

# Scientific Method and the Realist Hypothesis

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Such is the method of science. Its fundamental hypothesis, restated in more familiar language, is this: There are Real things, whose characters are entirely independent of our opinions about them; those Reals affect our senses according to regular laws, and, though our sensations are as different as are our relations to the objects, yet, by taking advantage of the laws of perception, we can ascertain by reasoning how things really and truly are; and any man, if he have sufficient experience and he reason enough about it, will be led to the one True conclusion. The new conception here involved is that of Reality. It may be asked how I know that there are any Reals. If this hypothesis is the sole support of my method of inquiry, my method of inquiry must not be used to support my hypothesis. The reply is this: 1. If investigation cannot be regarded as proving that there are Real things, it at least does not lead to a contrary conclusion; but the method and the conception on which it is based remain ever in harmony. No doubts of the method, therefore, necessarily arise from its practice, as is the case with all the others. 2. The feeling which gives rise to any method of fixing belief is a dissatisfaction at two repugnant propositions. But here already is a vague concession that there is some one thing which a proposition should represent. Nobody, therefore, can really doubt that there are Reals, for, if he did, doubt would not be a source of dissatisfaction. The hypothesis, therefore, is one which every mind admits. So that the social impulse does not cause men to doubt it. 3. Everybody uses the scientific method about a great many things, and only ceases to use it when he does not know how to apply it. 4. Experience of the method has not led us to doubt it, but, on the contrary, scientific investigation has had the most wonderful triumphs in the way of settling opinion. These afford the explanation of my not doubting the method or the hypothesis which it supposes; and not having any doubt, nor believing that anybody else whom I could influence has, it would be the merest babble for me to say more about it. If there be anybody with a living doubt upon the subject, let him consider it.

In “The Fixation of Belief”, Peirce discusses *inquiry* as the move from the unsettling state of doubt to the settlement of opinion, or belief. He distinguishes four different ways of settling opinion, or aims of inquiry. The first of the methods is tenacity, the steadfast clinging to one’s opinion. However, under the influence of what Peirce calls the “social impulse”, this method is bound to fail. The disagreement of others begins to matter, and the question becomes: how to fix

beliefs for *everyone*.

The three latter methods attempt to reach a shared opinion across believers. By the method of authority, a power such as that of the state forces a single opinion upon everyone, by brute force if required. But a “wider sort of social feeling” will show that the opinions dictated by the authority are mostly arbitrary (Peirce 1877, 118).<sup>1</sup> The *a priori* method attempts to rectify this problem by demanding that opinion is to be settled, under conditions of liberty, by what is agreeable to human reason. However, this method leads to no lasting results: it “makes of inquiry something similar to the development of taste; but taste, unfortunately, is always more or less a matter of fashion” (1877, 119).

It is required to develop a method which does not make our belief dependent on our subjective opinions and tastes altogether, but “by which our beliefs may be determined by nothing human, but by some external permanency” (1877, 120). This method is the scientific one. Truth, from its point of view, is the opinion which accords with a reality independent of our opinions of it. The hypothesis that underlies the scientific method is that there is an independent reality, which “affects, or might affect, every man” (1877, 120). This *hypothetical realism* finally makes intelligible the attainment of a single answer to any question across inquirers.

Contemporary scientific realists commonly attempt to show that science is a reliable guide to what there is. Peirce takes the opposite direction: it is science that is defined in terms of reality. (Of course, this is not to deny that the abstract definition of science presupposes and builds upon a reflection of its concrete development.) This direction of definition leads to the distinctive features of Peircean scientific realism. The scope of science is not limited to any particular set of theories or some specific methodical outlook, for example one conceived of in terms of a paradigmatic science such as physics. Instead, scientific inquiry is an inquiry that has as its aim finding out how things are independently of how we think they are.<sup>2</sup> Reality, in turn, is not defined in terms of the results or methods of (some particular) science, present or future.

