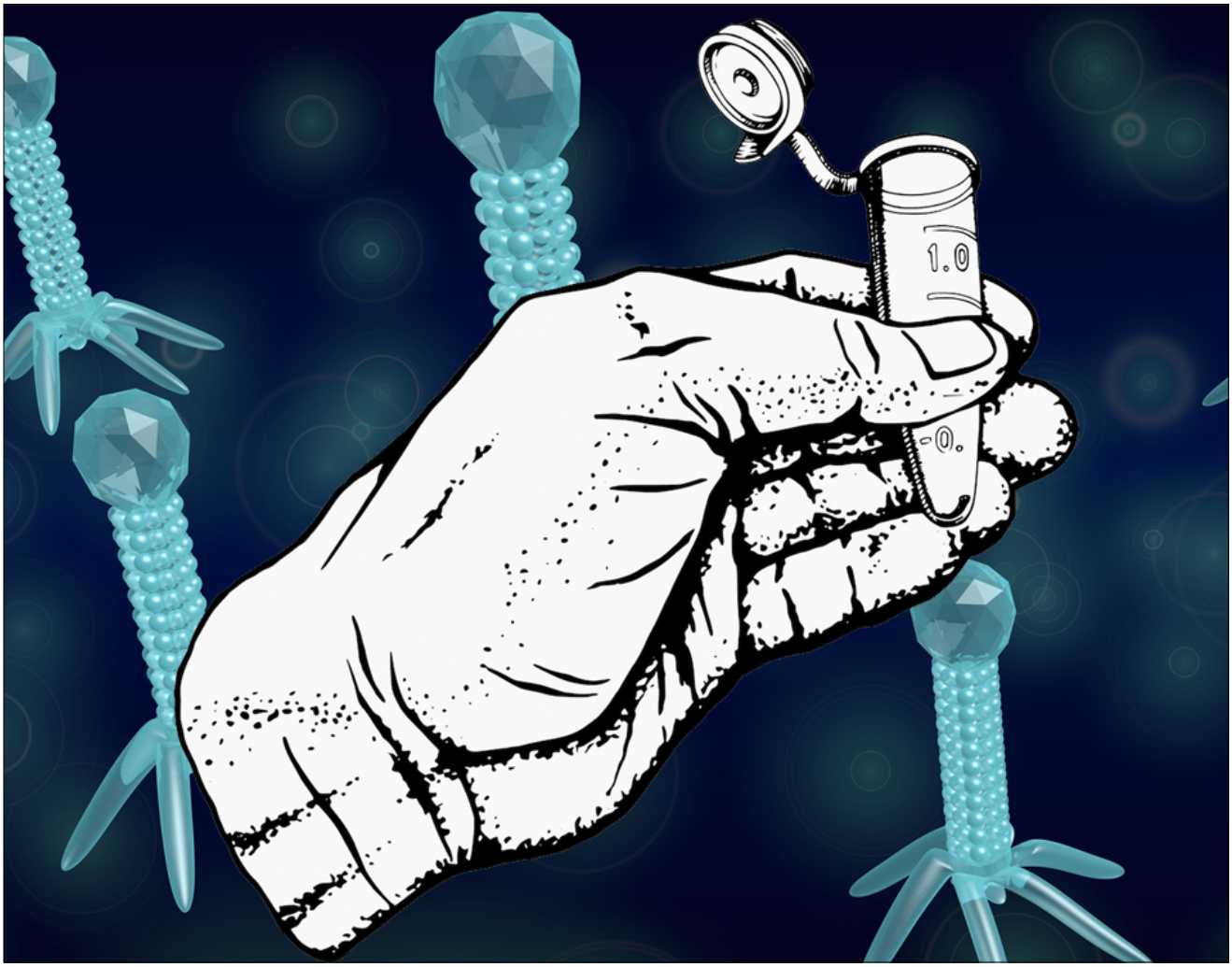
PHILOSOPHY 26



Science, Society & Values

Professor Craig Callender

TuTh 11-12:20

MANDE B-104

SYLLABUS

Topic

Science is often considered a value-free enterprise. Scientists work in labs, churning out facts. Policymakers then decide, based on their values, how to act on these facts. Rarely is life so clean, however. What counts as science is itself often contested. Once decided, are its claims inherently value-laden? Are values involved in accepting a hypothesis? Are the categories themselves value-free, e.g., is judging someone 'healthy' a claim of fact or value (or both)? How should the pursuit of science be structured in a democracy? How should risks be apportioned? Should the courtroom allow junk science? How do we deal with the ethics of emerging technologies, e.g., genetic enhancement, driverless cars? In these questions and others values and science get entangled in deeply important ways.

