

## **SOCIOLOGY OF TECHNOLOGY (Fridays, 15.30-16.50)**

THIS COURSE WILL BE HELD ONLINE ONLY ON GOOGLE MEET

[meet.google.com/mdw-pquc-eog](https://meet.google.com/mdw-pquc-eog)

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Office hours: By appointment, email me

### **Course Description**

The course gives an introduction of theories and approaches that are central for researching the interplay between society, science and technology. The course is designed for students with IR and security studies background (but not exclusively so) who are challenged to think more critically about what counts as technology and why, and how science and technology intervene in and with the wider world. Drawing on sociological (but also on anthropological, historical and philosophical) insights, we will explore major debates and perspectives in Science & Technology Studies (STS), such as Actor-Network Theory (ANT) and Social Construction of Technological Systems (SCOT). We will focus both on how science & technology co-shape social dynamics, but also on how society, as it were, gets inside science & technology. Hence we will examine the transformative power of science & technology to arrange and rearrange contemporary societies. But we will also ask: is it possible that the very design of technologies and the nature of scientific knowledge claims embody assumptions about the nature of society? How do culture, gender, ideological presuppositions, implicit theories about society enter into the very design of technologies, technological systems and scientific knowledge claims? The latter part of the course is specifically designed to provide opportunity for reflections and discussions of perspectives, theories, concepts and examples in sociology of science & technology that are related to IR and security studies.

### **Aims of the Course**

After completing this course, students shall be able to:

- understand major theories and approaches that articulate the relationship between society, science and technology
- develop critical and reflexive mindset in relation to technological artefacts, technosystems and scientific knowledge claims
- productively “import” insights from science & technology studies to security studies

### **The Structure of the Course**

1. **INTRODUCTION, OR ‘DEFETISHIZING TECHNOLOGIES’ (23/2)**

Introduction to seminar. Expectations, requirements, agenda, structure of each session. Why is Sociology of Science & Technology important? Technological mindset, technological fetish. Why we can't think (about) technologies without thinking about historical development of science (studies). Why we *cannot* think about society without taking into account technologies. Technological determinism and/vs. social constructivism.

**Readings:**

**Heilbroner RL (2009)** 'Do Machines Make History?' In *Technology and Society: Building Our Sociotechnical Future*, edited by DG Johnson & JM Wetmore, Cambridge, MA: MIT Press, pp. 97-106 (first published in 1967).

**Hughes TP (2009)** 'Technological Momentum.' In *Technology and Society: Building Our Sociotechnical Future*, edited by DG Johnson & JM Wetmore, Cambridge, MA: MIT Press, pp. 141-150 (first published in 1994).

**2. ON 'SCIENCE STUDIES' (1/3)**

We will trace origins & development of science studies from the mid 20<sup>th</sup> century onwards. Collins's piece is very useful in this sense – he advances a brief and very comprehensive history of 'science studies' (and how they turned into STS) and divides its history into three major waves. Yearley then asks provocative questions 'just what makes science special?' (i.e. in relation to other human pursuits). We will also discuss two fundamental conceptual – and to a very large extent conflictual – 'programmes' in science studies: the so called strong programme and empirical relativism.

**Readings:**

**Collins H (2014)** *Are we all Scientific Experts Now?* Cambridge: Polity, pp. 17-48.

**Yearley S (2005)** *Making Sense of Science: Understanding the Social Study of Science*. London: Sage, pp. 1-39.

**3. OPENING THE BLACK BOX OF SCIENCE AND TECHNOLOGY STUDIES (STS) (8/3)**

Introduction to Science & Technology Studies (STS). Whats, whys, hows. We will discuss the basic contours of STS, its distinctive character in the web of the social sciences. We'll also examine whether STS as can be treated as *a method of inquiry* as John Law suggests.

**Video & Readings:**

Watch discussion between **Pinch, Kaiser, Picon, Winner** available here:

<https://www.youtube.com/watch?v=D9o2B47CArw>

**Law J (2017)** 'STS as a Method.' In *The Handbook of Science and Technology Studies* (fourth edition) edited by U Felt et al. Boston, MA: MIT Press, pp. 31-58.

