

Mid-term Examination

General Directions: This examination is divided into three sections of four questions each. You are to answer a total of four questions, choosing at least one from each section.

The Historical Background to Logical Empiricism

1. Why do empiricists traditionally have a problem explaining the nature of mathematical truth?
2. In what ways might the mere logical possibility of non-Euclidean geometries pose a challenge to Kantian a prioriism about space?
3. Sketch the kind of argument that Pierre Duhem employed to motivate his brand of conventionalism. In what sense is Duhem's conventionalism a species of epistemological holism?
4. There are at least two ways of interpreting Ernst Mach's philosophical program, one that emphasizes the phenomenalist moment in his thinking and one that emphasizes the historical-critical and biological-economic moment. Describe these two readings of Mach and the evidence supporting each.

The Vienna Circle and Its Friends

5. The task confronting logical empiricists in the early 1920s is said to have been that of developing a new form of empiricism capable of defending the empirical integrity of Einstein's general theory of relativity in the face of neo-Kantian reactions to relativity. What was the issue under debate here?
6. Schlick was also well known for defending a point of view about simplicity as a criterion of theory choice. What was that view? In what way might Schlick's thinking about simplicity have been influenced by analogies drawn from the special theory of relativity?
7. Schlick criticized Reichenbach's assertion that contingent a priori coordinating principles play an essential role in empirical science, suggesting that those elements of theory are more helpfully described as, in effect, conventional coordinating definitions. What might be the important philosophical issues at stake in a debate over these two different(?) ways of regarding the basic links between theory and world?
8. In his essay, "The Lost Wanderers of Descartes and the Auxiliary Motive," Neurath deliberately chooses the psychological language of "motives," as opposed to talking about "reasons" or even just "assumptions" in characterizing those elements of theory that are not obviously either empirical or a priori. Why? What are the large, metaphilosophical issues on the table here?

Do Some Philosophy

9. Is scientific realism compatible with the view that theory choice is underdetermined by evidence?

10. The Heidelberg or Southwest-German neo-Kantian tradition featured a thesis about distinctive ways of knowing in the *Naturwissenschaften* and the *Geisteswissenschaften*. In one version of this thesis, the subject matters of the human sciences are said to be characterized by an essential element of “meaningfulness,” the presence of which calls for a distinctive method of *Verstehen* or “understanding,” a kind of empathic understanding from the point of view of the subject. By contrast, many thinkers associated with the Vienna Circle defended a strong unity of scientific method thesis. What is your view?

11. A corollary to Gödel’s first incompleteness theorem is that all first-order theories as powerful as or more powerful than elementary Peano arithmetic will be non-categorical, meaning that they will not determine for themselves a class of models all of the members of which are isomorphic to one another. We spoke in class about how this result may be read as implying the failure of the Marburg program. More generally, one often takes this to point to limits on the ability of theory to capture reality and, perhaps, as occasioning some deep questions about realism itself. On the other hand, one could also read it as implying that Hilbert was wrong in saying that to think clearly is to think axiomatically, or that one is wrong to press formal methods too far in epistemology. What do you think?

12. Neurath argued that there is a proper role for social and political values in theory choice. So, too, have some contemporary feminist philosophers of science, some of them, such as Helen Longino, adducing arguments strikingly like those of Neurath. Others worry that allowing a role for social and political values in theory choice necessarily compromises the objectivity of science. What is your view?