

SVF 8054 – THEORY OF SCIENCE

Autumn 2022

Course Handbook

I. Introduction

The course aims to introduce doctoral students enrolled in the HSL Faculty into the theory of science. The course is designed to be offered to students with varied backgrounds and does not presuppose prior knowledge of philosophy.

The course consists of two parts. The first part contains common lectures (to all students) and specialist lectures or seminars (depending on teacher) to specialization groups (in humanities, linguistics and social science). The second part consists of seminar discussions and student presentations in specialization groups.

For further information on the formal aspects of the course, see the [official course description on the UiT website](#).

The timetable for the course can be found [here](#). (The link is also available through the official course description.)

The course has its own Canvas room. All students should make sure that *they are registered on Canvas for the course* since this is going to be the primary platform of communication between students and teachers. If you have problems, please write to Lena Cecilie Bogstrand for help (see her contact details in the next section).

II. Course personnel

The course is taught in collaboration between the Institute of Philosophy and First Semester Studies (IFF) and other parts of the HSL Faculty.

Administration:

[Lena Cecilie Bogstrand](#) (lena.bogstrand@uit.no)

Course leader and responsible for the common lectures:

[Fredrik Nyseth](#) (fredrik.nyseth@uit.no)

Specialization teaching staff:

[Anniken Greve](#) (anniken.greve@uit.no) (Humanities)

[Peter Arne Svenonius](#) (peter.svenonius@uit.no) (Linguistics)

[Håkon Leiulfsrud](#) (hakon.leiulfsrud@ntnu.no) (Social Sciences)

III. Deadlines

There are three submission deadlines to keep in mind:

1. *August 29*. Submission deadline for the first (pre-course) assignment. The assignment is available in Canvas. Submission will be through WISEflow.
2. *Varying deadlines (in September/October)*: In between the two halves of the course (the lectures/seminars in weeks 36 and 37, and the specialist seminars in week 41), you will have to submit a draft (3-5 pages) of your final essay. This deadline will be set by your respective specialist seminar leader. Submission will be through Canvas.
3. *November 11*. Submission deadline for final (second) assignment: this is your final essay or examination paper (see [UiT course description](#) under 'Assessment' on 'examination'). Submission will be through WISEflow.

IV. Language

The language of instruction in the course is English, but if all the students and the teacher prefer it, Norwegian may also be used in the specialization seminars.

V. Course schedule

Kick-off (week 36)

September 5, 17.00 with pizza. We invite everyone to attend!

Common lectures (week 36)

September 7, 8 and 9 (10.15-15.00): Fredrik Nyseth (lecturing to all students).

Specialist lectures/seminar (week 37)

September 12 and 13 (10.15-14.00): Anniken Greve, Håkon Leiulfsrud and Peter Arne Svenonius (each lecturing only to their own specialist group of students).

Specialist seminars (Week 41)

October 10 and 11 (09.15-16.00): Anniken Greve, Håkon Leiulfsrud and Peter Arne Svenonius (each working with their own specialist group of students).

VI. Course syllabus

COMMON LECTURES (GENERAL PHILOSOPHY OF SCIENCE)

When: September 7, 8, and 9 (10.15-15.00)

Teacher: [Fredrik Nyseth](#) (IFF)

The common lectures are organised into four main topics:

1. What does it mean to be scientific?

This topic concerns 'the demarcation problem' – i.e. the question of how to distinguish that which is genuinely scientific from that which is not (e.g. pseudoscience). We will mainly be concerned with two approaches to this issue: 'inductivism' which says, roughly, that a scientific theory is one that can be appropriately supported by observation via induction (inductive inferences), and Karl Popper's 'falsificationism', which tries to eschew induction completely, and says that a theory is scientific if and only if it can be potentially falsified by observation.

2. Does science progress rationally?

This topic concerns the question of whether scientific change can generally be understood as a rational process where (ideally) scientific theories are accepted, rejected and revised based on the available evidence. We shall mainly approach this issue via the influential account developed by Thomas Kuhn. Although Kuhn sometimes resisted this interpretation, his views are frequently said to imply that scientific change is not generally a rational process. This is connected, in particular, with Kuhn's controversial claim that different 'paradigms' are *incommensurable* – meaning, roughly, that there is no neutral way to compare their strengths and weaknesses.

3. Does science aim at truth?

This topic concerns the debate between 'scientific realism' (roughly: the view that science aims to provide a literally *true* description of an independent reality) and two forms of 'anti-realism': *instrumentalism* and *social constructivism*. Instrumentalism is, roughly, the view that scientific theories should be regarded as instruments for systematising and predicting observable phenomena (rather than attempts to say what the world is really like). Social constructivism is, roughly, the view that our best scientific theories and/or the scientific facts themselves are social constructs and therefore not reflections of an independent reality.

