

24.111: Philosophy of Quantum Mechanics, Spring 2016

Homework 8: Theory and Evidence: Solutions

1. In class we discussed Instrumentalism, the “Moderate View,” and the “Ambitious View.” A fourth view is discussed in the dialogue, one that is even more moderate than the Moderate View. It is advanced by person C, just before person A begins to play devil’s advocate. State the view in the form: “A body of evidence E favors one theory T1 over another T2 if and only if” (You may assume that the relevant bodies of evidence consists in facts about the outcomes of experiments.) [4 points]

Solution: E favors T1 over T2 if and only if E is inconsistent with T2 and consistent with T2. In more detail: if there is some experiment whose outcome is part of our evidence, with the property that T1 predicted that outcome, while T2 predicted some other outcome, one that didn’t happen (and there is no experiment with the “reverse” feature).

2. Here is an argument against the Ambitious View:

P1. If there is no such thing as objective simplicity, then the Ambitious View is false.

P2. There is no such thing as objective simplicity.

C. Therefore, the Ambitious View is false.

In a few sentences, defend, that is provide some reason to believe, premise P1. (You yourself don’t have to believe it; if you don’t, try to imagine what someone who did believe it would say.) [4 points]

Solution: Whether evidence E favors T1 over T2 is an “objective fact”; it

doesn't depend on what anybody believes. Now the ambitious view makes use of the word "simple." If the ambitious view is to be true, then it must make evidential favoring an objective relation; and to do that, it must make use of only objective notions. Since it makes use of the notion of simplicity, it is only true if there is an objective notion of simplicity. So if there is no such thing as objective simplicity, the ambitious view is false.

3. Here is an argument for P2 of the argument in question 2:

P3. Some people accept "GRW is simpler than Bohmian Mechanics"; other people reject "GRW is simpler than Bohmian Mechanics."

P4. If some people accept "GRW is simpler than Bohmian Mechanics" and other people reject "GRW is simpler than Bohmian Mechanics," then there is no such thing as objective simplicity.

C. Therefore, there is no such thing as objective simplicity.

Do you think P4 is true or false? Explain your reasons. [6 points]

Solution: I think it's false; just because people disagree, doesn't mean that what they disagree about is an objective fact. People disagree about whether climate change is caused by human activity; still, if it is caused by human activity, then its being so caused is an objective fact. Still, things aren't all that straightforward with P4. Two people might disagree about whether ice cream is tasty. This disagreement might be intractable: no amount of discussion, and of gathering further evidence, could convince one side the other was right, even if both were trying their best to be rational. This kind of disagreement does suggest that there are no objective facts about tastiness. Maybe there is a similar argument against the objectivity of simplicity to be made. (I think, though, that it would require a more sophisticated premise than P4; still, I gave at least partial credit for answers that mentioned these kinds of considerations.)