This course examines the complex relationship between science and society. It also takes a sociological look at the process by which knowledge is constructed, using both historical and contemporary studies. The module also introduces students to the main currents of thought which have been influential in sociology of science.

### Basic course information

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<td>See Moodle, search HPSC0105</td>
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<tr>
<td>Assessment:</td>
<td>3-hour exam - 50% and essay (2500 words) - 50%</td>
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<td>Timetable:</td>
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<tr>
<td>Prerequisites:</td>
<td>None Course aimed at 2\textsuperscript{nd} and 3\textsuperscript{rd} years</td>
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<tr>
<td>Required texts:</td>
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<tr>
<td>Course tutor(s):</td>
<td>Dr Erman Sozudogru</td>
</tr>
<tr>
<td>Contact:</td>
<td><a href="mailto:erman.sozudogru@ucl.ac.uk">erman.sozudogru@ucl.ac.uk</a></td>
</tr>
<tr>
<td>Web:</td>
<td><a href="https://www.ucl.ac.uk/sts/people/dr-erma-sonzudogru">https://www.ucl.ac.uk/sts/people/dr-erma-sonzudogru</a></td>
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<tr>
<td>Office location:</td>
<td>22 Gordon Square, Room B14</td>
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Schedule

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Assessments

Summary

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<td>26 March 17:00</td>
<td>2500</td>
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<td>Exam</td>
<td>3 hours</td>
<td>Term 3</td>
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Assignments

See end of this syllabus for assignment instructions.
Essays must be submitted via Moodle
In order to be deemed ‘complete’ on this module students must attempt all parts of the assignment and exam.

Specific Criteria for Assessment for this Module:

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook.
Aims & objectives

The aim of this course is to undertake a detailed examination of the sociological contribution to the analysis of science. It examines the complex relationship between science and society and also takes a sociological look at the process by which knowledge is constructed. The course introduces students to the main currents of thought which have been influential in sociology of science through both historical and contemporary studies.

By the end of this course you should:

- Have an understanding of how science works as a social process i.e. how technical knowledge is produced by communities
- Have a detailed knowledge of the main theories in the sociology of science
- Be aware of the strengths and weaknesses of a range of sociological approaches to the analysis of science
- Begin to see links between sociological analyses of science and broader debates in science policy, history of science and philosophy of science

Although this course will draw on more general arguments and ideas in sociology, you will not be expected to become an expert in all of these wider debates. I have provided some reading for any one who wishes to place each topic in a broader sociological context.

Course expectations

Each week the class will be divided into a lecture (approx. 1 hour) and discussion session (approx. 1 hour). You will be expected to read a set piece for the seminars and to contribute fully to seminar discussions.

You must attempt both the essay assignment and sit the exam in order to complete this course.
Reading list

There are several recent introductory textbooks on the sociology of science, and you are strongly recommended to acquire one:

- Yearley, Steve (2005), *Making Sense of Science: Understanding the Social Study of Science* (London: Sage) [A good overview, with a leaning towards more contemporary issues] Abbreviated to SY on this reading list;
- Sismondo, Sergio (2010), *An Introduction to Science and Technology Studies* (Oxford: Blackwell) 2nd Edition [Another good introduction, with a greater leaning towards philosophy of science than the other texts]. Abbreviated to SS on this reading list.
- Bucchi, Massimiano (2002), *Science in Society: An Introduction to Social Studies of Science* (London: Routledge) [Well written, a little too concise in places but particularly good if you are interested in public understanding/communication of science] Abbreviated to MB on this reading list;
- David, Matthew (2005), *Science in Society* (Basingstoke: Palgrave) . Tends to be aimed more at sociology students, but still a good introduction particularly if you’re interested in wider links with social theory Abbreviated to MD on this reading list.

You should also be aware of the *Handbook of Science and Technology Studies* which has overviews of particular topics in STS:


*The 1995 2nd edition still has good, relevant overviews of topics
Lecture Readings:

**Topic 1: From Functionalist Sociology of Science to Strong Programme and the Sociology of Knowledge**

Does it make sense to talk about social scientific knowledge as different from natural scientific knowledge? What should social scientific knowledge about natural science be like?

The lecture contains a re-cap of some material on Mertonian approaches to sociology of science covered in HPSC1004. Although you will not be assessed on this material, it is worth revising:

**Good Reading for Revising Merton and Functionalist Sociology of Science:**
Either  
SY – Chapter 1 OR  
MB – Chapters 1-2 OR  
SS – Chapter 3 (and 4) OR  
MD – Chapter 1

**The Strong Programme**
The publication of T.S. Kuhn’s *Structure of Scientific Revolutions* in the 1960s opened the door to a sociology of scientific knowledge. Although Kuhn himself eschewed this approach, his theory implied that scientific change of a revolutionary order (the paradigm shift) is rooted in the characteristics of the scientific community. Sociologists began to look at knowledge itself as socially conditioned.

