SocGen 105A: Ways of Knowing in the Life and Human Sciences

Lecture and Discussion
T-TH 12:30- 1:45
Instructor: Christopher M. Kelty
Public Affairs 1222
Office: 1315 Rolfe Hall
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Office Hours: By Appointment

What this course will teach you

In SocGen 5 you learned about problems that cross the line between different disciplines—between the social, historical and biological. Diabetes, antibiotic resistance, and obesity are problems that have multiple facets and that require knowledge from many disciplines in order to understand why and how they exist and might be addressed. In this class we move to the next level: *understanding how the different styles of knowledge underlying these disciplines actually work*—and might be made to work together. You will learn some of basic concepts and problems of "epistemology" (*how* we know, not *what* we know) and you will learn to distinguish different "styles of thought" in science—observational, laboratory, statistical, theoretical, etc. By the end of the course you should be able to *identify the differences between these different styles, the similarities and overlaps among them, and their relative hierarchy in any given case*. We will also debate—and you should be able to articulate arguments about—controversial issues like truth and relativism, the power and influence of science, objectivity and rationality, and the role of denial, secrecy and ignorance in science.

How this course is structured

This class is structured to give students alternating lecture and discussion time. There are 10 lectures in the class (usually on Tuesdays), and the rest of the days will be devoted to discussion sections in which we focus more closely on the texts and assignments in the class, engage in small-group activities, or look at visual and other material together. Attendance is required at all class meetings, unless otherwise specified.

Course Requirements

Prerequisites

SOCGEN 5 is an enforced prerequisite for Human Biology and Society majors.

Readings

Students are required to read all posted assignments *before* the class date on which they are assigned.

Participation in Discussion

Students are expected to participate in discussion, express curiosity and think critically about the topics of the course.

How you will be graded in this course

See "Grades and Assignments" for details.

Syllabus

Part 1: Introduction to Ways of Knowing

Is there is one way of knowing or are there many? If there are many can they be compared, ranked or preferred? Can all knowledge be reduced to facts, or theories, or logic? Is it dependent on our brains or on something else? What's the difference between belief and knowledge? Where do good ideas come from? And what is ignorance? What does it mean *not* to know something? How is knowing related to technology, the public, or the media?

The first part of the class will introduce students to the philosophical issues of epistemology and challenge you to think about hard problems like relativism and the distinctiveness of scientific knowledge.

Part 2: Styles of Scientific thought

If there are different styles of thought in science, how do they work and where do they come from? Are they styles of *thought* only, or are they also styles of inquiry, work, technology or representation? Are styles complementary, incommensurable, or just different ways of saying the same thing? Part 2 of this class explores a range of different styles, and how they might overlap with each other.

Part 2a: Philosophy and history
Part 2b: Observational knowledge
Part 2c: Laboratory knowledge
Part 2d: Statistical knowledge
Part 2e: Creative/Introspective knowledge
Part 2f: Knowing with computers

Part 3: Ways of NOT knowing

Knowing is one thing, but NOT knowing is much more interesting. The third part of the class asks what ignorance is and how it works, and raises thorny issues about things like secrecy and "denialism" in science.

Schedule (Subject to Change)

Sept 27 Lecture 1: Introduction to Ways of Knowing

Class Mechanics and an introduction to ways of knowing

> **Reading**: Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine*, New York: Zone Books, Chapter 1 (p. 17-60).
>
> **Watch: "**Yury Gitman and Joel Murphy – Pulse Sensor," http://vimeo.com/29197117

Oct 2 No Class

Oct 4 Lecture 2: Styles of Scientific Thinking

What is a style of thought, and how do we distinguish them?

> **Reading**: Ian Hacking, "Style for Historians and Philosophers" in *Historical Ontology* Cambridge MA: Harvard University Press, 2002. p. 178-198
>
> **Watch**: Stephen Johnson, "Where good ideas come from" *TED talk*: http://www.ted.com/talks/steven_johnson_where_good_ideas_come_from.html
>
> **Optional:** Carlo Ginzburg, "Clues: Roots of an Evidential Paradigm" in *Clues, Myths and the Historical Method* tr. John and Anne Tedeschi, Baltimore: Johns Hopkins University Press, 1989.
>
> Ludwik Fleck, *The Genesis and Development of a Scientific Fact*, Chicago: University of Chicago Press, 1979. Chapter 4 (p. 82-end)

Oct 9 Lecture 3: Philosophy and history as a way of knowing
Epistemology, philosophy of science, epistemological history.

> **Reading**: Popper, Karl. "A Survey of Some Fundamental Problems." In *The Logic of Scientific Discovery*, p. 3-26. London & New York: Routledge, 1992.
>
> **Optional:** Don Howard, "Philosophy of science and the history of science," in *The Continuum Companion to The Philosophy of Science,* ed. Steven French and Juha Saatsi, NewYork: Continuum Publishing, 2011. Chapter 4 (p. 55-74)
>
> Peter Machamer, "A Brief historical introduction to the Philosophy of Science" in *The Blackwell Guide to the Philosophy of Science* ed. Peter Machamer and Michael Silberstein. Malden, MA: Blackwell Publishers, 2002. Chapter 1 (p. 1-18).

