

Lund University
Cognitive Science

er Gärdenfors

From communication to logic



From logic to communication

Classical logic:

- Syllogisms
- Propositional logic
- Predicate logic
- Reduction of arithmetic to logic

Extensions of classical logic

- Modal logic
- Temporal logic
- Non-monotonic logic
- Belief revision
- Logic of information dynamics
- Action logic

Johan himself:

”Notice that no human agents are involved here. Language could truthfully reflect an empty world, lika signpost in the desert. Still, language is also a natural social phenomenon that emerged for a reason.”

Natural language and the logic of agency, 2014

Logic of communication

- How can common knowledge be formalized?
- What is the role of theory of mind in reasoning?

Turning the tables: From communication to logic

- In the beginning was the word
- ... or can animals reason?
- Transitivity of dominance orderings
- Is deception reasoning?
- Implicit and explicit reasoning
- Without language one cannot provide an *argument*

The science of argumentation

- Began only when language was made external
- Memory is externalised
- Statements can be scrutinized
- The ancient Greeks had the first full alphabet and mathematical symbolism
- The first to create a theory of knowledge
- *Logos* is contrasted with *muthos*

The science of argumentation

- Arguments modelled on public debates
- The Greeks created the disputation
- Brings in the "you" in the judgment of what is knowledge
- Cf. Lorenzen's dialogical logic
- Validity of an argument is not subjective
- Euclid's axiomatization of geometry
- Aristotle's syllogisms

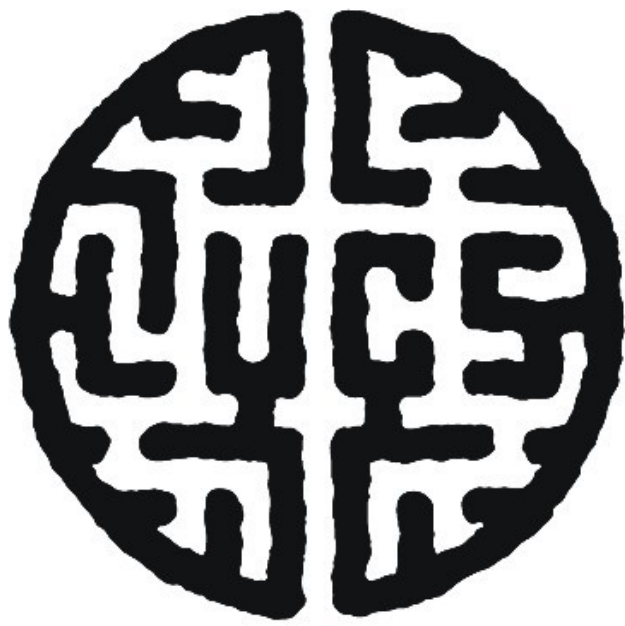
Conclusion

Logic can be seen as a social phenomenon

Use more material from conversation studies

Focus on

- dialogical structure
- modelling the reasoning of others
- information dynamics
- broader tools (game theory etc)



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