

# **HPSC0105**

## **Sociology of Science & Technology**

### **Course Syllabus**

2018-19 session | Dr Erman Sozudogru | erman.sozudogru@ucl.ac.uk

#### **Course Information**

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**

Course website:	See Moodle
Moodle Web site:	See Moodle, search HPSC0105
Assessment:	3-hour exam - 50% and essay (2500 words) - 50%
Timetable:	See UCL online timetable
Prerequisites:	None Course aimed at 2 <sup>nd</sup> and 3 <sup>rd</sup> years
Required texts:	See below
Course tutor(s):	Dr Erman Sozudogru
Contact:	erman.sozudogru@ucl.ac.uk
Web:	<a href="https://www.ucl.ac.uk/sts/people/dr-erman-sozudogru">https://www.ucl.ac.uk/sts/people/dr-erman-sozudogru</a>
Office location:	22 Gordon Square, Room B14

## Schedule

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<b>UCL Week</b>	<b>Topic</b>	<b>Activity</b>
20	From Functionalist Sociology of Science to the Strong Programme and Sociology of Knowledge	See Moodle
21	Laboratory Studies 1: Ethnography and Sociology of Science	See Moodle
22	Laboratory Studies 2: Case Study of the Experimenter's Regress	See Moodle
23	Actor Network Theory 1	See Moodle
24	Actor Network Theory 2	See Moodle
25	Reading Week	See Moodle
26	Science and Identity: Gender, Postcolonialism, Disability	See Moodle
27	Boundaries of Science	See Moodle
28	Experts and the Politics of Science	See Moodle
29	Sociology of Expectations and Imaginaries	See Moodle
30	Non-Knowledge: Secrecy, Ignorance and Uncertainty	See Moodle

## Assessments

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### Summary

	<b>Description</b>	<b>Deadline</b>	<b>Word limit</b>	<b>Deadline for Tutors to provide Feedback</b>
<b>Assignment 1</b>	Essay	26 March 17:00	2500	Two weeks after the deadline
<b>Exam</b>	3 hours	Term 3		

### 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) 2<sup>nd</sup> 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:

Felt, U et al (eds) (2016), *The Handbook of Science and Technology Studies* (Fourth Edition) (2016) (Cambridge Mass: MIT Press)

Hackett, EJ (et al) (2007), *The Handbook of science and technology studies* (Cambridge, Mass.; London : MIT Press) (3rd ed)\*

\*The 1995 2<sup>nd</sup> 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 2<sup>nd</sup> Edition for response to critics. [Electronic version on course e-reading 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)

Laudan, L (1981), ‘The Pseudo-Science of Science’, *Philosophy of the Social Sciences.*, Vol.11 (2) pp.173-98. (Scathing critique of the strong programme)

Bloor, D (1981), ‘The Strengths of the Strong Programme’, *Philosophy of the Social Sciences*, Vol.11(2) pp.199-213.

(Scathing defence of the strong programme) [Response to Laudan’s article above]

Sociologists ignore them and do Case Studies:

Gillespie B et al (1979), ‘Carcinogenic Risk Assessment in the United States and Great Britain: The Case of Aldrin/Dieldrin’, *Social Studies of Science*, 1979, Vol.9(3), pp.265-301

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

Collins, H and Pinch, T (1993), ‘The Germs of Dissent: Louis Pasteur and the Origins of Life’, in *The Golem: What Everyone Should Know About Science* (Chapter 4) [e-copy in library]

## **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**

Harry Collins and Trevor Pinch (1998) [1993] “A New Window on the Universe: The Non-Detection of Gravitational Radiation”, in *The Golem: What You Should Know About Science*, Cambridge: Cambridge University Press: 91-108. [Electronic reading list for course on Moodle]

The reading above is based on this more detailed piece:

Collins, H (1985), ‘Detecting Gravitational Radiation: The Experimenters’ Regress’, Chapter 4 in *Changing Order: Replication and Induction in Scientific Practice* (Chicago: Univ Chicago Press) Electronic reading list for course on Moodle]

#### **Additional Reading:**

##### Overviews

Knorr-Cetina, K (1995), ‘Laboratory Studies: The Cultural Approach to the Study of Science’ in Jasanoff S et al (eds) *Handbook of Science and Technology Studies*, (London: Sage) (2<sup>nd</sup> ed) pp140-166 (Not an easy read, but very succinct overview of the approach).