The scientific method is distinguished from the others by its realist hypothesis; accordingly, Peirce points out that the method itself cannot be used to support it. Instead of

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<sup>1</sup> References to “Fixation” are to the text as printed in *The Essential Peirce* vol 1.

<sup>2</sup> Some readers of Peirce have argued that the scientific method is defined by, or distinguished from the others, by its making our belief sensitive to experience, argumentation, reasoning, or the like. Among these readers, I’m indebted to an anonymous referee, and have two criticisms to make. Firstly, it is clear based on textual evidence that, *at least* in the “Fixation”, the distinguishing feature of the scientific method is the realist hypothesis. Secondly, what counts as relevant experience, argument or reasoning is already a matter of the choice of method. We will not be able to tell the scientific method apart from the others by reference to such notions – that is, unless the realist hypothesis is invoked in connection to them.

attempting to show that there is an independent reality by way of scientific inquiry, as it were, Peirce offers four considerations that in his words “afford the explanation” of his not doubting the method or its underlying hypothesis.

The first of the four considerations is that the application of the scientific method will not lead to the contrary conclusion – the conclusion that there is no independent reality. Peirce then adds that the scientific method is distinct from the others in that no doubts of that method necessarily arise from its practice. On the first count, Peirce is surely correct. It would be impossible for the scientific method to ever show that there are no real things: after all, this would amount to showing that, independently of our opinions, there is nothing independent of our opinions.

However, it is less evident that such a consistency in application is particular to the scientific method. Consider the crudest method, tenacity, which holds that the true opinion is that which one already maintains. Surely, for someone who consistently follows this method, the disagreement of others will simply not matter, and doubts over the method brought about by the conflicting views of other inquirers will not arise *within* its practice. Indeed, when discussing the tenacious person, Peirce himself points out that it “would be an egotistical impertinence to object that his procedure is irrational, for that only amounts to saying that his method of settling belief is not ours” (EP I, 116). Doubt over this method *does* arise, but not *necessarily* out of the practice of *that* method. Rather, for the “social impulse” to have its bite, we must have already proceeded beyond tenacity to a public method of fixing belief. As it turns out, none of the four methods Peirce discusses is inconsistent or self-defeating in like manner. For example, there is no *a priori* proof that the *a priori* method will not lead to any lasting results. For this reason, consistency cannot be listed as a benefit specific to the scientific one.

The social impulse explicitly appears in Peirce’s second consideration. Here his argumentation here is rather complex. The first prong of the argument appears to be that the fact of doubt itself implies the belief that there is some “one thing” that our beliefs represent, and hence the belief in an independent reality is presupposed. The second prong is almost unexpected. From his claim that everyone already agrees about the realist hypothesis – which we could easily think would be quite sufficient to his purposes – he further infers, as if by way of conclusion, that the social impulse will not count against the scientific method. This prong is however central to Peirce in light of the discussion of the “Fixation”: it is the influence of such an impulse that motivated the move from tenacity to the method of authority and then onwards to the *a priori* method.

This line of argument is too hasty. It certainly is not evident that the demand of consistency can only be due to the realist hypothesis. Recalling the pragmatist's insistence that beliefs are habits of action which may actualize in conduct under some conceivable circumstances, the impossibility of simultaneously embarking on two mutually exclusive courses of action might be a natural source for the dissatisfaction at two inconsistent beliefs, perhaps even for a rudimentary notion of the law of contradiction. But this natural pursuit of consistency does not equal the belief in an independent reality. The very existence of doubt does not equal the realist hypothesis. Moreover, the other methods already entail the notion of one and only one opinion being the correct one. By the method of authority, for example, the "one thing" that our opinion is to accord with is the view dictated by the authority. That our opinions are to accord with some "one thing" does not yet yield the admission of the realist hypothesis.

There is a further, more general reason to think that it cannot be that each belief represents an independent fact in some straightforward fashion. Namely, if this *were* the case, Peirce's whole discussion would be moot, and the scientific method would win by default: it would be simply impossible to follow methods other than the scientific one. Perhaps, as Peirce puts it, each proposition *should* be taken to represent a fact. But this notion appears with the scientific method alone.

