

Against Methodological Naturalism

Paul Mayer

Abstract

In this essay, I will explain why Methodological Naturalism (MN) fails as a demarcating criteria for science. I will argue that MN is

1. Not precise enough to be useful for demarcation
2. Unable to follow the evidence where it leads
3. Not theologically neutral (despite its stated goals as such), and
4. Difficult to justify (and currently unjustified) as an ontological or epistemic principle

1 MN is not precise enough for demarcation

In order for MN to be useful for demarcation, it needs to be able to make a reasonably clear boundary between which theories ascribe to MN and which do not. In this section, I will argue it does not. The first difficulty involves the definition of naturalism itself, which according to David Papineau, “is not a particularly informative term [14]” How can naturalism begin to differentiate science from pseudoscience the term itself has no precise (or agreed-upon) meaning?

Further still, arguments over the definition of naturalism often involves revolve around the existence of abstract objects, in particular mathematical objects. Since scientific theories usually attempt to generalize their results in the form of mathematical descriptions, many mathematical Platonists would argue the invocation of mathematical objects *a priori* violates naturalism. My point here is not to comment on whether the existence of abstract objects is compatible with naturalism. Rather it is to call attention to the lack of consensus to whether mathematical Platonism is compatible with naturalism. It seems clear we want science to allow (and perhaps even favor) mathematical descriptions of events. What is unclear is whether mathematics itself can be supported by naturalism in its usual (albeit imprecise) forms [11]. If mathematical objects do turn out to have a non-natural basis, then most current scientific theories and lines of investigation would be in violation of MN, an alarming conclusion if MN is to include the natural sciences in the way they are usually (and currently) performed.

Reconciling consciousness, including conscious causal action, with naturalism forms a similar difficulty (outside of the usual debate of whether consciousness can be understood via naturalism or reduced to a materialistic understanding [12, 4]). The challenge here is that the causal actions of conscious agents are uncontroversially a valid domain of scientific investigation, as in the case of forensic science, anthropology, SETI, and psychology, except when they are not, as in the case of Intelligent Design (ID). Discussing the ability of a conscious, rational agent to have a causal impact on the natural world opens a can of worms around free will, determinism, and the compatibility of consciousness and naturalism. If mental states bringing about causal action and/or consciousness itself has a non-natural basis, then any field of study investigating these would be pseudoscience under MN. There is a current assumption that, regardless of whether conscious action has a natural basis, it can be studied through science. However if consciousness *does not* have a natural basis, ruling out the action of a divine or supernatural mind would be special pleading.

Additionally, the motivations and actions of conscious beings are compatible with NM and thus a legitimate form of scientific investigation, ID proponents can simply say the intelligent designer they reference is a “natural” one. There is more to this than simply an ad-hoc redefinition of terms: work drawing on Bostrom’s simulation hypothesis [2] suggests the possibility of “...a god that even a naturalist can believe in [5].” If consciousness *is* compatible with MN and thus *is* reducible to natural causes and forces (and can be simulated by an appropriate approximation of the laws of physics), then it is possible (and perhaps even probable) we live in a simulated world. As a result, the actions of a programmer/simulator “the next world up,” (which would appear to us to be supernatural intervention) is compatible with naturalism and ID would qualify as science.

The point is of this section is not to comment on the probability of the simulation hypothesis or whether abstract objects are compatible with a naturalist ontology. Instead, precisely because these questions are far from settled, MN is unable to clearly demarcate science from pseudoscience. Far from achieving its goal of separating science from pseudoscience, MN fails to capture the nuance of current philosophical discussions and is instead wielded primarily for non-rational reasons. Perhaps the question we should ask is why so many are attached to the idea of MN for demarcation given its flaws and ambiguity. Defining science in terms of NM simply pushes the demarcation problem back to naturalism, which itself has no clear enough distinction to be useful for differentiating lines of inquiry to a binary category of “science” and “pseudoscience.” In the next section, we will explore the political and non-ontological reasons for MN’s adoption as a demarcating criteria, which will form an undercutting defeater for its practical or ontological usefulness.

2 MN is Naive about Power and Funding

Whether a theory is labelled “science” has enormous practical implications about funding and whether it can (or should) be taught in public schools. As a result, those who enjoy the benefits of their field being considered science will want to maintain their standing to keep out “undesirables” (or they would get a smaller piece of the funding pie), while emerging fields try to adopt the label “science” to reap the rewards. These motivations serve to illustrate the interests many have to redefine science in a way that is independent of whether a theory is *true*. As one sociologist remarked,

As anyone on the inside of academic life knows, vanity, ego, ambition, intellectual fashion, and political bias play enormous roles in channeling careers and influencing research. They affect who gets funding and from where, who gets published where, whose reputation rises and whose falls...In all spheres of social life, boundaries are not only demarcated but rigorously patrolled. Power and privilege are at stake in every social order. Those who have power and enjoy privilege generally want to keep it, while those who don't have it generally want it. [Factors such as this] shape who gets funded and who doesn't, what constitutes a legitimate or illegitimate line of inquiry and contribution, and ultimately what [is viewed as] truth and error [8].