**There will be no class on 15/3**

**4. INSIDE TECHNOLOGIES (22/3)**

In this seminar, we will focus on two very influential streams *within* STS that have (already in the late 1970s) opened-up the question how 'the social' co-shapes technologies, technosystems and scientific knowledge claims and how then technologies, technosystems and scientific knowledge claims co-shape 'the social'. Firstly, we will focus on what MacKenzie & Wajcman call 'the social shaping of technology' and secondly, and relatedly, we will discuss the field of Social Construction of Technological Systems (SCOT) that was substantial intellectual inspiration for the previous approach.

**Readings:**

**Bijker WE, Hughes TP & Pinch TJ (1987)** 'Introduction.' In *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by WE Bijker, TP Hughes & TJ Pinch, Cambridge, MA: MIT Press, pp. 3-9.

**Pinch TJ & Bijker WE (1987)** 'The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other.' In *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by WE Bijker, TP Hughes & TJ Pinch, Cambridge, MA: MIT Press, pp. 11-44.

**MacKenzie D & Wajcman J (1985)** 'Introductory Essay: The Social Shaping of Technology.' In *The Social Shaping of Technology* (first edition) edited by D MacKenzie & J Wajcman. Milton Keynes: Open University Press, pp. 2-26.

**5. FEMINIST & POSTCOLONIAL EPISTEMOLOGIES IN STS (5/4)**

Feminist and postcolonial thought played a very important role in development of STS. Science, Technology and Engineering have not been fully open to participation of women despite the substantive progress the western science have witnessed ever since the 1960. The same indeed holds for other minorities and for the global south What are the implication of this prevailing problem for scientific and technological development?

**Readings:**

**Wajcman J (1991)** *Feminism Confronts Technology*. University Park, PA: The Pennsylvania State University Press, pp. 1-53.

**Martin E (1991)** 'The Egg and the Sperm: How Science has Constructed a Romance Based on Stereotypical Male-Female Roles.' *Signs* 16 (3): 485–501.

**Banu S et al (2017)** *Feminism, Postcolonialism, Technoscience*. In *The Handbook of Science and Technology Studies* (fourth edition) edited by U Felt et al. Boston, MA: MIT Press, pp. 407-433.

**6. ASSOCIATIONS, ASSEMBLAGES, (A)SYMMETRIES (12/4)**

In this seminar, we will focus on, in many ways controversial, Actor-Network Theory (ANT) that equips nonhuman entities with agency and on the its central principle of *symmetry*. We will engage with the work of Latour, perhaps the key ANT representative, and his notion of socio-technical/technological assemblages. We will also look at Pickering notion of 'mangle' and 'dance of agency', which is not dissimilar from ANT.

**Readings:**

**Latour B (2005)** *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, pp. 1-17.

**Latour B (2009)** 'Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts.' In *Technology and Society: Building Our Sociotechnical Future*, edited by DG Johnson & JM Wetmore, Cambridge, MA: MIT Press, pp. 151-180 (first published in 1992).

**Michael M (2017)** *Actor-Network Theory: Trials, Trails and Translations*. London: Sage, pp. 3 –6; 10 – 22.

**Pickering A (1995)** *The Mangle of Practice: Time, Agency & Science*. Chicago, IL: The University of Chicago Press, pp. 1-34.

**7. HYBRIDS, CYBORGS & FRANKENSTEINS (19/4)**

In this seminar, we will loosely follow-up ANT approach by discussing the influential ‘cyborg manifesto’ by Haraway. We will also look at the question as to whether or not the very nature of social reality is hybrid. However, most interestingly perhaps, we will discuss the iconic novel *Frankenstein* by Mary Shelly and how the story itself relates to themes discussed in this course. Specifically then, by engaging with Shelly’s *Frankenstein* we will open up the relationship between technologies and ethics.

