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The Relevance of Evidence from the History of Science in the Contemporary Realism/Anti-realism Debate^{*}

K. Brad Wray[†]

I aim to clarify the relevance of evidence from the history of science to the contemporary realism/anti-realism debate as the need for evidence from the history of science is often misunderstood or misrepresented.

First, consider the role of evidence from the history of science in anti-realist arguments. In particular, consider the role of evidence from the history of science in one version of the Pessimistic Induction. Some anti-realists (allegedly) appeal to the history of science in an effort to construct an enumerative induction to support the conclusion that today's best theories, despite their many explanatory and predictive successes, are likely to be discarded in the future. Following the straight rule of induction, this sort of anti-realist (allegedly) argues that most past successful theories have since been discarded and replaced by different theories that make radically different assumptions about the nature of reality. Thus, the history of science is not, as many realists argue, a steady progression of modified theories that (i) retain the successes of past theories, and (ii) explain the successes of earlier theories by appeal to the same sorts of mechanisms and entities posited by earlier theories. Absent some distinguishing feature that would make contemporary successful theories less prone to being discarded than their predecessors, it seems there are good inductive grounds for believing that our contemporary theories will also be discarded in the future and replaced by theories that make radically different ontological assumptions about unobservable aspects of reality (Putnam 1975; Wray 2015).

The Pessimistic Induction has been criticized on a number of grounds. Some critics claim that it commits some sort of fallacy, either the Base

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Rate Fallacy, the Turnover Fallacy, or the False Positives Fallacy (Magnus and Callender 2004; Lange 2002; Lewis 2001). Others have taken issue with particular cases of discarded theories that have figured in the debate, cases allegedly supporting the anti-realists' enumerative induction. These critics argue that specific theories that anti-realists identified as successful but false were either (i) successful and approximately true, or (ii) unsuccessful, and hence incapable of supporting the anti-realists' induction (Harden and Rosenberg 1982; and Psillos 1996).¹

Setting the concerns about the Pessimistic Induction aside, I believe that realists have exaggerated the anti-realists' need for evidence. Any radical change of theory in a field threatens to undermine the realist's claim that changes of theory generally preserve the successes of the theories they replace by appeal to the same mechanisms and entities. Any discontinuities that are caused by radical theory changes threaten scientific realism, or at least certain forms of realism. Thus, an enumerative induction is unnecessary.

What is the relevance of evidence from the history of science to the realists' arguments? Realists have been less than transparent about their appeals to evidence from the history of science. But many realists claim that various theoretical values or virtues, such as simplicity, breadth of scope, etc., are correlated with theoretical truth. That is, theories that embody these virtues are more likely true than not (McMullin 1993).

The claims to the effect that simplicity or breadth of scope is correlated with theoretical truth are empirical claims, and thus require evidence in their support. One way to justify such claims is by appeal to an inductive argument. But realists have not provided evidence gathered systematically from the history of science to support claims such as: (i) simple theories are likely true or approximately true, or (ii) theories broad in scope are likely true or approximately true. Instead, many realists seem dogmatically to assume the alleged connection is beyond dispute. I take issue with this assumption.

There is an alternative route to justifying these sorts of methodological claims. The realist might take a Popperian attitude toward these methodological claims about the relationship between the theoretical values and theoretical truth. The realist might hypothesize such a link, and be open to rejecting it, if the evidence suggests otherwise. Clearly, there have been many cases in the history of science where a simpler theory was inferior to a more complex theory or a theory broad in scope was inferior to a theory that was narrower in scope. Confronted with such cases, the realist need not wholly reject her methodological claims. The realist could refine the claims, specifying, for example, under what specific conditions a simple theory is

¹ Laudan (1981) provides the definitive list of theories that are alleged to be successful but false.

more likely true than a more complex theory. This revised methodological hypothesis would then be subjected to testing. But realists have not pursued this strategy, at least not in any systematic way.

It is widely assumed that it is the anti-realist who stakes his case on evidence from the history of science. But I have argued here that (i) realists have failed to recognize the need to collect evidence from the history of science to support their methodological claims, and (ii) anti-realists do not rely on evidence from the history of science to the extent that many suggest.

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REFERENCES

- Hardin, Clyde L., and Alexander Rosenberg. 1982. In Defense of Convergent Realism. *Philosophy of Science* 49(4): 604-615.
- Lange, Marc. 2002. Baseball, Pessimistic Inductions, and the Turnover Fallacy. *Analysis* 62(4): 281-285.
- Laudan, Larry. 1981. A Confutation of Convergent Realism. *Philosophy of Science* 48(1): 19-49.
- Lewis, Peter J. 2001. Why the Pessimistic Induction is a Fallacy. *Synthese* 129(3): 371-380.
- Magnus, P. D., and Craig Callender. 2004. Realist Ennui and the Base Rate Fallacy. *Philosophy of Science* 71(3): 320-338.
- McMullin, Ernan. 1993. Rationality and Paradigm Change in Science. In *World Changes: Thomas Kuhn and the Nature of Science*, ed. P. Horwich, 55-78. Cambridge, MA: MIT Press.
- Psillos, Stathis. 1996. Scientific Realism and the "Pessimistic Induction." *Philosophy of Science* 63 (Proceedings): S306-S314.
- Putnam, Hilary. 1975. *Mathematics, Matter and Method: Philosophical Papers*, vol. 1. Cambridge: Cambridge University Press.
- Wray, K. Brad. 2015. Pessimistic Inductions: Four Varieties. *International Studies in the Philosophy of Science* 29(1): 61-73.