

Some Simple Problems with Simplicity¹

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One version of the problem of the underdetermination of theory by data is that for any set of data an infinite number of adequate hypotheses will account for them. Some antecedently stipulated criteria of hypothesis choice must be assumed in order to opt (non-arbitrarily) for one over another hypothesis. At the most fundamental level, the very notion of "evidence" presupposes that one can be warranted in believing in the truth of some hypotheses. For any given set of ostensibly disparate data, one might wonder why it should be the case that there should be a univocal true higher order theory at all. A story can always be told; an explanation can always be offered. Is any story better than none? Is any explanation better than none? Does being able to tell a certain kind of story about something suffice to make it true?

If a hypotheses H, connecting a group of facts together, is true, then the hypothesis "H or these facts are unrelated" is also true. Accordingly, the traditional problem of induction can be viewed as an instance of the problem of the underdetermination of theory by data. Coming to believe H means changing from the belief that the hypothesis was a possible story that could be told, to the belief that it actually "accounts for" the phenomena and, therefore, is true. How could one come to believe that the first disjunct is more likely to be true than the second? What could persuade someone to think that the story which can be told is true? Belief in hypotheses that "account for" seemingly unrelated data is a type of wishful thinking. Why should wanting there to be a true story make it the case that there is? Why should wanting there to be a simple explanation make it the case that, when "found," it will be true? People who devise elaborate fantasies in order to "make sense" of their experience, to "account for" all of the details of every interaction they have with every person who passes them on the street, are "paranoid." You must first believe that there is some story which will be true when told, in order to believe that satisfaction of some criteria would warrant your believing in such a story when it is in fact proposed.

"H or these facts are unrelated" is a simple and all encompassing hypothesis that "accounts for" all data of your experience. Why not stop there? How could one distinguish epistemic from pragmatic criteria for belief unless one already knew in which specific cases the first disjunct of this more general hypothesis was true? In order to know that, it seems that one would need a higher order hypothesis such as "Hypotheses with these features are always more likely to be true than is "These facts are unrelated."." But which sorts of features might those be? Simplicity? How might one come to know that S: "Simple hypotheses are more likely to be true than complex ones"?

Suppose that one may justifiably "infer to the best explanation,"² that the best explanation of a set of phenomena is more likely to be true than no explanation, and the simplicity of a hypothesis makes it good. What precisely constitutes "simplicity?" Even

supposing that one had some applicable notion of simplicity, why think that the universe is simple in that way?

If something like Ockham's razor is a principle of rationality, then to say that simple hypotheses are more likely to be true than those which are not, is to say that it is as though a rational creature created the universe. But that "A rational creature created the universe" is a better explanation for this than none. Ironically, a belief in simplicity as an epistemic criterion and a principle sanctioning "inference to the best explanation" is stronger than a mere belief in the existence of God. It is a belief in a scrutable God, a God whose ideas and values are relevantly similar to our own. Supposing that God believes that it is good to be rational, why think that he shares our ideas about what "rationality" is? Even supposing that the almighty hypothesis-monger, whose believing a hypothesis to be true makes it true, existed, and his values coincided with ours, why think that he would "decorate" the universe parsimoniously? Is God a miser? If you were going to decorate your apartment and knew that you had no budgetary constraints whatsoever, wouldn't you do it as luxuriously as possible?³

Ignoring those problems, and supposing that there were a workable and relevant criterion of simplicity, and that S were a sound principle, then ultimately the simplest hypothesis of all, H_∞ would be reached:⁴ "All is one," since that metahypothesis covers every case of "H or these facts are unrelated." Let us now see why this is so.

For any hypothesis H, if H is true, then "H or X" is true, where X = "These data (referred to in H) are unrelated." But if, as S implies, the better view is always the simpler view, then H should always be favored to X. Hypotheses are propositional statements, proposed facts about the way things are. So given any two hypotheses, H_a and H_b , the truth of the schema "H or these facts are unrelated," implies the possibility of some higher order hypothesis, H^1 , such that " H^1 or (H_a and H_b are unrelated)," is true. But the simplicity hypothesis, S, would lead in every case to the conclusion that H^n , the higher order hypothesis, is true, since it is obviously simpler and therefore warrants belief more than the hypothesis that the two lower level hypotheses are essentially unrelated or coincidental. Every higher order hypothesis would need to be connected to all other hypotheses, according to S, and so ultimately H_∞ would be reached: "All is one." A commitment to simplicity as a criterion for hypothesis choice seems to imply that the highest order hypothesis devised is the one that warrants belief. If one accepts the (meta)hypothesis S, that given the choice "H or X (these facts are unrelated)," H (being simpler) is always the better hypothesis, then he will be led to the parmenidean principle. As explained above, a commitment to simplicity as an epistemic criterion includes the idea that the world is how we want it to be. But it also implies that we should accept the metaphysical theory that "All is one."

During this century, the invocation of simplicity as a rational basis for theory choice has been common to both the logical positivists and the *soi-disant* "naturalistically-minded" metaethical relativists. Although the logical positivists overtly disdained metaphysics, their own commitment to simplicity as a criterion for world view choice committed them, ironically enough, to a deeply religious view.

A metatheoretical program of comprehensive reductionism is not advocated by all relativists, but a somewhat less substantive version of Ockham's razor, *viz.* that "Simpler theories are more probably true than less simple theories, *ceteris paribus*," is. Far from being embarrassed by their commitment to Ockham's razor, some relativists flaunt it, e.g. Gauthier, who writes, "Objective value, like phlogiston, is an unnecessary part of our explanatory apparatus, and as such is to be shaved from the face of the universe by Ockham's razor."⁵ That simpler theories are more probably true, *ceteris paribus*, cannot be defended without supposing that the universe exhibits a rationally reconstructible structure, and the universe is in fact "simple", where "simple" is characterized by comparison to theories which we already hold.

But if the meaning of 'simple' is determined through looking at our best confirmed scientific theories, then the relativist's invocation of the criterion in rejecting absolutism is obviously question-begging. Science clearly does not sanction the inclusion in its theories of entities which are not a part of the physical world, which necessarily comprises those entities susceptible of scientific study. If it is true that science and ethics are dichotomous, in that hypothesis testing is not possible for the latter as it is for the former,⁶ and if we are only justified in regarding as true those theories which are choiceworthy by the theoretical criteria sanctioned by science, then it is patent that a theory which posits *sui generis* values inaccessible to the methods of science cannot be justified. However, as I hope to have illustrated above, when the implications of a putatively "scientifically-minded" commitment to a criterion of simplicity for world view choice are thought through, they are found to be rather surprising.

Notes

1. I would like to thank John Burgess, Gilbert Harman, Richard Jeffrey and Bas van Fraassen for reading and commenting upon an earlier version of this paper.
2. Gilbert Harman argues that "either enumerative induction is not always warranted, or enumerative induction is always warranted but is an interesting special case of the more general inference to the best explanation," in "The Inference to the Best Explanation," *Philosophical Review*, volume 74, 1965, pp.89- 95.
3. And even if you restrained yourself, believing perhaps that what is good is "moderation in all things," wouldn't you still have an infinite number of choices about how to select and combine fabrics and colors? You would even have an infinite number of possibilities for basic furniture.
4. The cardinality of ∞ would be greater than \int_0^1 , if the number of lower level hypotheses were infinite, since every hypothesis could be combined with every other hypothesis. But finite people can devise only a finite number of actual hypotheses, so I'll not review Cantor's diagonal argument here.
5. Gauthier, *Moral Relativity*, (1986) p.56.
6. See "Ethics and Observation," in *The Nature of Morality* (1977), by Gilbert Harman.