**Essential Reading:**
Bloor, D (1991 [1976]), *Knowledge and Social Imagery* (Routledge) esp. Chapter 1 ‘The Strong Programme in the Sociology of Knowledge’ (for the classic statement of the tenets of the strong programme and the argument against a ‘sociology of error’) and also see Afterword in 2nd Edition for response to critics. [Electronic version on course e-readling list on Moodle]

**Text Book Overviews of the Strong Programme**
SY – Chapters 2-3 OR  
MB – Chapters 2-3 OR  
SS – Chapter 5 OR  
MD – Chapter 4
For more detail:

Berger, P and Luckman, T (196), *The social construction of reality: a treatise in the sociology of knowledge* (New York: Doubleday) (or http://perflensburg.se/Berger%20social-construction-of-reality.pdf) Intro and chapter 1 – sets out an agenda for the sociology of knowledge (not science *per se*).

**Philosophers go apoplectic about the Strong Programme:**

Chalmers, A (1990), *Science and its Fabrication* (chapters 6-8) (a critical overview of the strong programme)


**Sociologists ignore them and do Case Studies:**


Webster, A (1991), *Science, Technology and Society* (Chapter 2) (Overview, includes discussion of the botanical classification study mentioned in lecture)

**Topic 2: Laboratory Studies and The Micro-social Approach**

2 weeks

The ‘strong programme’ argued that broad social and political conditions could influence the content of scientific knowledge. Towards the end of the 1970s sociology of science took a distinctly micro-social (and linguistic) turn. Detailed studies of scientists, in laboratories or making claims in papers, became the preferred methodology of ‘lab anthropologists’. The complex negotiations, contingencies and skills involved in creating ‘a fact’ (and the way that these were all erased from the final product) became the focus of attention.

**Laboratory Studies 1: Ethnography and Sociology of Science**

**Text Book Readings:**

Either

SY – Chapter 6 OR

MB – Chapter 4 OR

SS – Chapters 6, 9 OR

MD – Chapter 5

**Laboratory Studies 2: Case Study of the Experimenter’s Regress**


The reading above is based on this more detailed piece:


**Additional Reading:**

**Overviews**


**Examples of Ethnographies of Science (try to read at least one):**


**Topic 3: Actor-network theory (ANT)**

(2 weeks)

One of the most influential schools of thought since the 1980s and 1990s has been actor-network theory (ANT). The central idea is that ‘facts’ are created when ‘heterogeneous’ assemblages of actors and objects are mobilized into a ‘network’. Science and society are both co-created as the laboratory is used as a focal point for assembling knowledge and redefining social interests. Science becomes ‘politics by other means’.

**Essential Readings (2 weeks)**

**Text Book Overviews**

Either

SY – Chapter 4 OR

SS – Chapter 7


Ch.3

**Week 2**


AND


**Additional Reading:**

If you read one piece of extra reading, read this:

Latour, B (1999), *Pandora’s Hope: Essays on the Reality of Science Studies* (Chapter 2 ‘Circulating Reference’) (Includes a good, relatively clear, illustrative case study of Amazonian soil science in the making – best to ignore the confusing diagrams) [Electronic reading list for course on Moodle]

Further reading:

Michael, M (2016) *Actor-Network Theory: Trials, Trails and Translations* (London: Sage) Ch.3 and 4 (and 7 if you are interested in brining ANT up to date)

Callon, M (1986), ‘Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay’, in Biaglio, M (1999), The Science Studies Reader (London Routledge) (Ch.5) (Some key ANT jargon explained through a case study of molluscs in Brittany)(Case study also discussed in SY text book)


Collins, HM and Yearley, S (1992), ‘Epistemological Chicken’ in A. Pickering (ed) Science as Practice and Culture (Chicago: University of Chicago Press) pp301-26 (attacks the notion that non-humans can be treated as if they were the same as intentional actors)

See also:

Law, J and Hassard, J (1999), Actor-Network Theory and After (Oxford: Blackwell) (More advanced reading – including Latour claiming that all the terms in actor-network theory, including the hyphen, are problematic).
Topic 4: Science and Identity: Gender, Postcolonialism, Disability

Feminist critiques of science have tended to develop outside of mainstream sociology of science, despite the overlap in perspectives. Studies range from institutional questions (why so few women in science?) to epistemological questions (is there a distinctly feminist science?). Feminist analyses of science form a burgeoning literature. Other inequalities in science remain relatively under-researched.

See Moodle for Seminar Readings

Textbook Reading

Either
SY – Chapter 5 OR
SS – Chapter 13 OR
MD – Chapter 5

Starting points for further reading:


Additional Reading


Oudshoorn, N (2004), "Astronauts in the Sperm World": The Renegotiation of Masculine Identities in Discourses on Male Contraceptives , Men and Masculinities, Vol. 6, No. 4, 349-367


Hardin, S. (2008), *Sciences From Below: Feminisms, Postcolonialisms and Modernities.* (Ch. 5)


**Topic 5: Boundaries: Science and Non-Science**

Drawing boundaries is an eminently social process. Boundaries are routinely drawn between, for instance, science and non-science, experts and lay persons, science and politics and the social and natural. The way in which boundaries are drawn and the purposes served by the resulting distinctions are an important topic within social studies of science.