**Readings & Film:**

**Haraway DJ (1999)** ‘Modest Witness@Second Millenium.’ In *The Social Shaping of Technology* (second edition) edited by D MacKenzie & J Wajcman. Maidenhead: Open University Press, pp. 41-49 (first published in 1997).

**Watch Mary Shelly’s *Frankenstein* (1994) by Kenneth Branagh (<https://youtu.be/doR7qniJ9ZY>)**

**8. NON-HUMANS WITH POLITICS? (26/4)**

Drawing on the two previous sessions, we will re-open the question of whether or not nonhuman entities (such as bridges) do have not only agency but politics by focusing on influential and controversial essay by Winner.

**Readings:**

**Winner L (1999)** ‘Do Artifacts Have Politics?’ In *The Social Shaping of Technology* (second edition) edited by D MacKenzie & J Wajcman. Maidenhead: Open University Press, pp. 28-40 (first published in 1980).

**Guston DH, Finn E & Robert JS (2017)** *Frankenstein. Annotated for Scientists, Engineers, and Creators of all Kinds*. Cambridge, MA: MIT Press, pp. xxiii-xxxv, 201-251 (optionally 271-273) – **THIS PIECE OF READING ASSUMES THAT YOU HAVE WATCHED BRANAGH’S FILM!**

**9. STS & SOCIAL CRITIQUE (3/5)**

So far, it might have seemed that sociology of science & technology is an uncritical enterprise (and such point has been raised many times!). In fact, there is a minor current within STS that heavily draws on critical theory (especially that of the Frankfurt School) and advances a critical theory of technology.

**Readings:**

**Andreas M (2018)** Future Questions: Democracy and the New Converging Technologies. In *Critical Theory and the Thought of Andrew Feenberg* edited by DP Arnold and A Michel. Cham: Springer Nature, pp. 217-240.

**Feenberg A (2017)** ‘A Critical Theory of Technology’. In *The Handbook of Science and Technology Studies* (fourth edition) edited by U Felt et al. Boston, MA: MIT Press, pp. 635-663.

**Feenberg A (2018)** Ten Paradoxes of Technology. In *Technology, Modernity, and Democracy: Essays by Andrew Feenberg*, edited by E Beira and A Feenberg. London: Rowman & Littlefield, pp. 37-54.

**10. CONSTRUCTING AND DISSEMINATING MILITARY TECHNOLOGIES (10/5)**

The cases of military cockpit design & ‘globalization of AK-47’ will serve us as specific examples illustrating human imprint in technological design and use. Following-up one of the major tropes of the course we will look at how socio-cultural values penetrate into construction, design and engineering.

**Readings:**

**Osborne T (2014)** 'The AK-47 as a Material Global Artefact.TET' In *Globalization in Practice* edited by N Thrift et al, Oxford: Oxford University Press, pp. 246-248.

**Weber RN (1999)** 'Manufacturing Gender in Military Cockpit Design'. In *The Social Shaping of Technology* (second edition) edited by D MacKenzie & J Wajcman. Maidenhead: Open University Press, pp. 372-381 (first published in 1997).

**There is no class on 17/5**

### **11. VISIONS OF TECHNOLOGICAL FUTURE (20/5)**

In this session, we will look into the future, how STS deals with technological futures, imaginaries, visions, expectations, anticipations and with what is sometimes in popular discourse labeled "grand challenges".

#### **Readings:**

**Dyson FJ (2009)** 'Technology and Social Justice'. In *Technology and Society: Building Our Sociotechnical Future*, edited by DG Johnson & JM Wetmore, Cambridge, MA: MIT Press, pp. 5-12 (first published 2004).

**Foster EM (2009)** 'The Machine Stops'. In *Technology and Society: Building Our Sociotechnical Future*, edited by DG Johnson & JM Wetmore, Cambridge, MA: MIT Press, pp. 13-36 (first published 1909).

### **Reading List**

Please refer to syllabus and SIS. for a detailed list of required and additional readings for each session.

