A new perspective on No Miracle Argument

T. Erfanifar

According to no miracle argument, the fact that scientific theories oftentimes enable us to make accurate prediction is because they reflect the true structure of the world. In mature scientific theories, there are two capacities: from one side they explain observable phenomena and from another side they make predictions about the unobservables, and these predictions are mostly successful. The empirical success of theories may be due to either their ability to pin down the structure of the world authentically, or there is a miraculous event that leads them to coincidentally represent the world accurately. Given the peculiarity of the latter one can legitimately defends the former and holds that a mature and well-confirmed scientific theory is true or approximately true. This argument entails that those unobservable entities that are postulated by such a theory for their explanatory function, like electrons, are real entities that populate the world. This argument relies on the inference to the best explanation (henceforth IBE), because it assumes that theories at stake are not just occasionally good way of explaining the world, rather among all alternative such as miracles, scientific realism is the best approach that properly explains the success of theories.

In contrast to this realist argument, some anti-realists attribute the success of science to another idea borrowed from Darwinian evolution, i.e. natural selection. The reason that scientific theories usually make accurate predictions is neither miracle nor their (approximate) truth. Rather, they are successful just because their rival that haven't been proved to be pragmatically successful, have been discarded. In this approach, unsuccessful theories are conceived of like extinct species that lack the sufficient level of adaptability to their environment. Likewise, theories that are around

have survived the test of usability by making more accurate predictions. To say, the natural environment and the scientific milieu work similarly. The nature eliminates those species that cannot adapt themselves to the environmental changes. Similarly, the scientific community doesn't tolerate theories that fail to make accurate predictions. So the successful theories that make accurate predictions have nothing to do with truth since truth or falsity of a theory and the reality/unreality of its postulated unobservables do not play a substantial role in conjectures predicted by the theory.

Wray, in his defense of selectionism, put an emphasis on the concept of success. In his estimation, success is a relative concept, and the factors that determine the success of a theory are subject to change. The predictive success is determined by standards of accuracy which not only change in the course of history, but also are constructed by the research community. That is to say, the criteria of success are relative to different expectations of scientists in different historical periods, rather than being posited once and for ever as absolute standards. Therefore, success is a matter of "social consensus" (Wray, 2018, 165) rather than a metaphysical truth.

Conversely, there's a different reading that considers selectionist argument compatible with realism. In Van Fraassen's version of selectionism there's no necessary link between truth and success, however realist selectionists like Popper believe that in the course of scientific selection, weak theories are eliminated, and this successive replacement enables the theories to get ever closer to the truth. This is what Van Fraassen is skeptic about because the only thing that IBE tells about successful theories is their usefulness rather than truth. To clarify, when a scientist selects a theory among a bunch of available alternatives, there's no guaranty that the pool of theories contain a true one and this is what he describes as "selecting the best of a bad lot" (van Fraassen 2003, 143).

Following van Fraassen, Wray gives three reasons why realism and selectionism are incompatible (Wray, 2018, 172-3): 1- Anti-realism explains the success of all theories, true or false. While realism can only explain the success of true theories. 2- In anti-realism, the phenomena are explained parsimoniously alluding just to the selection mechanism. Realism, in contrast, requires more explanatory apparatus for explaining true and false theories. 3- When the theories that once have been assumed as true are replaced by more successful theories, the realists should retract all their explanations and ontological assumptions involved in them. But anti-realists always uphold a same explanation for the success of the theories without any need to continuous retraction. In my view, it seems that Wray's reasons in favor of incompatibity of realism and selectionism doesn't support his conclusion and merely shows the superiority of anti-realism over realism. However, there are other ways to justify incompatibity position.

First, in the realist front it is claimed that the ongoing evolution of science in which the less unfit are replaced by fitter theories, leads us to the (approximate) truth and it's the same thing that happens in natural selection. But I think this analogy is flawed, because in the case of Darwinian evolution the presupposition of fitness to the environment can be tested by studying their fossils and genetic makeup and see how and in what sense those species that survived the evolutionary progress are fitter and how the changes in their organs helps them to adapt themselves more efficiently to their environment. However in the case of the scientific theories there's a significant difference. In order to see which theory can better represent observations, a realist should do experiments. But every experimental success, which is aimed to give support to the theory, is itself another success in need of explanation. The realists devise experiments in order to corroborate their theories but if the experiments successfully confirm the theories, the second success itself needs a theory-based explanation. In other words, the realists mistakenly think that the continuum

of consequent theories and observations will finally stop and hit the goal. However, an anti-realist can contend that what they are appealing to in order to verify and corroborate the theories is itself another observation that should be explained ad infinitum.

Secondly, I think the process of scientific evolution is not like the relay race in which the more recent theories are built on the bedrock of the previous ones and use their achievements and findings as their initial asset and then make revisions and enrichments on the pre-given resources of the precursors. In contrast, there are cases in which the theories are formulated in a way that in some aspects makes revolutionary and significant changes in the previous theories and this recasting is purposefully done in a way that makes the new theories seem like a giant breakthrough. Therefore the course of scientific evolution is not like what realists conceive as an ever converging path in which we're getting closer to the truth, rather it proceeds through intermittent huge breakaway from what was previously assumed as true.

Finally, I think the very guiding idea of observation to which realists attempt to correspond their explanation isn't clear at all and cannot be grasped immediately. To wit, every observation is theory-laden and is mediated by the scientist's specific conceptual framework (Hashemi 2022: 958). Take the example of Cetacean stranding. The phenomenon of mass suicide of whales is interpreted by marine physicists and biologists and veterinarians differently and based on theories that may have incompatible ontological assumptions. The realists' claim that scientific evolution is guided by the idea of ultimate truth is untenable as it cannot adequately explain the interaction and reciprocal contributions of different disciplines and the way they can be equally true and explain a same phenomenon from different perspectives with different ontological assumptions.

Therefore, Wray's thought that the anti-realist explanation for the success of science is not compatible with realism seems reasonable.

References:

Hashemi, A. (2022). How Does a Theoretical Term Refer?. *Axiomathes*, 32(6), 957-968. https://doi.org/10.1007/s10516-021-09555-6

van Fraassen, Laws and Symmetry. Oxford: Clarendon, 2003.

Wray, Resisting Scientific Realism. Cambridge University Press: Cambridge 2018