

Syllabus

January 28, 2011

Philosophy 142: Philosophical Logic
Professor John MacFarlane
UC Berkeley, Spring 2011
TuTh 12:30–2, 110 Wheeler Hall
<http://johnmacfarlane.net/142>

Description

“Philosophical logic” includes both (a) the philosophical investigation of the fundamental concepts of logic and (b) the deployment of logical methods in the service of philosophical ends. We’ll tackle five interconnecting topics in philosophical logic:

Quantifiers You may think you learned everything there is to know about quantifiers in Philosophy 12A. But in fact, there are quite a few quantificational idioms that we can’t understand in terms of the quantification theory you learned. We’ll look at the logic of identity, numerical quantifiers, generalized quantifiers, definite descriptions, substitutional quantifiers, and plural quantifiers.

Modal logic In addition to talking about what *is* the case, we talk about what might have been the case and what could not have been otherwise. Modal logic gives us tools to analyze reasoning involving these notions. We’ll get a basic grasp on some of the fundamentals of propositional modal logic, and then delve into some hairy conceptual problems surrounding *quantified* modal logic, explored by Quine, Kripke, and others. We’ll also look at the famous “slingshot argument,” which was used by Quine and Davidson to reject modal logic and correspondence theories of truth. At this point our work on definite descriptions will come in handy!

Logical consequence If you ask what logic is about, a reasonable (though not completely satisfactory) answer is that it’s the study of what follows from what, that is, of logical consequence. But how should we think of this relation? We’ll start by looking at Tarski’s account of logical consequence, which has become the orthodox account. On this account, logical consequence is a matter of *truth preservation*: P follows from Q if there is no model on which P is true and Q false. We’ll talk about how this account relates to the older idea that P follows from Q if it is *impossible* for P to be true and Q

false. Then we'll consider some alternatives. One alternative is to define consequence in terms of proof. We'll look at a version of this idea by Dag Prawitz, which yields a nonclassical logic called "intuitionistic logic." We'll then look at the suggestion that *relevance* in addition to truth preservation is required for logical consequence. We'll see how one might develop a nonclassical "relevance logic," and we'll consider some technical and philosophical issues that speak for and against a requirement of relevance. Finally, we'll consider how, exactly, logic relates to reasoning.

Conditionals In Philosophy 12A you were taught to translate English conditionals using the "material conditional," a truth-functional connective. This leads to some odd results: for example, "If I am currently on Mars, then I am a hippopotamus" comes out true (since the antecedent is false). We'll start by considering some attempts to defend the material-conditional analysis of indicative conditionals in English. Then we'll consider some alternatives, including Edgington's view that indicative conditionals have no truth-conditions, Stalnaker's elegant modal account, and the view that indicative conditionals should be understood as conditional assertions. Finally, we'll look at McGee's "counterexample to modus ponens," and consider whether this sacrosanct inference rule is actually invalid!

Vagueness Finally we'll turn to the "sorites paradox," or paradox of the heap, which argues: five thousand grains of sand make a heap; taking one grain away from a heap still leaves you with a heap; so...one grain of sand makes a heap. Philosophical logicians have suggested that it is a mistake to use classical logic and semantics in analyzing this argument, and they have proposed a number of alternatives. We'll consider three of them: (a) a three-valued logic, (b) a continuum-valued (or fuzzy) logic, and (c) a supervaluational approach that preserves classical logic (mostly) but not classical semantics. If there's time, we'll also look at a short argument by Gareth Evans that purports to show that vagueness must be a semantic phenomenon: that is, that there is no vagueness "in the world."

Prerequisites

Since this is an upper-level course in philosophy, students *must* have taken at least two prior courses in philosophy. At least one must be an introductory course in symbolic logic, at the level of Philosophy 12A (translations, natural deduction proofs, and semantics for propositional logic and predicate logic.) *Students who do not have a solid grasp of the material presented in 12A will not be able to do well in this course.* I will not presuppose knowledge of logic beyond what is covered in 12A. If you find me using logical machinery you do not understand, please stop me and make me explain it.

Books

The only book is a course reader, which will be available by the second week of class at Copy Central on Bancroft (just across from the Pacific Film Archive on campus). Additional materials will be handed out in class and posted on the course website.

Requirements

The course grade will be based chiefly on the following assignments, although in borderline cases, consideration will be given to class participation.

- Three problem sets (one on quantifiers, one on modal logic, one on logical consequence).
- One 7–8 page paper, due at the end of the term, on one of the topics we are covering in the course. Please check with your GSI to make sure your topic is appropriate before getting too far into the paper.
- Final exam (in class, May 12, 3–6 PM, location TBA)

The final grade will be based one third on the problem sets (taken together), one third on the paper, and one third on the final exam.

Sections

All students taking the course for credit must attend a discussion section. Sections will be led by Justin Bledin (jbledin@berkeley.edu), a PhD candidate in the Group in Logic and Methodology of Science. We will schedule sections during the first week of class. Section assignments will be e-mailed to you by the end of the week, and section meetings will begin the second week of class. If you are enrolled in the course and do not receive an e-mail about your section assignment, please contact Justin or me.

Academic Integrity

Plagiarism and cheating will not be tolerated in this course: students caught cheating or plagiarizing will receive an F in the course. Please read the handout entitled “Plagiarism and Academic Integrity” (to be distributed with the first paper topics and made available on the web site). You may work with others on the problem sets, but if you do, make sure that you write up your answers on your own, in your own words.

Contact

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