

Don't Objectify Theories: Review of Steven French, *There are no such things as theories**

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Steven French's *There are no such things as theories* is the result of several decades of sustained reflection on the nature of science, and its relation to other human endeavors. In fact, I dare say that it is the most in-depth reflection ever written on the question "what is a scientific theory?" That makes French's answer all the more surprising: scientific theories do not exist. But don't take him the wrong way. For all their presumed non-existence, French still has a lot of interesting things to say about scientific theories.

First for some background. With the invention of mathematical logic, it became possible to think of scientific theories as "objects" in their own right. The logical positivists said that theories are sets of axioms in a formal language. Nobody thought of this claim as terribly controversial until the 1970s, when a second-wave of philosophers of science argued that the "syntactic view" is a patently inadequate account of the nature of theories. These philosophers proposed, instead, that theories are collections of models — and thus, the "semantic view" of theories was born. Even so, nobody was thinking much about the fact that if theories *are* such and such mathematical objects, then if theories exist, so do mathematical objects, i.e. Platonism is true. Worse yet, if theories really are abstract objects, then we will have a world of problems understanding how humans can create and use theories.

Steven French is a leading member of the third-wave of philosophers of science — i.e. those who grew up with the semantic view, and applied it to discussions of the foundations of specific sciences, as well as to discussions of general issues about the ontology and epistemology of science. So, one might have expected French's book to be a sustained refutation of recent

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complaints about the semantic view. However, French rises above the fray and asks: “what in the world are we talking about in the first place?”

I will quickly summarize the dialectic of the book before turning to some critical questions. French begins by looking at the ontological commitments of the syntactic view of theories. Here he argues that the syntactic view must ultimately take theories to be sets of propositions. French considers various ways that one might get rid of the ontological commitment to propositions, but in the end, he decides to look elsewhere for a plausible account of theories.

French then turns the same critical eye to the semantic view of theories. At first glance, the semantic view also treats theories as abstract objects, and so it will have similar problems. However, there is a relevant difference between the syntactic and semantic views: the latter, with its emphasis on models, makes scientific theories seem more similar to works of art, and here French can draw upon a well-developed literature on the ontology of works of art. After surveying various proposals, and considering the extent to which scientific theories are, and are not, like works of art, French finally finds his solution in “truth-maker semantics”: sentences about theories are true, but not because theories exist. What makes these sentences true is not theories, but practices.

As the foregoing description indicates, this book searches for an account of theories against a backdrop of more or less implicit assumptions about what a good account would look like. What are these implicit assumptions? At the risk of oversimplifying, I think the two main methodological demands are: (1) Philosophers of science should think like scientists, in particular in the application of Ockham’s razor. (2) Philosophers of science should save the phenomena of scientific practice, in particular, finding the meaning behind various things scientists do with, and say about, their theories. If I am right about French trying to live up to these demands, then it would explain — as we will see below — why he seems to be pulled in opposite directions.

The first demand here might be called “the naturalistic demand”, and it is the driving force behind French’s hesitancy to accept Platonic objects into his ontology. I also see this naturalistic stance as pushing French away from essentialist analyses, i.e. analyses of the form “the necessary and sufficient conditions for being a theory are . . .”

It is more difficult to find a label for the second demand, but the relevant contrast here is with the kind of reductive (in particular, Quinean) naturalism that would dispense with words like “theory” or “equivalent” or “explains”. In other words, French does not merely want to save the data that would be

accessible to a being who could not understand the language that scientists speak. French also wants philosophy of science to make sense of the game of science “from the inside”. Trying to fulfill both of these demands — naturalism and intelligibility — is what, I think, drives French to the “two language” solution of truth-makers. The first language, that contains words like “theory” and “equivalence”, upholds the internal intelligibility of science. The second language, i.e. the ontologically fundamental language, fulfills the demand of naturalism.

In some ways, I find myself in complete agreement with the spirit of French’s maneuver here. If somebody asks me, “but are theories *really* sets of propositions?”, my initial reaction would be to say, “sure, if I can be agnostic about what propositions are.” But French shows that this response fails to grasp the seriousness of the issue. If there are two types of objects — concrete and abstract — and if theories are objects, then theories are either concrete or abstract objects. It is not plausible that theories are concrete things, but if they are abstract things, then that leads to all sorts of problems, as discussed by French.

It would be tempting to cut the Gordian knot by eliminating the word “theory” from our vocabularies. In that case, if someone asked, “are theories *really* sets of propositions?” we could reply that the question does not arise for us. However, that response would fail to uphold the intelligibility of science.

French grants that questions about the nature of theories make sense, and he decisively answers: “Theories are *not* really sets of propositions. Rather, the word ‘theory’ is a shorthand we use to talk about scientific practices.” Again, there seems something right about French’s way of thinking here, but it does raise some further philosophical questions. In particular, what kind of thing is a practice? And can practices bear the ontological weight that French needs them to in order to ground claims about theories?

I see two ways here of thinking about practices, neither of which seems terribly friendly to French’s original aspiration to hold naturalism together with intelligibility. On the one hand, French might mean the word “practice” in a reductively descriptive sense, i.e. the patterns of noises and movements that scientists make. On the other hand, French might mean the word “practice” in a quasi-normative sense, as, for example, when somebody is described as practicing a religion.

The problem with relying on a purely descriptive notion of practice is that it does not seem thick enough to bear the quasi-normative claims we

tend to make about scientific theories, e.g. claims such as “ T_1 is equivalent to T_2 ” or “ T_1 is reducible to T_2 ” or “ T_1 explains more than T_2 ”. On the other hand, the problem with a more normative notion of practice is that it undercuts the original motivation for invoking truth-maker semantics, i.e. the thought that practices are less ontologically problematic than theories. In short, if practices are themselves normative kinds of things, then why not just stick with the talk about theories (sans the attempt to identify them with mathematical objects)?

How should we move forward from here? I would suggest that there are two kinds of philosophers, and that only one of these two kinds of philosophers will feel the need to say “talk about theories is made true by something more ontologically basic than theories.” One kind philosopher — let’s call them “fundamentalists” — thinks that there is a preferred, fundamental ontological language, and that a sentence in any other language is true iff it corresponds to something true in the fundamental language.

Another kind of philosopher denies the existence, or at least denies the fruitfulness of the notion, of a fundamental language. This other kind of philosopher might, in particular, think that some languages, or modes of speech, are less “object-oriented” than others. For example, while I believe that “I have many reasons to be happy,” I would laugh at any analytic philosopher who asked me: “Exactly how many reasons do you have? What notion of identity of reasons are you appealing to?” Nor do I think that the situation would be improved if I said that “there are reasons” is made true by facts that do not involve reasons. I suspect, moreover, that “theories” occupy a similar location in logical space as “reasons”, and in this case, talk about theories should be expected to be less object-oriented than, say, talk about sets.

I suspect that, in the end, my reaction to French’s challenge (to make sense of talk about theories) runs afoul of his naturalist demand. But it is to French’s credit that he pushes the reader to come clean about his or her own most fundamental philosophical commitments. Most particularly, if one insists on treating theories as things, then one is going to have a hard time making sense of science.