

Philosophical Logic

LECTURE ONE | MICHAELMAS 2017

Dr Maarten Steenhagen
ms2416@cam.ac.uk



Teaching

Course outlines & handouts

[Earlier courses »](#)

¶ [Philosophical Logic](#)
Part 1a, Paper 3: Logic | Michaelmas 2017

¶ [Leibniz](#)
Part 1b, Paper 1: Early Modern Philosophy | Michaelmas 2017

¶ [Perception](#)
Part 1b, Paper 1: Metaphysics and Epistemology | Michaelmas 2017

¶ [Causation](#)
Part 2, Paper 1: Metaphysics | Lent 2017

You can download these slides:
<http://msteenhagen.github.io/teaching/2017plo/>

(As always, Google will get you there...)

Philosophical Logic

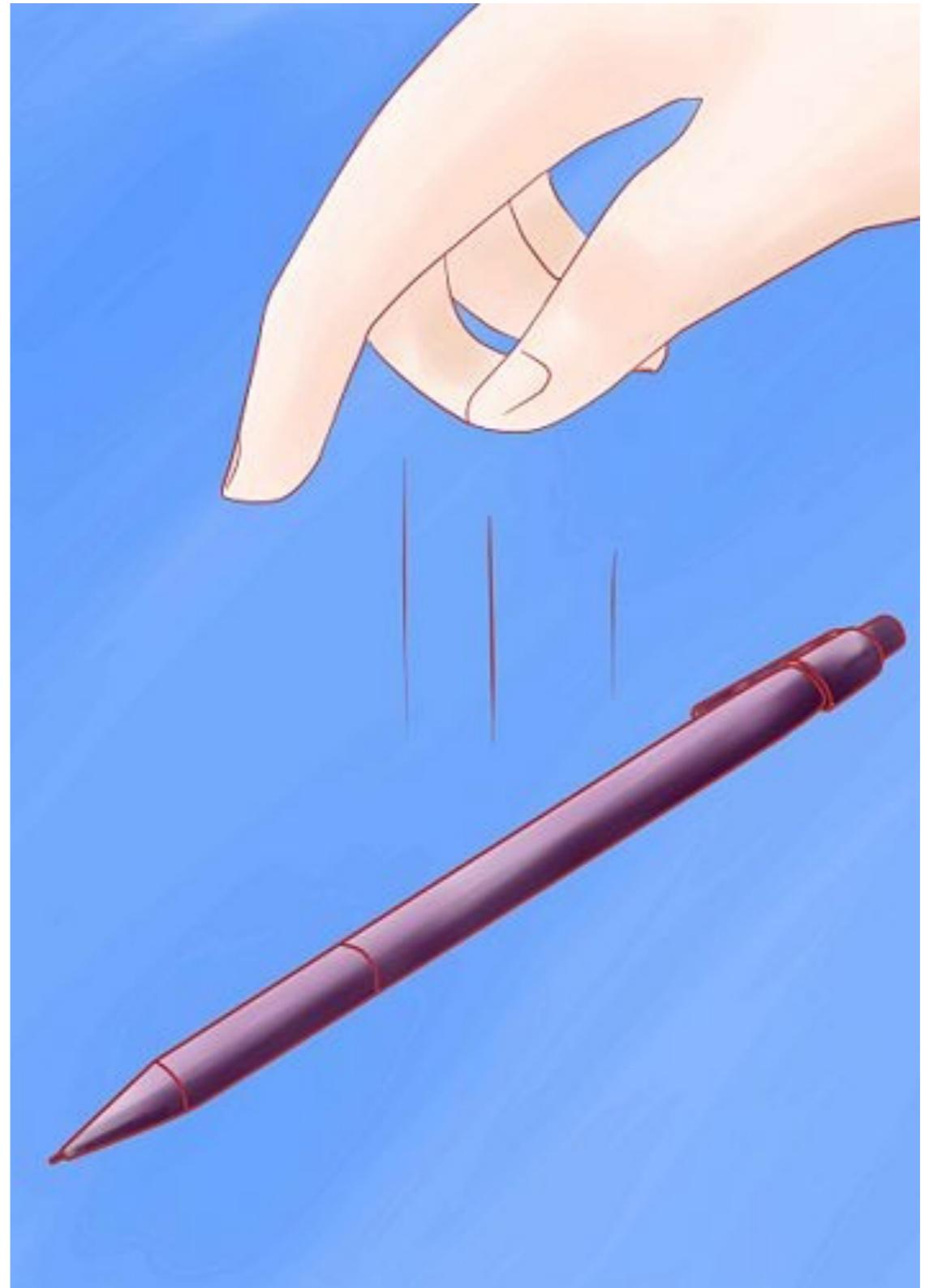


These Lectures

- Lecture 1: **Necessity, Analyticity, and the A Priori**
- Lecture 2: **Reference, Description, and Rigid Designation**
- Lecture 3: **What Could ‘Meaning’ Mean?**
- Lecture 4: **Natural Language**
- Lecture 5: **Formal Translations**
- Lecture 6: **Conditionals**
- Lecture 7: **Deeper into ‘the’**
- Lecture 8: **Quantification and Existence**

Necessity

‘Necessary’ in everyday language



Everyday necessities

