

Philosophy of Science and Computational Linguistics

Debate session

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Outline for Today

- Short introduction and presentation of debate topics
- Prepare for debate in small groups (30–45 minutes)
- Debates (around 15–20 minutes per topic)
 - ► Each group introduces their point of view (Short, 1–2 minutes)
 - Debate among the two groups
 - Questions and comments from the audience



Debate topics

- Is language technology a science?
- Was there an "empirical scientific revolution" in the 1990s in Kuhn's sense?



Language Technology as a Science

Is language technology science or engineering?

- Is it a scientific goal to beat the state of the art?
- What is the research question/hypothesis?
- If science, what is its object of study?
 - Natural language from a computational point of view (CL)
 - Computational models applied to natural language (NLP)
 - Natural language as an example of intelligent behavior (AI)
- If engineering, how is it grounded in science?
 - Data description from linguistic theory
 - Theoretical models from mathematics and statistics
 - Algorithms from computer science

▶ ...

► ...



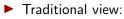
Science

Characteristics of science: (Overton opinion)

- 1. It is guided by natural law
- 2. It has to be explanatory by reference to natural law
- 3. It is testable against the empirical world
- Its conclusions are tentative, i.e. are not necessarily the final word
- 5. It is falsifiable



Scientific Change



- Science advances in a cumulative fashion
- Kuhn's notion of paradigm (normal science)
 - A set of shared theoretical assumptions
 - A set of accepted problems and methods ("puzzle solving")
- Scientific revolutions
 - Accumulation of anomalies lead to crisis and revolution
 - Old paradigm abandoned only if new paradigm available
 - Copernicus, Darwin, Einstein



Thomas Kuhn (1922–1996)



Language Technology Changes

The "empirical revolution" in language technology

- Before 1990: Rationalist approaches and qualitative evaluation
- Today: Empirical approaches and quantitative evaluation
- What happened?
 - Paradigm shift in Kuhn's sense?
 - Just another swing of the pendulum?
 - Language technology becoming a mature science?

▶ ...



Language Technology Changes

- ► The "empirical revolution" in language technology
 - Before 1990: Rationalist approaches and qualitative evaluation
 - Today: Empirical approaches and quantitative evaluation
- What happened?
 - Paradigm shift in Kuhn's sense?
 - Just another swing of the pendulum?
 - Language technology becoming a mature science?
- ▶ You may also consider the "neural" revolution around 2015

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Debate topics



Group 1: yes

Group 2: no

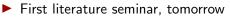
Was there an "empirical scientific revolution" in the 1990s in Kuhn's sense?

Group 3: yes

Group 4: no



Coming up



Low-resource languages: Zoom

- Take home exam
 - Handed out: September 8 (morning) in Studium
 - Hand in: September 14, 23.59 in Studium
 - Anonymous
 - You should now all be signed up
- UPPMAX lecture: September 13





- Meet back here at 11.20
- Organisation:
 - ► Each group introduces their point of view (Short, 1–2 minutes)
 - Debate among the two groups
 - Questions and comments from the audience