on health. It argues that gender inequality is an important determinant of health. When I have used this, I have asked students to highlight the reasons the authors provide and to evaluate those reasons.
- “Gender and the Biological Sciences” by Kathleen Okruhlik—This is probably the most philosophic article in the folder. I use it a lot in my Philosophy of Science course. Okruhlik argues that androcentric bias may actually taint the content of scientific theories. She focuses on biology and uses different cases to try to show that the current landscape of biological theory has been shaped by gender bias. She provides arguments for why it is important to recognize the role that gender bias has played. After we go through the article, I have the students work through each example she provides, and we consider how strong her argument is.

## Folder “Genetic Testing”

- “Ethical issues in predictive genetic testing: a public health perspective” by K.G. Fulda and K. Lykens—I use this to give the students an overview of some of the ethical issues that genetic testing present. It also provides a way that some ethical theories can be applied to the issue.
- “Huntington’s activity”—I use this to get the students to think carefully about the ethical issue of testing for illnesses that we cannot cure. The students often say that they like the fact that this is a first-person account of someone struggling with the information.