- Different expressions for necessity: "There is no alternative...", "It cannot be otherwise", "It ought not be so!"
 - Sometimes we say things are necessarily so by definition (e.g. "capital cities *have to be* in a country or region")
 - Sometimes we say things are necessary because of laws or principles ("the pen *must* fall when you let it go")
 - Sometimes we say things are necessarily such-and-such because of some deep fact about them ("a triangle *cannot but have* three sides")

Necessity

de re,

necessity

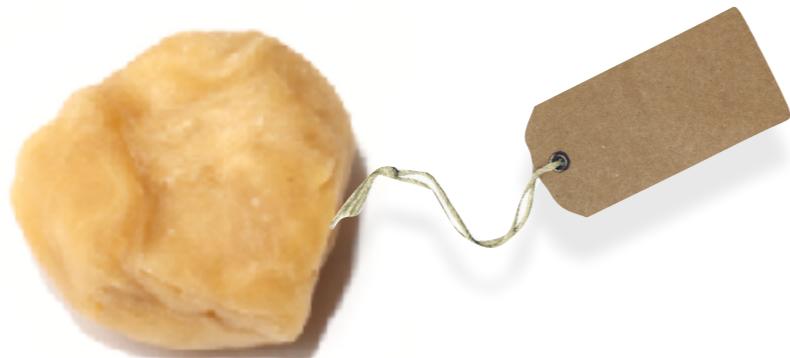
de dicto

(When we say that
something is necessary,
what are we talking
about?)



De Re vs De Dicto

- A de re necessity: some object (e.g. a piece of wax) has some property (e.g. extension) necessarily



- A de dicto necessity: some statement (or proposition) is necessarily true

‘The wax is extended’



W.V.O. Quine

- Quine's argument against *de re* necessity
 - '8 is necessarily greater than 7' [True]
 - The number of planets is 8
 - 'The number of planets is necessarily greater than 7' [False]

(Quine, 'Notes on existence and necessity' 1943)