Oct 11 Discussion TBD

Oct 16 Lecture 4: Observational style
The observational mode; astrology and divination; systematic observation; qualitative and quantitative observation; the educated eye vs. mechanical objectivity; observing behavior vs. observing culture

> **Reading**: Jeanne Altman, (1974) "Observational study of behavior: Sampling Methods" *Behaviour* 49(3-4): 227-266.
>
> Bronislaw Malinowski (1932) *Argonauts of the Western Pacific*, New York: Routledge and Sons. Pages 1-26 (skip preface and foreword).
>
> **Optional:** Katherine Park, "Observations on the Margins, 500-1500" in Lorraine Daston and Elizabeth Lunbeck eds. *Histories of Scientific Observation*, Chicago: University of Chicago Press (p. 15-45)
>
> Lorraine Daston, "The Empire of Observation, 1600-1800" Lorraine Daston and Elizabeth Lunbeck eds. *Histories of Scientific Observation*, Chicago: University of Chicago Press (p.81-115)

Oct 18 Discussion
Discussion of observational methods, special guest: **Jessica Lynch Alfaro** of the Institute for Society and Genetics.

Reading: Natalie Angier "Warm and Furry but they pack a toxic punch" *New York Times*, January 30, 2012. http://www.nytimes.com/2012/01/31/science/these-mammals-pack-a-toxic-punch.html

Wikipedia, "Capuchin Monkey" http://en.wikipedia.org/wiki/Capuchin_monkey

Oct 23 Lecture 5: From Observation to Experiment
Anthropologists observe what goes on in a lab...

> **Reading**: Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts*, Princeton: Princeton University Press, 1979. Chapters 1 and 2 (p. 15-91)
>
> **Watch:** Brian Cox, "CERN's Supercollider"
> http://www.ted.com/talks/brian_cox_on_cern_s_supercollider.html

Oct 25 No class

Oct 30 Lecture 6: The Experimental Style
What counts as *style* in an experiment?

Reading: Stanley Milgram (1977), "The Small World problem" in Stanley Milgram, *The Individual in a Social World: Essays and Experiments,* (p. 281-296).

Claude Bernard, *Introduction to the study of Experimental Medicine*, tr. H.C. Greene, New York: MacMillan, 1924 [1865]. Pgs 1-27 and 151-172.

Nov 1 Discussion TBD

Nov 6 (Election Day) Lecture 7: Statistical Knowledge

The rise of statistics and probability as the guardian of truth.

Reading: Gigerenzer et.al., *The Empire of Chance: How probability changed science and everyday life*, Cambridge: Cambridge University Press, 1989 (pgs 203-214; 235-270)

Listen: RadioLab, *Cosmic Habituation*, Broadcast Tue. May 3rd, 2011
http://www.radiolab.org/blogs/radiolab-blog/2011/may/03/cosmic-habituation/

Hans Rosling, *Stats that reshape your worldview,* June 2006
http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html

Nov 8 Discussion TBD

Nov 13 Lecture 8: Introspective and Theoretical Styles of Knowing

Know thyself.

Reading: Edward Boring, "A History of Introspection" *Psychological Bulletin* May 1953 50(3):169-189.

David Kaiser, *How the Hippies Saved Physics: Science, Counterculture and the Quantum Revival*, New York: W.W. Norton Books, 2011. Pgs 1-43, 65-97

Watch: Jill Bolte Taylor, "Stroke of Insight" 2008 TED Talk,
http://www.ted.com/talks/jill_bolte_taylor_s_powerful_stroke_of_insight.html

Nov 15 Discussion

Special Guest **Michael Wartenbe** (PhD, Information Studies) on the Quantified Self Movement

Explore: The Quantified Self, http://quantifiedself.com/

Nov 20 Lecture 9: Knowing with a Computer

How are computers and "Big Data" changing what we know?

Reading: Chris Anderson, "The End of Theory," Wired 2008

Eric Winsberg, *Science in the age of Computer Simulation,* Chicago: University of Chicago Press, 2010. pgs TBD

Markus Weibel, Dario Floreano, Laurent Keller (2011), "A Quantitative Test of Hamilton's Rule for the Evolution of Altruism," *PLoS Biology* 9(5): e1000615.
http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1000615

Watch: Massimo Banzi "How Arduino is open sourcing imagination" TED talk
http://www.ted.com/talks/massimo_banzi_how_arduino_is_open_sourcing_imagination.html

Nov 22. Thanksgiving No Class

Nov 27 Lecture 10: Ways of Not knowing 1

Ignorance of Ignorance is not Knowledge.

Readings: Stuart Firestein, (2012) *Ignorance: How it Drives Science.* Oxford: Oxford University Press. Pages 1-88.

Proctor, Robert N., (2008). "Agnotology: A Missing Term to Describe the Cultural Production of Ignorance (and its study)," in Robert N. Proctor and Lona Schiebinger eds. *Agnotology: The Making and Unmaking of Ignorance*, Stanford: Stanford University Press. p.1-37

Optional: Nancy Tuana, "Coming to Understand: Orgasm and the Epistemology of Ignorance" in Robert N. Proctor and Lona Schiebinger eds. *Agnotology: The Making and Unmaking of Ignorance*, Stanford: Stanford University Press, p. 108-149.

Nov 29 Discussion TBD

Dec 4 Lecture 11 Part 3 Ways of not knowing 2

Readings and Topics TBD

Dec 6 Presentations (if any) and Discussion

Optional Final Thu Dec 13 11:30-2:30

(See Grades and Assignments)

If you wish to request an accommodation due to a suspected or documented disability, please inform your instructor and contact the Office for Students with Disabilities as soon as possible at A255 Murphy Hall, (310) 825-1501, (310) 206-6083(telephone device for the deaf).
Website: www.osd.ucla.edu