Against Limited Pessimistic Induction: A Rebuttal to Hobbs

The anti-realist project has tended to rely on one or another formulation of the pessimistic induction, that is, the conclusion from the failure of past theories that current theories are similarly flawed. In “A Limited Defense of Pessimistic Induction”, Jesse Hobbs puts forward a version of pessimistic induction which he believes calls into doubt the reliability of some modern scientific theories. My goal here is not to demonstrate the likely validity of any modern scientific theory. Instead, I merely intend to show that the pessimistic induction, even the more modest version proposed by Hobbs, does nothing to call into question the verisimilitude of our current theories. Moreover, the principles which validate Hobbs’ use of the pessimistic induction, when taken to a natural extent, seem to necessitate all-out skepticism.

Hobbs’ particular version of the pessimistic induction relies on a calculation of the relative degree of “theoreticity” of a particular theory. In his words, “theories to which pessimistic induction applies…will be those with a higher degree of theoreticity, or a lower degree of observationability” (Hobbs 1994, 173). Here, Hobbs draws a distinction between the observable and the unobservable which I consider to be unfounded. In this, I echo Maxwell, whose “Ontological Status of Theoretical Entities” contended that the “drawing of the observational-theoretical line at any given point is an
accident…it has no ontological significance whatever” (Maxwell 1998, 353). Hobbs agrees that there is no categorical distinction between the observable and theoretical but nonetheless argues that the pessimistic induction can be utilized to call into question the validity of those theories which fall on the theoretical end of the continuum (Hobbs 1994, 173). This I consider a problematic claim and one at the heart of realist versus anti-realist debate.

To better get at this debate, we must first clarify what is meant by observable. Realists and anti-realists alike generally agree on those scientific theories which are considered to be based directly on observables. For instance, few would argue with the idea that a rock, when dropped anywhere on the surface of the earth, and under normal circumstances, will fall. Granted, this is a trivial observation, but its significance will be further explored later. Most scientific observations are not made so directly, but rather rely on the use of instruments. Observation of planetary motion, for instance, is made much simpler through the use of telescopes. Hobbs is willing to concede that the use of such instruments for the advancement of theories does not necessarily place said theories within the realm of the pessimistic induction. He considers basic instruments, the telescope included, to be “relatively theory-free and not in the scope of pessimistic induction” (Hobbs 1994, 183). However, Hobbs considers many other instruments, including the electron microscope, to be subject to the application of the pessimistic induction. It is in the distinction between various instruments as reliable sources of theory generation that Hobbs makes a key oversight.

Hobbs considers the key difference between a telescope and an electron
microscope to be the ability to test the former on “isolated objects that are manipulable, mid-sized, and reasonably well-understood” (Hobbs 1994, 183). Crucially, Hobbs considers the validity of an instrument in theory-creation to be based on its ability to be crosschecked with instrument-independent sense data. Herein lies a problem. While Hobbs’ criterion for distinguishing between trivial and non-trivial instruments seems somewhat appealing, it ultimately relies on corroboration with instrument-independent sense data. However, Hobbs offers no justification for his belief in the reliability of such data. The reliability of the senses might seem, at first, beyond dispute. However, I would argue that the same principles which allow for scrutiny of data gleaned from electron microscopes and other such instruments ought to also apply to basic sense data.

Let us return to the example of the rock dropped on the surface of the earth. One might ask how, prior to the rock being dropped, one knows that it will fall. An answer to this question would likely include references to several properties of the rock: its apparent weight, the fact that it occupies space, etc. What is important to note here is that all of these properties are apparent only insofar as they can be observed. They are accessible to us only as sense data, not something independent of our experience. It is important, then, that sensation is not a straightforward process. Vision, for instance, involves several different steps, including interaction between light and chemicals within the eye. Touch also involves different steps, including the interpretation of nerve signals by the brain. What is important here is that all forms of sensation are mediated by several different processes, not all of which are entirely understood. The reliability attributed to sense data, then, can only be the result of corroboration by other sense data. This seems
to be a serious problem, and one which renders Hobbs’ privileging of direct sense data over that gained through use of electron microscopes, and similar instruments, to be unfounded.

Certainly there are instruments whose reliability have not been sufficiently demonstrated. Theories derived from the use of these instruments do not bear the same weight as those which derive from use of basic sense data and data gained through use of well-established instruments. The main point here is that the validity of instruments or, for that matter, the basic senses, as tools for theory generation is based on their degree of empirical success.

Following the pessimistic induction, the anti-realist would likely object, as Hobbs does, that history has demonstrated that the empirical success of a theory has rarely implied its truth. As Hobbs puts it, “science is an endeavor that exhibits continual change, involving not only the addition of new facts, theories, and theoretical extensions of current views, but also the continual revision of existing theories” (Hobbs 1994, 173). I would willingly concede that the history of science has, as Hobbs states, involved the constant metamorphosis of theories to account for new data. However, I do not believe that Hobbs, or anyone else for that matter, has provided adequate reason to believe that the pattern will continue indefinitely. While the history of science has involved the constant scrapping of theories in exchange for updated ones, it has also involved the constant replacement of observational instruments with better, more accurate ones. Thus there is reason to believe that the theories of today, at least those which are based on empirical evidence gathered through use of new technologies, are superior to those of the
past. Even anti-realists tend to acknowledge that our modern theories come closer to the truth than those forwarded in the past. The question becomes, then, why our new theories might not be true.

In discussion of this question, two assumptions must be put forward. First, there are truths to be known about the universe. Anti-realists, Hobbs included, acknowledge that many of our theories, those based on unaided sensory data, offer true representations of the nature of reality. The second assumption is that the truth of a given theory can only be made apparent through its empirical success. Anti-realists might balk at this claim, citing the empirical success of many failed theories. However, the crucial part about such theories is that their falsehood was eventually proven through empirical failure. Often, though not always, falsification of these theories was made possible by use of new technologies. As I’ve demonstrated, these technologies fulfill the same role as the basic senses and, as such, ought to have the same epistemological significance. To combine these two assumptions is to recognize that the discovery of true theories is possible and that such theories can only be recognized by their empirical success. As such, the empirical success of our current theories, while falling short of proving their truth, is the best possible indicator of truth. Indeed, there is no reason to think that our most successful theories do not offer true, or very near true, pictures of reality.

To better show this point, a thought experiment is in order. Consider for a moment that we suddenly become aware that a particular theory is true. It does not matter how we came upon this information, only that we are certain of it. Now, despite our knowledge of the truth of this theory, the only difference that we could observe
between this and competing theories is that the true theory will *always* have empirical success. A theory that is always empirical successful, even after extensive and varied testing, is indistinguishable from a true theory and ought to be taken as such.

The anti-realist, even presented with a true theory, would not believe it to be so, unless perhaps it could be backed up by direct sense data. However, as I’ve discussed, the very phrase “direct sense data” seems problematic given that sensation is hardly a direct process. As such, the distinction between observational and theoretical entities seems arbitrary and based on an unstable skepticism of certain scientific instruments. In other words, the same degree of scrutiny to which anti-realists subject certain instruments, if applied to the sensory process, would collapse anti-realism into full-scale skepticism.
Works Cited