4. Is there a fundamental divide between the natural and the human sciences?

This topic revolves around the question of whether the human sciences can/should be governed by the same methodology as the natural sciences. According to *naturalism*, the methodology we find in the natural sciences provides the blueprint for how science in general should be done. Although the details are controversial, this methodology is typically understood to emphasise things like prediction, scientific laws and causal explanations. According to *interpretivism*, on the other hand, the subject matter of the human sciences is such that it makes the methodology of the natural sciences inappropriate. These sciences, it is said, deal

with *meaningful* material, and the aim is not to provide causal explanations or predictions, but to *make sense of/understand* human actions and their products. This, moreover, is often said to require a *hermeneutic* methodology which is radically different from what we find in the natural sciences.

Readings:

The readings for the common lectures are collected in four documents – one for each of the topics above. These are available in the ‘modules’ section on Canvas.

HUMANITIES SPECIALIZATION

When: Day 1-2 (September 12-13, 10.15-14.00), Day 3-4 (October 10-11, 09.15-16.00)

Teacher: [Anniken Greve](#) (ISK)

Theme and topics:

The specialization in the humanities will look at concepts and issues that bring out the tension between the natural sciences and the humanities, so as to help us reflect on the specific nature and character of research acts within the humanities.

The discussion will be organized around three themes:

1. The notions of rationality and reason, as viewed from the humanities.
Being one of the fundamental notions of philosophy underpinning the scientific enterprise, rationality is a contested concept, often looked upon with great suspicion in the humanities: Claims to rationality are seen as covering up political and ideological biases. We will approach such issues through Stephen Toulmin’s *Return to Reason* (see reading list), letting our discussion be informed by his historical account of the development of the notions of rationality and reason.
2. Hermeneutics, philosophically and methodologically considered.
Starting off from the distinction between interpretation and explanation (or to use Windelband’s terms: between idiographic and nomothetic acts of research), we will consider the characteristics of interpretive acts of research, the relation between interpretation and prejudice, and the role of method in acts of interpretation. In this part of the course Heidegger and Gadamer (see reading list) will play a seminal role.
3. The notion of theory, viewed from the humanities.
Theory plays a central, but not altogether clear role in the humanities. In the course we will try to illuminate its role through a set of questions. If theories in the humanities are not subject to testing, what are their functions? How should we understand the plurality of theories within our fields of research? Is Kuhn’s notion of paradigm transferable to the humanities?

Required readings:

- Stephen Toulmin: *Return to Reason*. Cambridge, Massachusetts, London, England 2002: Harvard University Press
- Martin Heidegger: *Being and Time*. Oxford UK, Cambridge US 1962: Basil Blackwell. §§ 31-32, pp. 182-195.
- Hans-Georg Gadamer: *Truth and Method*. Second Edition. London/New York 2006 [2004]: Continuum, pp. 235–382
- Thomas Kuhn: «The Natural and the Human Sciences» in Hiley, Bohman and Shusterman (eds): *The Interpretive Turn: Philosophy, Science and Culture*. Itacha and London: 1991: Cornell University Press, pp. 17–24.

LINGUISTICS SPECIALIZATION

When: Day 1-2 (September 12-13, 10.15-14.00), Day 3-4 (October 10-11, 09.15-16.00)

Teacher: [Peter Svenonius](#) (ISK)

The three days of lectures for the linguistics specialization will take up several central topics in the philosophy of linguistics. The three main themes are, What is linguistics? Is language internal or external to the individual? and What is the relationship of language to thought?

Under the first question, concerning the nature of linguistics, we will also discuss methodologies of linguistics and the nature of the linguistic data.

The second question allows us to burrow further into a specific issue, that of internal versus external conceptions of language. Here we will discussion the notion of ‘private language’ and rule-following, and the E-language vs. I-language distinction, among other things.

In the third question, we turn to Fodor’s Language of Thought hypothesis and some related issues.

A detailed syllabus and reading list has been posted on the Canvas page.

SOCIAL SCIENCES SPECIALIZATION

When: Day 1-2 (September 12-13, 10.15-14.00), Day 3-4 (October 10-11, 09.15-16.00)

Teacher: [Håkon Leiulfstrud](#) (NTNU)

The specialization in social sciences deals with the relationship between everyday understanding and social science understanding and the role of theory and concept formation in social research. We look at different types of theory and concepts, theories at different levels and the role of theory and concepts within different traditions. The

function of theories and concepts in research practices will be in focus. The specialization discusses different consequences these approaches may have for methodologies and the choice of methods and the role of the researchers. We will also spend time in the specialization sessions to develop and discuss suitable research questions for student papers and how relevant themes and issues brought up in the common part of the course related to social science disciplines and research themes.

These discussions will be organized around three themes:

- central features in the methodology and practices of the social sciences (such as concept formation, development and use of theory)
- issues on knowledge production: traditional models, critical models and democratization of science. The consequences for the role as researcher. Discussion of ethical issues following different positions. selected current challenges within the philosophies of social sciences relevant to students project
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Readings

Choose approximately 400 pages from the readings below, and submit a list of what you have read together with your final paper (this should not be confused with the paper's bibliography, which is a list of the texts you have referred to in your paper). Your readings must include the chapters by Benton and Craib mentioned as "Required reading", as well as two more texts from the "Required reading" list, but can otherwise be chosen from either "Required reading" or "Recommended literature".