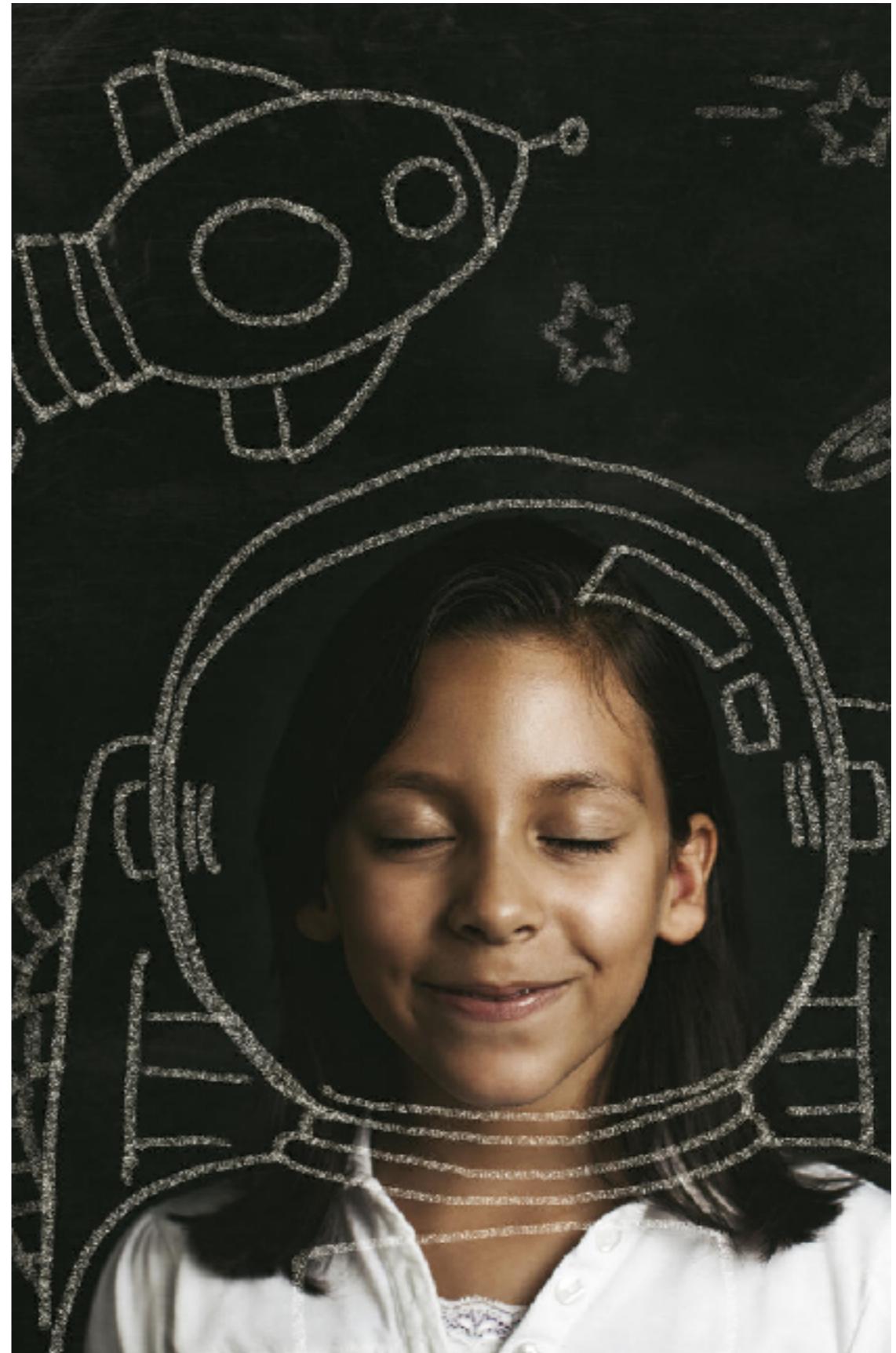


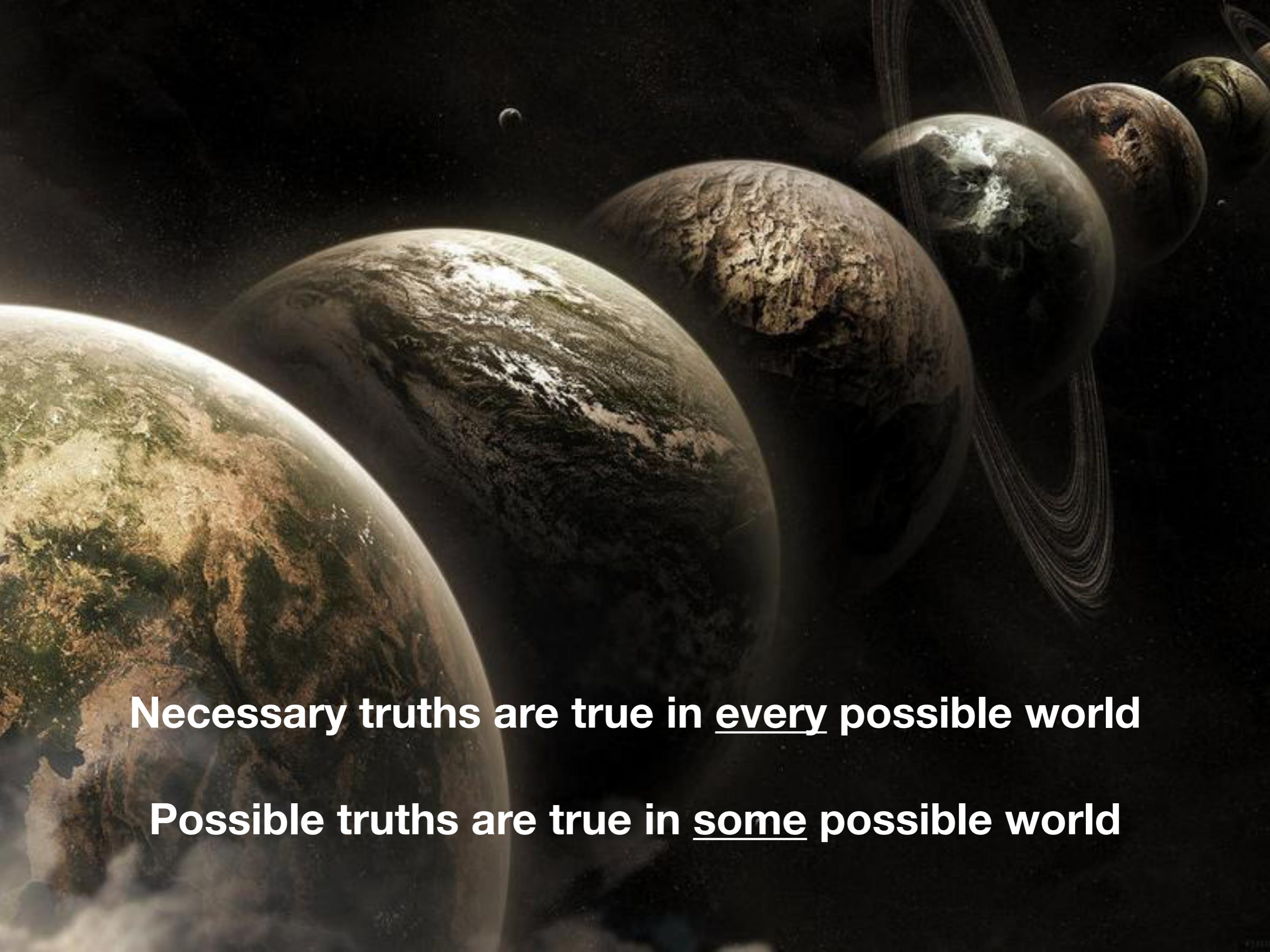
Necessary truths and modal logic

- The logical properties of necessary truths are studied in *modal logic*. (e.g. What can we deduce logically if P is necessarily true?)
 - ‘Modal’, from ‘mode’ (roughly: ‘way’): Modal logic studies the logical properties of modes or ways of being true.
 - In what ways can a statement be true? (Necessarily, possibly, ...)

Can we define necessity?

(What's the nature of
necessity?)



The background of the image is a dark, star-filled space. In the foreground, a large, Earth-like planet is visible, showing continents and clouds. Behind it, several other celestial bodies of various sizes and colors (ranging from brown to blue) are scattered across the frame, some with visible rings. The overall mood is mysterious and vast.

Necessary truths are true in every possible world

Possible truths are true in some possible world

Why are some truths necessary?

(Why are some truths true in all possible worlds, and others not?)



Analytic vs Synthetic

- Some statements are made true, not by anything in the world, but by properties of the statement itself:
 - ‘1 = 1’
 - ‘Demeter is Demeter’
 - ‘The meeting is cancelled or not’
- These statements are called *analytic* truths: their truth is determined by (formal) properties of the statement itself

Analytic vs Synthetic

- Some truths are not logical truths, but are very similar to logical truths:
 - ‘A vixen is a female fox’
 - ‘All ophthalmologists are doctors’
 - ‘If Demeter killed Hades, then Hades died’
- These statements are also called *analytic* truths: their truth is determined by (meaning) properties of the statement itself

Analytic vs Synthetic

- Contrast this with truths that are not logical truths, but are also very different from logical truths:
 - ‘There’s a vixen on the street’
 - ‘Demeter killed Hades’
 - ‘Hades died’
- These statements are *synthetic*: their truth is not (fully) determined by properties of the statement itself. Their truth is determined (at least in part) by empirical facts.

Analytic vs Synthetic

- Why are some truths necessary?
- Because some truths are analytic.
- Quine: “Among the various possible senses of the vague adverb ‘necessarily’, we can single out one—the sense of analytic necessity—according to the following criterion: the result of applying ‘necessarily’ to a statement is true if, and only if, the original statement is analytic.” (1943:121)