UC San Diego is in a sense founded on such questions. Our founder, Roger Revelle, not only discovered climate change but later returned as a professor of science policy in an attempt to do something about it. Our first Chancellor, Herb York, was a part of the Manhattan Project who later worked in government on nuclear deterrence. Our history is filled with tough challenges, e.g., Ed Munk's controversial acoustic tomography tests. Today is no different. With leaders in stem cell therapy, gene drives, and more, scientists here still must navigate the tricky waters of advancing science in a socially responsible way.

Goals

Today more than ever we are faced with choices where science and values interact. We're bombarded by information dressed in scientific garb. Most of the sources of this information want something from us, ranging from a purchase to a belief to a vote. A lot hangs on our decisions, from small personal purchases (e.g., should we buy "performance" wristbands?) to bigger personal choices (e.g., what medicine should I take?) to major public policy decisions (e.g., climate change). Students in this course will gain some familiarity and background with a selection of challenges in the pursuit of socially responsible science. The material will be relevant to your later work in science or simply in your role as a citizen and consumer. By the quarter's end, successful students will be able to identify the values at stake in scientific enterprises. They will also improve certain skills, such as the ability to critically read and appraise an academic essay, the ability to write such an essay, the ability to present academic work to an audience, and more.

PHILOSOPHY 26

List of Topics (tentative)

What is Science, Anyway?

Detox, Homeopathy, Etc; The Placebo Effect; The Demarcation Problem; Creationism and Scientific Method; Second Hand Smoke Science

Is Science Inherently Value-Laden?

The Inductive Risk Argument; Are Scientific Categories Normative? Psychiatric disorders

What Should We Research? Anything?

International Space Station; Nuclear Weapons, Cognitive Abilities; Research in a Democracy

Health, Society, and Medicine

Nutritionism; Big Pharma; Tropical Disease and the 90/10 problem; What is Health? Disease?

Science and the Law

The Daubert Case; Industrial Chemicals and Daubert

Ethics of Emerging Technology

Genetic Enhancement: Pro & Con

Contact

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Reading

The only book to buy for this course is Ben Goldacre's *Bad Science: Quacks, Hacks, and Big Pharma Flacks*. You can purchase this online for under $10. Please purchase it before class begins. All other readings are accessible via TritonEd.

Debunking Group Project

More details in class, but groups will choose a pseudo-scientific topic to debunk. They will present their findings in class on Jan 31 in the form of a powerpoint or website. They will stress why the claims are bogus, what values are at stake, and the social cost. Topics might range from AIDS pseudoscience to EMF nets to performance golf wrist bands. This assignment will be paired with an individual assignment of a few pages.

Case Study Project

Pick a case (past or future) where science, values and society interact in a controversial way. For example: Munk's underwater tomography tests, regulation of particular toxins, GM insects, experiments on the human genome, stem cell therapies, building a particle accelerator. Research the case after getting approval of a short reading list by the instructor. Explain the case, identify where value judgements come into play, and make a good argument for a particular outcome. More details in class. This report will be about 5 pages long.

Debates

We'll sometimes break up class into a bunch of small group debates. Many of the topics are controversial, so they lend themselves to this format nicely; also, they allow you to get slightly more individualized feedback on your ideas than in lecture. When a debate is announced, make extra sure that you've done the reading prior to class. Your performance will be part of your class participation grade.

Assessment

1. 300-word Reactions — 20%
2. Debunking (individual) — 10%
3. Debunking (group) — 15%
4. Case Study Project — 25%
5. Final Exam — 25%
6. Class Participation — 5%

Late Work

Assignments handed in after the due date and without permission will be docked five percent the first day of the missed deadline. The penalty will then grow at a rate of five percent per day. After ten days no assignment will be accepted except in exceptional circumstances and in consultation with your instructor. Assignments that are handed in late and without extension will be returned after those completed on time and will not receive comments.