The third consideration repeats this idea by maintaining that the scientific method is used by everyone "about a great many things". Common sense, from the Peircean perspective, is often a rudimentary form of science: it may involve far less refined methods of investigation, but nevertheless entail the assumption of an independent reality. In some domains of belief (and inquiry), however, the scientific method is not commonly followed. Normative questions such as issues concerning the rightness and wrongness of actions could serve as a central example. In the absence of a well-formed normative science, we often resort to the other methods in settling moral opinion.

The main problem with the third consideration is that it appears to take place from the point of view of another method, namely the third, *a priori* one: it lists consensus as speaking for the hypothesis. From the point of view of the scientific method, too, agreement across inquirers is obviously central. In the same connection, Peirce himself familiarly articulates truth as that view which inquirers would agree upon, were investigation pursued indefinitely. But such agreement – often dubbed convergence – derived in an inquiry that attempts to be responsive to the influence of an independent reality through experience, is distinct from a simple consensus, which might be coincidental. Moreover, considerations pertaining to the agreement achieved

among inquirers will be irrelevant from the perspective of those who haven't attained at least the third, *a priori* method of fixing belief.

Finally, in his fourth consideration Peirce argues that experience of application of that method will not count against it, but rather shows its "wonderful triumphs". If anything, however, drawing from our *experience* in applying the method is an instance of the application of that method itself. As Peirce notes at the outset of his discussion, it cannot be used to support the realist hypothesis. No matter how plausible the concrete results of science, including the technological advancements it has enabled, may make that hypothesis to some, for those who rather follow another method, no amount of such experience will count as the relevant type of evidence. Peirce would likely maintain that inquirers will eventually converge, under the influence of reality through experience, upon the scientific method. In advance of this development in any particular field of inquiry, however, such experience and the convergence of opinion under its influence will not be considered relevant.

All in all, none of Peirce's four considerations succeeds in giving the scientific method and its realist hypothesis an unquestionable advantage over the other methods, which do not involve such a hypothesis. To recapitulate, the first consideration imposes a demand of consistency that is met by each of the four methods Peirce presents. The second consideration maintains that there must be some one thing that our opinions are settled in accordance with, but all of the three latter methods answer to this demand. Peirce's further insistence that the external standard must be an independent reality seems exaggerated: it cannot be that our beliefs represent a reality in a manner that would make the non-scientific methods superfluous.

The third consideration, which draws from the wide appeal of the scientific method (and thus of its underlying hypothesis) is motivated by the *a priori* stance rather than the scientific method. Finally the fourth consideration which centers on the experiences resulting from the application of the method is itself an application of that method. It cannot be used to defend the hypothesis that underlies that method itself: that such experience *is* the experience of our opinion being settled in accordance with an independent reality.

But of course, we should not read these considerations as an attempt to give a full-blown proof to the realist hypothesis – otherwise it would not be a hypothesis at all. As Peirce is quick to point out, these four considerations rather explain why he entertains no doubt about its feasibility. The most important defense of the realist hypothesis is ultimately that which Peirce states subsequent to the four considerations: "If there be anybody with a living doubt upon the subject, let him consider it". There is no argument that would overturn a skeptic about reality;

neither can we supply a method-neutral defense of the scientific method. In line with the idea that reality would ultimately impose the scientific method upon all inquirers, the true response to the doubter and the follower of another method is “wait and see”.

Admitting the impossibility of *showing* that the realist hypothesis is the correct or even the most rational one is still no reason to rest content with others applying the three other methods. Instead, there is work to be done in aiding the expansion of the scientific outlook. In particular, there are cases of inquiry – such as that of moral or more generally normative claims already considered – that do not easily allow themselves to the scientific method. Both philosophical conceptual work and scientific discovery may be required to bring different domains of inquiry into the scientific fold.

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