Knowledge of necessary truths

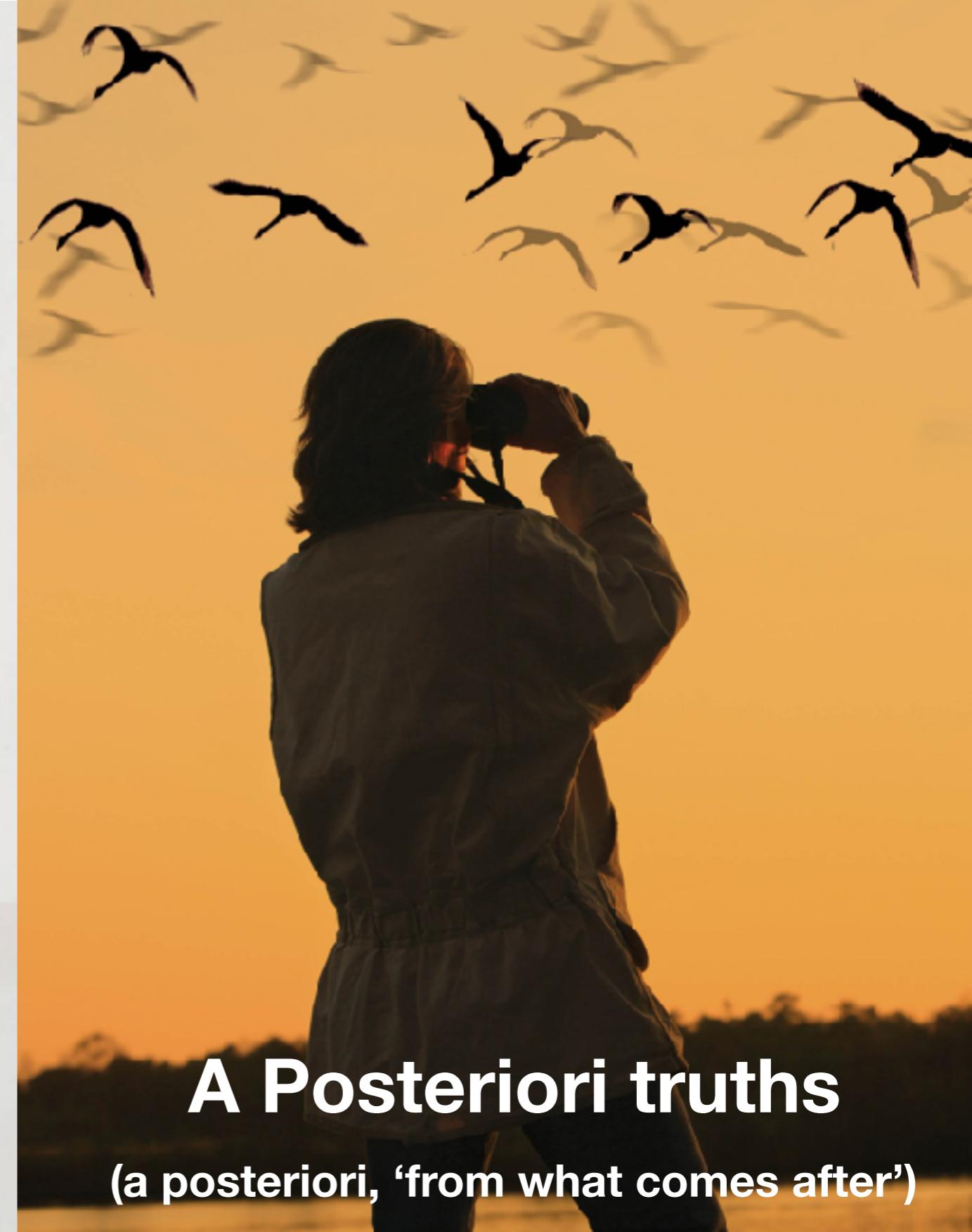
(Shouldn't we have
travel to all possible
worlds to verify them?)





A Priori truths

(a priori, 'from what is before')



A Posteriori truths

(a posteriori, 'from what comes after')

A package deal?