Fine Print

In your coursework all sources must be appropriately acknowledged. All answers given must be in your own wording. Closely paraphrasing or simply copying the work of others (such as authors of books or articles, or classmates) is not allowed and will be severely penalized. You must ask me in case you are uncertain whether something constitutes plagiarism. All forms of academic dishonesty will be immediately reported to the Academic Integrity Office. Students agree that by taking this course all required assignments will be subject to submission for textual similarity review to Turnitin.com for the

detection of plagiarism. Use of the Turnitin.com service is subject to the terms of use agreement posted on the Turnitin.com site. You must observe the University's Policy on Integrity of Scholarship, which can be found at http:/www-senate.ucsd.edu/manual/appendices/app2.htm. Students who wish to write a make-up exam must inform me (by phone or email) before the exam takes place. In order to qualify for a make-up exam, appropriate evidence of the most severe circumstances must be produced by the student. I will determine, in consultation with the student, what qualifies as appropriate evidence.

Accommodation for Disability

Students requesting accommodations must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to me and to the OSD Liaison in the department in advance so that accommodations may be arranged. The OSD can be contacted via 858.534.4382 (phone), osd@ucsd.edu (email), disabilities.ucsd.edu (web).

Electronics

Except when explicitly allowed, use of electronics (laptops, phones, tablets, etc) in the classroom is *prohibited*.

DETAILED SCHEDULE

Tentative!

The reading should always be completed *prior* to the class meeting. Assignments are due on the class meeting day.

	Topic	Reading	Assignment
Jan 10	**What is Science, Anyway?** Bad, Junk and Pseudo- Science	Goldacre, chapters 1-3	
Jan 12	Homeopathy, Detox, ESP, Astrology, Etc and the Placebo Effect	Goldacre, chapter 4, 5	300 words. Select a headline from 'Correlation or Causation'. (a) Identify whether the headline makes causal or correlational claims. (b) Explain whether the associated research supports the type of claim made.
Jan 17	The Demarcation Problem	Popper, Conjectures and Refutations	
Jan 19	Creationism and Scientific Method	Kitcher, Believing Where We Cannot Prove Shermer, Science and Pseudoscience	300 words: Is falsification necessary for a theory to be scientific? Is it sufficient? Why or why not?

Jan 24	Tobacco Science, Climate Science, & More	Michaels, Manufacturing Uncertainty: Contested Science and the Protection of the Public's Health and Environment Oreskes and Conway, Challenging Knowledge	
Jan 26	**Is Science Inherently Value-Laden?** The Inductive Risk Argument	Rudner, The Scientist Qua Scientist Makes Value Judgments	
Jan 31		DEBUNKING PRESENTATIONS	Individual Debunking reports due
Feb 2	The Inductive Risk Argument	Douglass, Inductive Risk and Values in Science	
Feb 7	Are Scientific *Categories* Normative?	Bentall, A proposal to classify happiness as a psychiatric disorder.	
Feb 9	**Can/Should We Study *Anything*? Problem Selection**	Dummett, Ought Research to be Unrestricted?	300-words. Reaction to one of Dummett's arguments.
Feb 14	Scientific Research in a Democracy	Philip Kitcher, Scientific Research–Who Should Govern? Park, Voodoo Science, selection	

Feb 16	Heisenberg vs Bohr	Watch Copenhagen, by Michael Frayn in class	Case Study Reading List due
Feb 21	**Health, Society and Medicine** Nutrition Science	Goldacre, chapter 7	
Feb 23	Is Mainstream Medicine Evil?	Goldacre, chapter 9, 10 (Michaels, "This Country Has a Drug Problem" (143-160) in Doubt is Their Product.)	
Feb 28	The 90/10 Problem The Testing Problem	tbd Screening for Alzheimer's Gene Tests the Desire to Know	300 words. Read the NYT piece. If in the Reiswig's shoes, which decision would you make? Why?
Mar 2	Are Health and Disease Factual or Value-laden Categories?	Worrall & Worrall, "Much Ado About Nothing? Defining Disease?"	
Mar 7	**Science & Law** The Daubert Decision	Daubert v. Merrell Dow Pharmaceuticals. "When Science is Lost in a Legal Maze" NYT	Case Study Project Due
Mar 9	Industrial Chemicals, Risk and Daubert	Cranor, "The Dual Legacy of Daubert v. Merrell-Dow Pharmaceuticals: Replacing Junk Science with Insidious Science"	

Mar 14	**Ethics of Emerging Tech** Ethics of Enhancement	Savulescu, “Procreative Beneficience: Why We Should Select the Best Children” Bioethics 15 2001, 413-26 Harris, “Enhancements are a Moral Obligation” (Mo, “CRISPR-Cas9 Human Genome Editing: Challenges, Ethical Concerns and Implications”)	300 words. Drawing on the connections to the reading, answer: is doping in sports unethical?
Mar 16	Final Exam Review		
Mar 23, 11:30am			**FINAL EXAM**