Doing, P (2008), ‘Give me a Laboratory and I will Raise a Discipline: The Past, Present and Future Politics of Laboratory Studies in STS’, in Hackett, EJ (et al) (2008), *The Handbook of Science and Technology studies* (Cambridge, Mass. ; London : MIT Press) (3rd ed)

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

Latour, B and Woolgar, S (1986) [1976] “An Anthropologist visits the Laboratory”, in *Laboratory Life: The Construction of Scientific Facts*, N.J; Chichester: Princeton University

Press: 43-88. [e-book available from UCL library; chapter also on e-reading iist on Moodle site]

Karin Knorr-Cetina (1999) "From; Machines to Organisms: Detectors as Behavioural and Social Beings", in *Epistemic Cultures: How the Sciences Make Knowledge*, Cambridge, Mass.; London: Harvard University: 111-135. [Chapter available through course e-reading list on Moodle]

Mol, A (2002), 'Cutting Surgeons, Walking Patients: Some Complexities Involved in Comparing', in Law, J and Mol, A (eds) *Complexities: Social Studies of Knowledge Practices* (Durham: Duke University Press) [e-book available from UCL library]

## **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

Or Michael, M (2016) *Actor-Network Theory: Trials, Trails and Translations* (London: Sage)

Ch.3

### **Week 2**

Latour, B (1983), 'Give Me a Laboratory and I will Raise the World', in *Science Observed: Perspectives on the Social Study of Science* (London: Sage) pp141-170. or extract in Biaglio, M (1999), *The Science Studies Reader* (Ch.18)). [Available in online reading list, Moodle]

AND

O, Amsterdamska (1990), 'Surely you are joking, Monsieur Latour!', *Science, Technology and Human Values* Vol.15, Fall, pp495-504.

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 bringing ANT up to date)

Latour, B (1987), *Science in Action* (Harvard University Press) (especially introduction and chapters 1 & 2) (A classic overview of Latour's theories) (Chapter 2 'Laboratories' is on Moodle e-reading list)

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)

Scott, P (1991), 'Levers and Counterweights: A Laboratory that Failed to Raise the World', *Social Studies of Science* Vol.21 pp7-37 (empirically based critique of Latour)

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:*

Callon M and Latour B (1992), "Don't Throw the Baby Out with the Bath School! A Reply to Collins and Yearley" in *Science as Practice and Culture* (Ed. Pickering A. Chicago and London: University of Chicago Press) pp343-368.

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:

Felt, U et al (eds) (2016), *The Handbook of Science and Technology Studies* (Fourth Edition) (2016) (Cambridge Mass: MIT Press): Chapters 12, 13, 14, 24 depending on your interests.

Star, SL (1991), “Power, Technology and the Phenomenology of Conventions: On Being Allergic to Onions” in Law, J (ed) *A Sociology of Monsters: Essays on Power, Technology and Domination* (London and New York: Routledge) pp26-56. (An essay on power, marginality and actor-network theory)

Hacking, I. (1986), ‘Making Up People’. In T. Heller et al. (eds), *Reconstructing Individualism*. Stanford: Stanford University Press.

### **Additional Reading**

Haraway, D (1999), ‘Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective’, in Biagioli, M (ed) *The Science Studies Reader* (Routledge) and also in Lederman, M and Bartsch, I (2001), *The Gender and Science Reader* (London: Routledge). [Electronic copy available on course e-reading list on Moodle ]

Haraway, D. (1997), ‘Modest\_Witness@Second\_Millennium’, in *Modest\_Witness@Second\_Millennium.FemaleMan<sup>©</sup>\_Meets\_OncoMouse<sup>TM</sup>* (London: Routledge) (Chapter 1 – a tough but rewarding read – on e-reading list for course on Moodle)

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

Schiebinger, L (1999), *Has Feminism Changed Science?* (Harvard Univ. Press) (esp. Sections II and III)

Lederman, M and Bartsch, I (2001), *The Gender and Science Reader* (London: Routledge) (Esp. sections 4 and 5)

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

R. Velho, C. Holloway, A. Symonds, B. Balmer, '[The Effect of Transport Accessibility on the Social Inclusion of Wheelchair Users: A Mixed Methods Approach](#)', *Social Inclusion* Vol. 4 No. 3 (2016) On-line Open Access.

Westhaver, R. (2010). "A Kind of Sorting Out": Crystal Methamphetamine, Gay Men, and Health Promotion. *Science, Technology, & Human Values* 36(2), pp.160-189.

## **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***

Gieryn TF (1983), "Boundary Work and the Demarcation of Science from Non-Science: Strains and Interests in the Professional Ideologies of Scientists", *American Sociological Review* Vol.48 pp781-795

#### **Or:**

Gieryn T (1995), 'Boundaries of Science' in Jasanoff S *et al* (eds) *Handbook of Science and Technology Studies*, (London: Sage) pp393-443 (Long but useful overview of the practical problem of demarcating the inside from the outside of science)

### **Additional Reading:**

Lynch, M (2004), 'Circumscribing Expertise: Membership Categories in Courtroom Testimony' in Jasanoff, S (ed) *States of Knowledge* (London: Routledge) – (contains some criticisms of 'boundary-work')

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

Yearley S (1988), *Science, Technology and Social Change* (London: Unwin Hyman). Chapter 2.

Jasanoff, S (1987), 'Contested Boundaries in Policy-Relevant Science', *Social Studies of Science* Vol.17 pp195-230 (Complex but excellent argument on the shifting and negotiable boundary between science and politics)

Golinski, J (1998), *Making Natural Knowledge: Constructivism and the History of Science* (Chapter 2 - on historical uses of the boundary problem).

SS – Chapter 1 pp31-32.