### **Course Requirements**

The students' performance in the course will be assessed based on the following criteria:

#### **ATTENDANCE/ACTIVITY (25%)**

All students are expected to participate in sessions by contributing with their observations and insights based on readings. Attendance therefore also means active participation in discussions. One unexcused absence will be tolerated, more absences will be considered on an individual basis.

#### **PRESENTATION (25%)**

The presentations will take place at the beginning of each session and will introduce the readings assigned for the very session. PPT is optional, students are encouraged to present in groups.

#### **FINAL PROJECT (50%)**

**The project (I accept individual & collective projects) does not have to be a traditional essay i.e., a written text. You are encourage to be creative and bold whilst capturing course-related themes using various media, visuals, digital technologies, podcasts, photography/visual essays and more -- this**

really depends on your imagination as I am open to experimental ideas, for instance a short film about particular futures and/or technoscientific imaginers and/or anticipations and how they are materially enacted - and with what implications - in the present. The project needs to be complemented with 1-2 pages long synopsis and explanation.

**!!BUT PLEASE DISCUSS SUCH PROJECTS WITH ME FIRST!!!**

Traditional essay is also possible nevertheless and the essay questions/themes will be provided in the latter part of the course. The essays should be 2500-3000 words in length (incl. bibliography). Co-authorship is possible: max 3 authors allowed however (2 authors = 4000 words; 3 authors = 6000 words).

**THE PROJECT DEADLINE IS DUE ON 15 JUNE, 2024 (by midnight), TO BE SENT TO MY EMAIL.**

### **Marking Scale**

General Grade	Grade Specification	Percentage
<b>A - excellent</b>	Excellent upper (1)	100 – 96
	Excellent lower (2)	95 - 91
<b>B – very good</b>	Very good upper (1)	90 - 86
	Very good lower (2)	85 – 81
<b>C - good</b>	Good upper (1)	80 – 76
	Good lower (2)	75 – 71
<b>D - satisfactory</b>	Satisfactory upper (1)	70 – 66
	Satisfactory lower (2)	65 – 61
<b>E - sufficient</b>	Sufficient upper (1)	60 - 56
	Sufficient lower (2)	55 - 51
<b>F - fail</b>		50 - 0

### **Course Rules**

The *Code of Study and Examination of Charles University in Prague* provides the general framework of study rules at the university. According to art. 6, par. 17 of this Code, “a student may not take any examination in any subject entered in his study plan more than three times, i.e. he shall have the right to two resit dates; no extraordinary resit date shall be permitted. (...) If a student fails to appear for an examination on the date for which he has enrolled without duly excusing himself, he shall not be marked; the provision of neither this nor of the first sentence shall constitute the right to arrange for a special examination date.”

Any written assignment composed by the student shall be an original piece. The practices of plagiarism, defined by the Dean's Provision no. 18/2015, are seen as "a major violation of the rules of academic ethics" and "will be penalized in accordance with Disciplinary Regulations of the faculty."

This instructor believes academic honesty is the foundation of the entire enterprise of a university. The personal integrity policy works for both students and teachers. Students can expect that the instructor will treat them in a fair, honest, and impartial manner. The instructor also expects students to deal with him and with one another honestly.

Plagiarism\* and cheating are violations of academic honesty because they steal from the original creator of the work. In addition, they violate the relationship of honesty between student and teacher as the student attempts to pass off work as his or her own which was produced by another. Further, plagiarism and cheating violate the bond of honesty among students themselves. Students who produce their assignments through long, hard work are being violated by those taking a shortcut through the misappropriation of another's work or knowledge. Most sadly, students who violate academic honesty cheat themselves of the chance to learn. Only in an environment of honesty can genuine learning occur and good citizenship be fostered.

Because academic honesty is treated as a serious matter, the course policy is one of zero tolerance for academic dishonesty. Cheating and plagiarism will not be tolerated. If you are caught cheating at any point during the course, you will automatically fail the course.

\*PLAGIARISM – "the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work." Random House Unabridged Dictionary, 2nd ed. (New York: Random House, 1993).