

Why Logics Matter

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Structure of the talk

- What is logic?
- What is the role of logic?
- Why logic matters

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- What is the role of logic?
- ~~Why logic matters~~ → Why **logics** matter

What is logic? (1)

- the theory of (deductive) inference/implication
- the theory of logical consequence
- the study of deductive arguments
- ...

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- the theory of logical consequence
- the study of deductive arguments
- ...
- no general agreement!

What is logic? (2)

The study of good arguments.

What is an argument?

A series of statements (which can be true or false), one of which is the conclusion and the others of which are premises.

What is a *good* argument?

Common answer:

Definition

A *deductively valid argument*, that is, one where there is no way for the premises to be true and the conclusion false.

My answer:

It depends on the context and purpose that you are using it!

What is the role of logic?

Different answers at different times:

- Aristotle: a tool for scientific reasoning
- Ancient Hindu/Buddhist philosophers: a *pramāṇa* or “instrument of knowledge”
- Medieval European philosophers: a “handmaiden” for philosophy; rules for how to speak *properly*
- Modern logicians: Computer science, mathematics, philosophy, cognitive science, psychology, artificial intelligence. . .

What do we do when we do philosophy? (1)

Two approaches to philosophy:

- 1 Philosophy is characterised by *topics* it discusses.
- 2 Philosophy is characterised by the *methods* it uses.

What do we do when we do philosophy? (2)

Philosophical methods:

- Arguments (formal logic, informal logic)
- Conceptual analysis
- Thesis/antithesis/synthesis
- Phenomenology
- Intuitions/thought experiments

What do we do when we do philosophy? (2)

Philosophical methods:

- Arguments (formal logic, informal logic)
- Conceptual analysis
- Thesis/antithesis/synthesis
- Phenomenology
- Intuitions/thought experiments
- Asking and answering questions.

How to ask questions

- Edge cases.
- Intersection.
- What's in there?
- Tool combination.

How to answer questions

- Ask good questions!
- What counts as an answer?
- What counts as a *good* answer?
- Why does answering the question matter?

The use of logic in philosophy (1)

- Reconstructing arguments
- Identifying fallacies/gaps in arguments
- Clarifying concepts
- Making distinctions
- Abstraction
- Precision in definition
- Attention to detail
- Identifying what is important, what is not

The use of logic in philosophy (2)

- There is no “correct” representation of an argument.
- Every reconstruction of an argument requires choices.
- These choices of what to highlight, what to omit, matter.

Why logic matters

→ Why **logics** matter!

Different logics give different answers

All cats are mammals.
All mammals are animals.
Therefore, all cats are animals.

<i>MaC</i>	<i>p</i>	$\forall x(Cx \rightarrow Mx)$
<i>AaM</i>	<i>q</i>	$\forall x(Mx \rightarrow Ax)$
<i>CaA</i>	<i>r</i>	$\forall x(Cx \rightarrow Ax)$

Logics beyond philosophy

(beyond mathematics, beyond computer science. . .)

- “Reason”/“rationality” in public discourse.
- Who is rational? = Who is human?
- Who do we listen to? Who do we silence/exclude?
- Who gets to count?

Want to learn more about logic?

- Textbook, *What is Logic?*,
<https://sluckelman.webspace.durham.ac.uk/whatislogic/>
- Youtube channel, Doctor Logic Awkwardly Does Logic,
https://www.youtube.com/playlist?list=PLbEJNppcCD6VCb1-sWPGtjV7jnK_PIIYj
- Send me your questions! s.l.uckelman@durham.ac.uk