1. Necessary if and only if Analytic
2. Analytic if and only if A Priori
3. A Priori if and only if Necessary



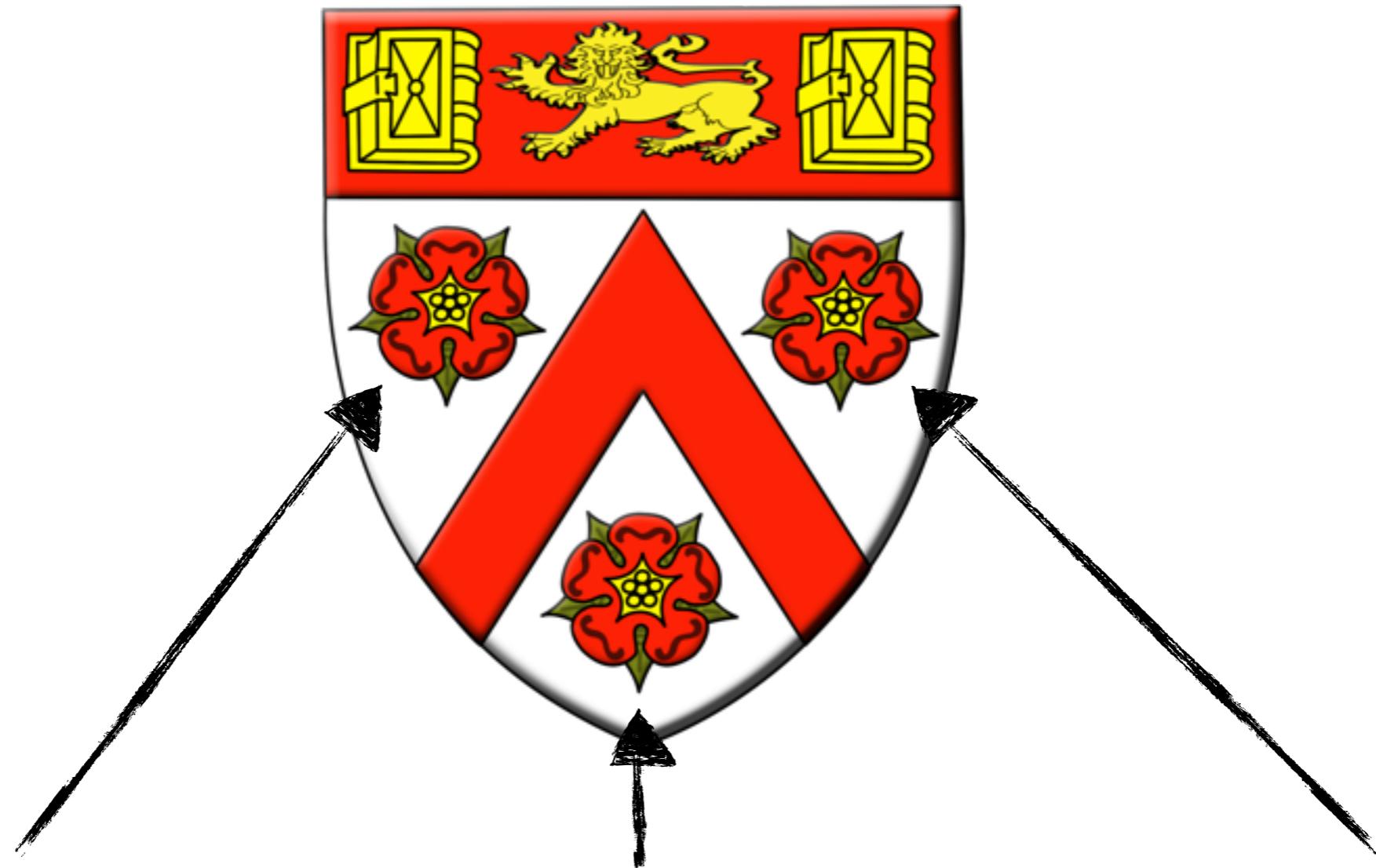
“The views which are put forward in this treatise derive from the doctrines of Bertrand Russell and Wittgenstein, which are themselves the logical outcome of the empiricism of Berkeley and David Hume. Like Hume, I divide all genuine propositions into two classes: those which, in his terminology, concern ‘relations of ideas’, and those which concern ‘matters of fact’. The former class comprises the **a priori** propositions of logic and pure mathematics, and these I allow to be **necessary** and certain only because they are **analytic...**”

–A.J. Ayer, ‘Preface to First Edition’ in *Language, Truth and Logic*

“...That is, I maintain that the reason why these propositions cannot be confuted in experience is that they do not make any assertion about the empirical world, but simply record our determination to use symbols in a certain fashion. Propositions concerning empirical matters of fact, on the other hand, I hold to be hypotheses, which can be probable but never certain.”

—A.J. Ayer, ‘Preface to First Edition’ in *Language, Truth and Logic*

A package deal?



Necessary truth = A Priori truth = Analytic truth

Next week

- Lecture 1: **Necessity, Analyticity, and the A Priori**
- Lecture 2: **Reference, Description, and Rigid Designation**
- Lecture 3: **What Could ‘Meaning’ Mean?**
- Lecture 4: **Natural Language**
- Lecture 5: **Formal Translations**
- Lecture 6: **Conditionals**
- Lecture 7: **Deeper into ‘the’**
- Lecture 8: **Quantification and Existence**