

# Seminar: Thought Experiments

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Universität Osnabrück, Summer semester 2013, Thursday 16-18

## *Description*

Thought experiments, which are of core relevance to argumentation both in the context of natural sciences and philosophy, invite us to imagine hypothetical, idealized, and often physically impossible scenarios based on which inferences are then drawn on the make-up of the actual world or on the truth or adequacy of theories. What sorts of insights can be gained by means of thought experiments? Can they actually produce new knowledge or is everything that can be inferred from them already contained as implicit premises in the construction of the hypothetical scenarios, that is, are thought experiments simply figurative arguments? If the former is the case, how is it possible that mere imagination lets us discover contingent features of the world; if the latter is the case, why are thought experiments so relevant for scientific discourse? What is the difference between thought experiments and experiments in the laboratory, on the one hand, and pure fictions, on the other? What conditions must be satisfied in order for thought experiments to fulfill their function? What sorts of questions can be answered on the basis of thought experiments and what questions cannot? In this course we will carefully investigate these matters by drawing on many concrete examples from natural sciences and philosophy and by discussing the theoretical literature on the topic. The goal of the seminar is to develop a systematic understanding of the role, the function, the limits, the pitfalls, and the justifiability of thought experiments.

To pass the course a minimum of 4 essays must be written over the course of the semester on questions about the texts discussed in the seminar, and you must give a 20-minute presentation to set up the discussion of one of the meetings. The presentation will count for 30% of the final grade, the essays for 17.5% each.

All texts discussed in the course can be downloaded from StudIP. This is also where the weekly essay questions are uploaded. Essays must be sent to me by email by Thursday morning 10h at the latest:

michael.baumgartner@uni-osnabrueck.de

## Program

### 11.4. Introduction

## Thought experiments in the sciences

### 18.4. Examples

- GALILEI, GALILEO, *Unterredungen und Mathematische Demonstrationen über zwei neue Wissenszweige, die Mechanik und die Fallgesetze betreffend, Erster bis Sechster Tag*, Darmstadt 1964 (1638), 56-60.
- NEWTON, ISAAC; WOLFERS, J. PH., editor, *Philosophiae naturalis principia mathematica*, Darmstadt 1963 (1687), 25-31.
- MACH, ERNST, *Die Mechanik in ihrer Entwicklung – Historisch-kritisch dargestellt*, Darmstadt 1991 (1883), 48-56.
- EINSTEIN, ALBERT, *Über die spezielle und allgemeine Relativitätstheorie*, Braunschweig 1916, 14-19.

**25.4. A means for conceptual analysis**

- KUHN, THOMAS S., A Function for Thought Experiments, in: *The Essential Tension*, Chicago: University of Chicago Press 1977 (1964), 240–265.

**2.5. Synthetic knowledge a priori**

- BROWN, JAMES ROBERT, Thought Experiments Since the Scientific Revolution, *International Studies in the Philosophy of Science*, 1 (1986), 1–15.

**16.5. Figurative arguments**

- NORTON, JOHN D., Are Thought Experiments Just What You Thought? *Canadian Journal of Philosophy*, 26 (1996), 333–366.

**23.5. Constructivism**

- GENDLER, TAMAR SZABÓ, Galileo and the Indispensability of Scientific Thought Experiment, *British Journal for the Philosophy of Science*, 49 (1998), 397–424.

**30.5. Mental models**

- NERSESSIAN, NANCY, In the Theoretician's Laboratory: Thought Experimenting as Mental Modeling, in: HULL, D., FORBES, M. and OKRUHLIK, K., editors, *Proceedings of the 1992 Biennial Meeting of the Philosophy of Science Association*, Volume 2, East Lansing 1993, 291–301.

**Thought experiments in philosophy****6.6. Brains in a vat and ants drawing Churchill**

- PUTNAM, HILARY, Brains in a Vat, in: *Reason, Truth and History*, Cambridge: Cambridge University Press 1981, 1–21.

**13.6. Teletransportation and human replicas**

- PARFIT, DEREK, Divided Minds and the Nature of Persons, in: BLAKEMORE, C. and GREENFIELD, S., editors, *Mindwaves*, London: Basil Blackwell 1987, 19–26.
- GALE, RICHARD M., On Some Pernicious Thought-Experiments, in: HOROWITZ, T. and MASSEY, G., editors, *Thought Experiments in Science and Philosophy*, Savage: Rowman & Littlefield 1991, 297–303.

**27.6. Hooked up to a violinist**

- THOMSON, JUDITH JARVIS, A Defense of Abortion, *Philosophy and Public Affairs*, 1 (1971), 47–66.

**4.7. Relevance of narrative details**

- SOUDER, LAWRENCE, What Are We to Think About Thought Experiments? *Argumentation*, 17 (2003), 203–217.

**11.7. Poor thought experiments**

- PEIJNENBURG, JEANNE and ATKINSON, DAVID, When Are Thought Experiments Poor Ones? *Journal for General Philosophy of Science*, 34 (2003), 305–322.