Of course, “ruling out a particular topics of discussion a priori is...a rather undemocratic use of power [7],” and in the context of academic debate constitutes an aversion to scholarship, or worse, a wielding the term “scholarship” for a political end. And yet, this is what happens to theories that are not considered “scientific:” the average number of required science credits in American public high schools is around 3 [1]. To my knowledge, not a single state requires any credits in Philosophy. Federal funds for scientific research has increased to hundreds of billions of dollars annually [13], while federal funds for philosophy (from the humanities in general) have dwindled [15]. When defending MN, Swamidass asks “Why exactly is the label “science” so important [17]?” This is a valid question, and the answer is because so we ensure we are giving different lanes of inquiry a fair hearing, in addition to all the practical reasons offered above.

The problem cuts deeper because the public generally holds a positive view of scientists and the and the ontological and epistemic merits of science. If scientists want to constrain themselves to certain *a priori* assumptions (as in the case of MN), they can no longer claim their theories are “superior” or even “true” unless these assumptions can be non-circularly justified. The fact is scientists *do* occasionally overreach and make metaphysical claims (often masquerade as *scientific* claims); using their publicity as a scientist to do (in Einstein's words) poor philosophy.

3 MN is not theologically Neutral

Some argue for MN on practical grounds: that it allows for a “cease-fire” between theists and atheists and allows scientists to focus on doing science [17]. In this section, I will argue this is not the case. On a basic level, this proposed cease-fire is not respected by either party. Theists often argue that modern science, including the belief in a law-governed universe, was what first gave rise to modern science [16] and even continues to justify its continued regular behavior that is assumed by MN [10]. Atheists argue that the sufficiency of scientific theories leaves no room for supernatural or theological entities [3]. While the goal of lessening infighting between scientists over the superior metaphysical position is a noble one, it is impractical (these debates continue regardless) and done for a reason other than whether a specific theory describes reality better.

However, even if philosophers of science and scientists adopted MN and respected the “cease fire”, MN would not be “theologically neutral” as many theists and atheists suggest. The reason for this is because Methodological Naturalism (MN) becomes Philosophical Naturalism¹ (PN) in the limiting case. To illustrate this point, consider that one of the assumptions of MN is that there is no supernatural intervention during the time an experiment is performed. Theories are usually stated in terms of mathematical generalizations. As a result, naturalistic and therefore atheistic cosmological theories, which may be equally speculative, ad-hoc, evidentially unsupported, or unfalsifiable as supernatural accounts, get the privilege of bearing the moniker “science” and its associated benefits described previously.

As a result, naturalistic explanations in theoretical cosmology are considered science not because the underlying assumptions are true or justified, but instead for a definitional reason that fails to fulfil its stated goal of neutrality. If NM really promoted “neutrality” among theists and atheists, theistic creation accounts would be considered “science” *or* naturalistic theories in theoretical cosmology would be relegated to philosophy of religion or “atheistic theology.” The assumed reluctance of many theoretical cosmologists to drop the label “science” from their fields, despite dubious differences from assumptions underlying natural theology, illustrates this point.

4 Consensus is not an Epistemology

Some defenders of MN appeal to the consensus of current scientists around MN, claiming “scientists get to define science [17].” There are two challenges to this claim, one historical and one epistemic.

The historic challenge says that who is considered a scientist is often shaped by political and cultural factors. Until recently, women and minorities were barred admission to many universities and were often deemed “unfit for science” by many researchers. Defending MN by the consensus of scientists implies the uncomfortable conclusion that who was considered to be “scientists” less than

¹This is also referred to ontological naturalism in some literature

a century ago were perfectly justified excluding women and ethnic minorities on the same grounds. Would the normativity of segregated universities and lab spaces have been a key ingredient to proper “science” a generation or so ago? I would hope not, yet this is what relying on consensus would imply.

However the larger issue here is that consensus is *not* an epistemology. We do not determine the truth of our theories based on the consensus of a body of experts. If we had asked “scientists” 500 years ago whether the sun revolved around the earth, most would have said “yes” (most would have subscribed to the Aristotelian geocentric model). Similarly, the consensus of those already selected as scientists will be biasing the results in favor of institutional entrenchment. What matters more is what the *reasons* scientists offer for keeping (or rejecting) MN. As I have argued here, these reasons are insufficient for adopting (or keeping) MN as a sole demarcating criterion.

Conclusion

What matters to most of us is not whether a theory has the word “science” attached to it, or whether the word “science” has some specific demarcating criterion, but rather a theory is *true*. Constraining scientific practice to MN means science cannot comment on the truth of many theories because it *a priori* rules them out. While some find this acceptable, many uncritically think any theory labelled “science” must be true and something labelled “pseudoscience” must be untrue. There appears to be an equivocation (often propagated by science communicators) between “science” referring to a field of study bound by methodological constraints and “science” referring to what is *true*. The rock and a hard place for scientific realists is bridging this gap: either MN is an operational assumption that does not imply any ontological commitments (and thus neither do any scientific results), or MN *is* an ontological position (the truth of which must be argued *outside* of science to avoid circularity). Note that I am not advocating for methodological anarchy, like [6]. Instead, I believe we have evolved past the idea of a single sufficient demarcation criteria, be it MN or anything else [9].

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