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

Addison, C (2017), Spliced: Boundary-work and the establishment of human gene therapy, *BioSocieties* June 2017, Volume 12, Issue 2, pp 257–281

Lindberg, K *et al* (2017), Performing boundary work: The emergence of a new practice in a hybrid operating room, *Social Science & Medicine*, Volume 182: 81-88

## **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>

Irwin, A (2007), ‘STS Perspectives on Scientific Governance’, in Hackett, EJ (et al), *The Handbook of Science and Technology studies* (Cambridge, Mass. ; London : MIT Press) (3rd ed) [NOT the fourth edition cited in general readings]

Irwin, A (2001), *Sociology and the Environment* (Cambridge: Polity) Chapters 5 and 7.

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)

Jasanoff, S (1987), ‘Contested Boundaries in Policy-Relevant Science’, *Social Studies of Science* Vol.17 pp195-230 (Complex but excellent argument on the shifting and negotiable boundary between science and politics)

Stirling, A (2007), ‘Risk, Precaution and Science: Towards a More Constructive Debate’, *EMBO Reports* 8(4):309-315

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

Jasanoff, S (ed) (2004), *States of knowledge :the co-production of science and social order* (London : Routledge, 2004) (Esp. Chapter: 'Ordering Knowledge, Ordering Society')

Reardon, J (2001), 'The Human Genome Diversity Project: A Case Study in Coproduction', *Social Studies of Science*, Vol.31 No.3 pp.357-388 (On the simultaneous production of social and natural categories, together with the boundary between them).

## **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**

Borup, M et al (2006), ‘The sociology of expectations in science and technology’. *Technology Analysis & Strategic Management* 18:285-298

Jasanoff , Sand Kim, S (2009), Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea, *Minerva* Vol. 47, No. 2, pp. 119-146

Steven Shapin (1998) ‘Placing the View from Nowhere: Historical and Sociological Problems in the Location of Science’, *Transactions of the Institute of British Geographers* 23 (1), 5–12.

### Additional Readings on Expectations and Imaginaries

Hurlbut, JB (2015) ‘Remembering the Future: Science, Law and the Legacy of Asilomar’ in Jasanoff , Sand Kim, S (eds), *Dreamscapes of Modernity: Sociotechnical Imaginaries And The Fabrication Of Power* [other chapters might also be of interest]

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

Adam Hedgecoe, Paul Martin (2003), ‘The Drugs Don't Work: Expectations and the Shaping of Pharmacogenetics’, *Social Studies of Science*, Vol. 33, No. 3, 327-364

Brown, N and Michael, M (2003), ‘A Sociology of Expectations: Retrospecting Prospects and Prospecting Retrospects’, *Technology Analysis & Strategic Management* 15: 3-18

Brown, N and Kraft,A (2006),Blood Ties: Banking the Stem Cell Promise,*Technology Analysis & Strategic Management* Vol. 18 , Issue 3-4

Busby, Helen, Martin, Paul (2006) ‘Biobanks, national identity and imagined communities: The case of UK biobank’ *Science as Culture*, Volume 15, Number 3, September 2006 , pp. 237-251(15)

### Additonal Readings on Geographies of Science

Henke, C and Gieryn, T (2007), 'Sites of Scientific Practice: The Enduring Importance of Place', in Hackett, EJ (et al) (2007), *The Handbook of science and technology studies* (Cambridge, Mass. ; London : MIT Press) (3rd ed): 353-77

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

Secord, J (2004) Knowledge in Transit *Isis*, 95, 654–672

Collier S J, Lakoff A, (2008), "Distributed preparedness: the spatial logic of domestic security in the United States" *Environment and Planning D: Society and Space* 26(1) 7 – 28.

Canales, AF (2012), 'A new space for a new science: the transformation of the JAE Campus after the Spanish Civil War', *History of Education: Journal of the History of Education Society*, 41:5, 657-674.

## **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:

Galison, P. 2004. Removing knowledge. *Critical Inquiry*, 31(1), 229-43.

### Further Reading

Kempener, J (2011), 'Forbidden Knowledge: Public Controversy and the Production of Nonknowledge', *Sociological Forum* 26(3): 475-500.

Holmberg, T and Ideland, M (2012), 'Secrets and lies: "selective openness" in the apparatus of animal experimentation', *Public Understanding of Science* vol. 21 no. 3: 354-368

Paglen, T. (2010). Goatsucker: toward a spatial theory of state secrecy. *Environment and Planning D: Society and Space*, 28(5), pp.759-771.

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).

Gross, M and McGahey L (eds), *Routledge International Handbook of Ignorance Studies* (London: Routledge) Introduction pp1-12

MacKenzie , D and Spinardi, G (1995), 'Tacit knowledge, weapons design, and the uninvention of nuclear weapons' *American Journal of Sociology* 101(1) (1995), pp.44-99

Merton, R. 1973. The normative structure of science, in *The Sociology of Science: Theoretical and Empirical Investigations*, edited by N. Storer. Chicago: University of Chicago Press, 267-78.

Robert N. Proctor, R and Londa Schiebinger, L (2008), *Agnostology: The Making and Unmaking of Ignorance* (Stanford: Stanford University Press)

Conway, E and Oreskes, N (2012) *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (London: Bloomsbury)

## **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?