**Key Reading**

**Either**


Or:


**Additional Reading:**


Gieryn, T (1999), *Cultural Boundaries of Science: Credibility on the Line* (Chicago) (Esp. Introduction)


SS – Chapter 1 pp31-32.

**Two Recent Case Studies that Use Boundary-Work**


Topic 6: Experts and the Politics of Science

Scientific expertise is called on by many groups such as industry, governments, non-governmental organisations. This science is brought to bear in regulatory disputes or other areas of controversy. What is the role of science in such situations?

Text Book Reading

Either
SY – Chapter 8 OR
SY – Chapter 9 OR
MD – Chapter 3

Additional Reading:

The First Hundred Days, an academic blog coming from Harvard STS dealing with the politics and repercussions of so-called ‘post-truth’ and ‘alternative facts’: http://first100days.stsprogram.org


Ravetz, J (2006), The No-Nonsense Guide to Science (New Internationalist), Chapters 5 and 6 (Scientific Objectivity; Uncertainty)

Stilgoe, J (2005), ‘Controlling mobile phone health risks in the UK: a fragile discourse of compliance’, Science and Public Policy Vol. 32(1): 55-64. (Case study involving the public face of science)


Lupton, D (1999), Risk (Routledge). Chapter 2 ‘Theorizing Risk’ (Short and excellent introduction to risk in social science) [Electronic copy on e-reading list on Moodle]

Specific Reading on co-production

**Topic 7. Time and Space: Expectations, Imaginaries and the Geography of Science**

This is a session on hope and promise. Recent STS studies of emerging technologies have emphasized the role of ‘expectations’ and ‘imaginaries’ in shaping the development of novel science and technology. This new ‘sociology of expectations’ moves away from ideas of promise as ‘mere’ hype and looking at how promises about future utopias and dystopias actively shape the innovation process. At the same time, there has been increasing attention paid by human and cultural geographers to ideas from STS, giving rise to a burgeoning geography of science.

**Three Key Readings**


**Additional Readings on Expectations and Imaginaries**


*The Sociotechnical Imaginaries Project*, useful website run from Harvard STS, particularly the FAQ and antecedents sections: [http://sts.hks.harvard.edu/research/platforms/imaginaries/](http://sts.hks.harvard.edu/research/platforms/imaginaries/)


Additional Readings on Geographies of Science


Davies GF (2014). ‘Searching for GloFish™: Aesthetics, Ethics and Encounters with the Neon Baroque’. *Environment and Planning A: international journal of urban and regional research*, 46(11), 2604-2621


Topic 8: Non-Knowledge: Secrecy, Ignorance and Uncertainty

STS has recently turned from looking at the construction on knowledge to also look at these various forms of non-knowledge. If there can be a sociology of scientific knowledge, can there equally be a sociology of ignorance? With respect to secrecy, a combination of STS with the geography of knowledge has promised to re-think the dynamics of secrecy.

Starting Point:

Further Reading


Balmer, B (2012), *Secrecy and Science: A Historical Sociology of Biological and Chemical Warfare* (Farnham: Ashgate) (Chapter 1 for a review of literature on science and secrecy).


ESSAY TOPICS FOR
SOCIOLOGY OF SCIENCE

Assignments should be word-processed, 12 point type, minimum 1.5 line-spaced, with page numbers added and with a word count at the end.

Assignment 1: Essay
Your essay should be no more than 2500 words long with a list of references at the end. Do not include references in your word count. You are expected to read widely for this assignment in order to answer the question set. Wherever possible your essays should discuss empirical case studies from the academic literature.

1. “What was strong about the Strong programme was its insistence that social science should treat all kinds of knowledge equally.” (Yearley 2005)
   Explain what Yearley is claiming here about the Strong Programme and assess whether the programme succeeded in its analysis of scientific knowledge.

2. What are the strengths and limitations of employing ethnographic methods in the sociology of science?

3. What does it mean to claim that science is socially constructed? Does it matter whether or not the claim is true?

4. Actor-network theory has been described as “a social science whose only goal is to tell inconsistent, false and incoherent stories about nothing in particular” (Amsterdamska 1990). Is this a fair assessment?

5. Feminist approaches to gender and science have demonstrated how few women there are in science and the barriers to their careers. What, if any, other contributions have feminist approaches made or could they make to our understanding of science?

6. What can the study of science and excluded or marginalised groups other than gender learn from feminist analyses of science and technology?

7. Briefly explain Gieryn’s distinction between essentialist and constructivist solutions to the demarcation problem. Does the constructivist ‘solution’ really solve the problem?

8. Do science advisors ‘speak truth to power’ in regulatory disputes?

9. Are socio-technical imaginaries merely a re-invention of the sociology of expectations?

10. Does the geography of science tell us anything more than that people believe different things in different places?

11. Is secret science simply open science done behind closed doors?