

## Phil. 125: Philosophy of Science

### First Assignment (Take Home Exam Version)

#### Instructions

Answer any *three* of the following questions, 2–3 pages for each answer, for a total of 6–9 pages. You may hand in your answers early if you like, but all answers are due by Tues., Oct. 31, in class.

The questions are keyed to different reading assignments, with the idea that each question is raised most centrally in a certain part of the reading. However, you can and should use material from anywhere in the text where it's relevant to the answer.

Because this is an exam rather than a paper, I will give priority to accuracy over originality in grading. (If you have original ideas you should choose the paper option.) However, all the questions do require some thought; they can't simply be read out of the texts. And, of course, as usual, your answer must be "original" in the sense that it is your own work. (If you use any outside source—which I *don't* recommend—you must cite it.)

#### Questions

1. Carnap, *Aufbau*, first reading assignment: Explain both the similarities and the differences between the two aspects of an axiomatized theory, as explained by Carnap in §2: the "deductive system" and the "constructional system." Explain further what Carnap means by "reduction" and "construction," and what the equivalents would be in a deductive system. From the fact that Carnap is engaged in setting up a constructional system, rather than a deductive system, what can be ruled out as the purpose of the book?
2. Carnap, *Aufbau*, second reading assignment: According to Carnap, what is the connection between the following three ideas: (1) not every name makes sense as an argument to every propositional function (for example, "Julius Caesar is prime" is neither true nor false); (2) not every object is of the same "type"; (3) objects of higher type are "logical complexes" of objects of lower type? Why is he forced to claim that ordinary language is full of a special kind of ambiguity—type-ambiguity—to make this work?
3. Carnap, *Aufbau*, third reading assignment: In §102 (p. 160), Carnap says that the point of construction theory is "rational reconstruction of a process

of cognition whose results are already known.” Explain what this means and why it is important that he says it. In what sense does construction theory serve to justify science, and in what sense does it not? Why is it important that rational reconstruction involves “fictions” (see §100)? (Can we use construction theory to check if scientific statements are true?)

4. Carnap, *Aufbau*, fourth reading assignment: What, according to Carnap, is the difference between a scientific question and a metaphysical question? (Discuss the example of the Trojan war, §175, p. 281.) What is wrong with a metaphysical question and why? Given that the constructional system is so incomplete, how can we spot metaphysical questions and metaphysical concepts? Explain both why this seems to be a problem for Carnap and why it actually isn't. Give an example of a question we can be sure now is metaphysical (according to Carnap), and explain how we can tell.
5. Carnap/Neurath, protocol sentences debate: Explain what Carnap means by a “protocol sentence” in *The Unity of Science*. Why does Neurath think there cannot be “protocol sentences” in this sense? What does he propose instead? That is: what does he think the language of science should be like, and how does he think scientific testing can work, if there are no protocol sentences? (Again: explain both why this *looks* like a serious problem for Neurath and how he would respond.)
6. Carnap/Putnam, “Methodological Character” and “What Theories are Not”: Explain the role of the “Observation Language” in the “Methodological Character” paper and how Putnam's attack on “observation terms” seems to make that impossible. Isn't Carnap free to propose whatever Observation Language he wants? Why won't Putnam allow that?
7. Quine, “Epistemology Naturalized”: Discuss Quine's explanation of Carnap's project by comparing it to (a) what Carnap says about “reduction”; (b) what he says about “rational reconstruction”; and (c) what he says about “choice of basis.” How does (a) back up what Quine says about the relationship between Carnap's project and Hume's? How do (b) and (c) cause problems for Quine?
8. Quine, “Epistemology Naturalized” (another question): Quine says (on p. 81) that we should not reject “the verification theory of meaning,” even though the verificationist project of the *Aufbau* fails. Why does he say that the theory must be true in some form? Is this a reason that Carnap would give? Why or why not?