

Study questions for [S] Chaps 13-14: Rhetoric and Objectivity.

Chapter 13. Rhetoric and Discourse

1. According to Plato, what is the difference between rhetoric and dialectic?
2. According to Latour and Woolgar, what is a key marker of a fact?
3. In what sense is foundationalism an appropriate picture of the rhetorical situation of scientific arguments?
4. What are the differences between the empirical *repertoire* and the contingent *repertoire* that scientists use in different circumstances?
5. Is there an important place for metaphors according to the positivist image of science? Why or why not?
6. How does the metaphor of the Internet as an "information highway" do political work?
7. What might the ubiquity of metaphor and analogy in the sciences be evidence for?

Chapter 14. The Unnaturalness of Science and Technology

8. How do most understandings of science view experiments?
9. In what sense do "experiments have a life of their own"?
10. What is the notion of an *experimental system*?
11. In what sense is the problem of replication a problem of delocalization?
12. In the history of experimental science, what did experiments have to become seen as before they could become revealing of nature?
13. In what sense is theoretical knowledge unnatural?
14. What is a "ceteris paribus" statement?
15. According to Sismondo, both experimental scientists and engineers are in the business of constructing artificial systems, but with different goals in mind. What are these goals?
16. In what sense are sex hormones "not just found in nature"?
17. According to Sismondo, "The best scientific knowledge does not straightforwardly consist of truths about the natural world, but of other truths". What are these "other truths"?
18. What is the difference between constructivism and realism with respect to the objects of scientific knowledge?
19. How does Sismondo reconcile constructivism and realism?

Study questions for [GS] Chaps 12-13: Scientific Realism and Scientific Explanation.

Chapter 12. Scientific Realism

1. How might someone claim that the world of one thousand years ago was not a world of electrons?
2. What is *common-sense realism*?
3. According to Godfrey-Smith, must the scientific realist be a common-sense realist? Why or why not?
4. What is *common-sense realism naturalized*?
5. What is Godfrey-Smith's definition of *scientific realism*?
6. What is the Pessimistic Meta-Induction against scientific realism?
7. What is the argument for scientific realism based on the success of scientific theories? Why should we be critical of this "Miracles Argument"?
8. According to Godfrey-Smith, how did the logical positivists, Popper, Kuhn, and Latour view scientific realism (pro or con)?
9. What is the empiricist Underdetermination Argument against scientific realism?
10. What is the argument against scientific realism that is based on metaphysical constructivism?
11. According to Godfrey-Smith, what is the difference between *metaphysical* constructivism and *social* constructivism?
12. What is *instrumentalism*?
13. What is an *empirically adequate* theory?
14. According to van Fraassen, what is the goal of science?
15. What is one problem associated with van Fraassen's *constructive empiricism*?
16. Under a linguistic account, what does a theory consist of?

17. How are models used by scientists to represent phenomena? How is this different from a linguistic approach to representation?
18. How can the model-theoretic approach to representation avoid the Pessimistic Meta-Induction against scientific realism?

Chapter 13. Explanation

19. According to the *covering law* theory of explanation, what does it mean to explain something?
20. How is explanation like prediction, according the *covering law* theory?
21. What is another name for the covering law theory?
22. What is the *asymmetry problem* with the covering law theory?
23. According to the *causal* theory of explanation, what does it mean to explain something? What is the biggest problem with this theory?
24. According to the *unificationist* theory of explanation, what does it mean to explain something?
25. What is "pluralism" about explanation?
26. What is the Humean (regularity) view of laws of nature?

Study questions for [S] Chaps 15-16: Science and the Public Sphere

Chapter 15. The Public Understanding of Science

1. According to Sismondo, why can't the authority of scientific knowledge stem from nature alone?
2. According to Sismonod, why can't the authority of engineers stem from a narrative of progress?
3. In what sense are science journalists more closely allied with their contacts (scientists) than other fields of journalism?
4. In what sense does science journalism emphasize findings and their importance, as opposed to processes?
5. What is the "dominant" (or "diffusionist") model of science popularization?
6. In what sense are scientific rules about popularization often applied self-servingly?
7. What are some reasons Sismondo discusses for claiming that "no sharp distinction can be drawn...between genuine knowledge and popularization"?
8. According to Sismondo, what are two things that the dominant model ignores?
9. What is the "deficit" model of science popularization?
10. According to Sismondo, is better science education the best way to address issues associated with science illiteracy?
11. According to Sismonod, in the Cumbrian sheep example, public opposition to science was not just the result of a misunderstanding. What other factors were involved?
12. What is the dominant model of expertise?
13. According to Sismondo, what are some reasons not to completely abandon the deficit model of science popularization?

Chapter 16. Expertise and Public Participation

14. In what sense is there a conflict between expertise and democracy?
15. According to Sismondo, what are some problems with a straightforward appeal to expertise?
16. What are some components of Jasanoff's notion of "civic epistemologies"?
17. What does "deliberative democracy" involve? What are some consequences of applying it to science and technology?
18. According to Sismondo, what are some potential advantages of deliberative democracy in technical and scientific decisions?
19. What are some criteria for successful participation exercises?
20. What is the notion of a "science shop" in the Netherlands?
21. What are some examples of allowing public access to the resources needed to participate in scientific and technological research?