



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
 4. Its conclusions are tentative, i.e. are not necessarily the final word
 5. It is falsifiable



Scientific Change

- ▶ Traditional view:
 - ▶ 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
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 - ▶ 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



Debate topics

- ▶ Is language technology a science?
 - ▶ 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

- ▶ First literature seminar, tomorrow
 - ▶ 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



Debates

- ▶ 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