Required reading:

Benton, Ted and Ian Craib (2011): *Philosophy of Social Science. The Philosophical Foundations of Social Thought*. London and New York; Palgrave Macmillan, Chs. 1-4

Required reading (choose min. two texts):

- Burawoy, Michael (2005): "2004 American Sociological Association Presidential Address: For public sociology", *The British Journal of Sociology* 56 (2), pp. 259-294.
- Cahill, Caitlin (2007): "The Personal is Political: Developing new subjectivities through participatory action research" in *Gender, Place and Culture*, vol. 14, no 3, pp 267-292.
- Eriksen, Thomas Hylland (2006): "Farewell to the gift economy?" English translation of "Farvel til gaveøkonomien" in Bjerk Hagen, Erik and Ander Johansen (red): *Hva skal vi med vitenskap?* Oslo; Universitetsforlaget.
- Johnson, Greg (2014): "Off the stage, on the page: on the relationship between advocacy and scholarship" in *Religion*, vol 44, no 2, pp 289-302.

- Kalleberg, Ragnvald (2010): "The Ethos of Science and the Ethos of Democracy" in Craig Calhoun (Ed.): *Robert K. Merton: Sociology of Science and Sociology as Science*. Columbia University Press pp 182-213.
- Knorr-Cetina, Karin (1981): "The Scientist as Practical Reasoner: Introduction to Constructivist and Contextual Theory of Knowledge" in Knorr-Cetina, Karin: *The Manufacture of Knowledge*. Oxford; Pergamon Press.
- Merton, Robert K (1942/1973): "The Normative Structure of Science" in Merton, R.K and Norman W. Storer: *The Sociology of Science, Theoretical and Empirical Investigations*. Chicago: The University of Chicago Press. Reprinted in different collections.
- Mirowsky, Philip (2011): "Has Science been 'harmed' by the commercial regime?" in Mirowski, Philip: *Science-Mart. Privatizing American Science*. Cambridge, Mass and London; Harvard University Press, ch 6 from p 259.
- Nowotny, Helga et al (2003): "Model 2' Revisited: The New Production of Knowledge" in *Minerva*, vol. 41, pp 179-194.
- Sohlberg, Peter & Leiulfstrud, Håkon (2018): "Conceptual Constructivism: An Introduction" in Sohlberg, Peter & Leiulfstrud, Håkon (Eds): *Concepts in Action*. Leiden-Boston, Brill
- Weber, Max. (1958). Science as a Vocation. *Daedalus*, 87(1), 111-134.

Recommended literature:

- Anderson, Elizabeth (2000/2011): "Feminist Epistemology and Philosophy of Science". *The Stanford Encyclopedia of Philosophy* (Fall 2012 Edition), Edward N. Zalta (ed.)
- Asdal, Kristin (2005): "Returning the Kingdom to the King: A Post-Constructivist Respons to the Critique of Positivism" in *Acta Sociologica*, vol 48, no. 3, pp 253-261
- Baert, Patrick (2005): *Philosophy of the Social Sciences: Towards Pragmatism*. Cambridge; Polity Press
- Coole, Diana and Samantha Frost eds (2010): *"New materialisms. Ontology, agency and politics."* Durham; Duke University Press
- Haraway, Donna (1988): "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspectives" in *Feminist Studies*, vol. 14, no. 3, pp 575-599
- Hastrup, Kirsten (2004): "Getting it Right. Knowledge and Evidence in Anthropology" in *Anthropological Theory*, vol. 4, no. 4, pp 455-472
- Larsen, Tord (2012): "Acts of Entification: The Emergence of Thinghood in Social Life" in Rapport, Nigel Eds: *Human Nature as Capacity: Transcending Discourse and Classification*. (pp 154-177)
- Mjøset, Lars (2009): "The Contextualist Approach to Social Science Methodology" in Byrne, D. & C. C. Ragin Eds: *Handbook of Case-Based Methods*. London; Sage
- Mol, Annemarie (2010): "Actor-Network Theory: Sensitive Terms and Enduring Tensions" in *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, vol 50, no 1, pp 253-269

- Porpora, Douglas V. (2015): *Reconstructing Sociology. The Critical Realist Approach*. Cambridge; Cambridge University Press
- Steel, Daniel & Francesco Guala Eds (2011): *The Philosophy of Social Science Reader*. London; Routledge
- Swedberg, Richard (2012): "Theorizing in sociology and social science: turning to the context of discovery" in *Theory and Society*, vol 41, pp 1-40
- Verran, Helen & Michael Christie (2014): "Postcolonial Databasing? Subverting Old Appropriations, Developing New Associations" in Leach, J & L. Wilson (2014): *Subversion, Conversion, Development: Cross-cultural Knowledge Exchange and the Politics of Design*. MIT press
- Verran, Helen (2014): "Extending the Cosmopolitical Right to non-Humans" in *Valuation Studies* 2 (1) 2014:65-70
- Wendt, Alexander (2015): *Quantum mind and social science. Unifying physical and social ontology*. Cambridge; Cambridge University Press