John Dewey’s Conception of Scientific Explanation: Moving Philosophers of Science Past the Realism-Antirealism Debate

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John Dewey provided a robust and thorough conception of scientific explanation within his philosophical writing. I provide an exegesis of Dewey’s concept of scientific explanation and argue that this concept is important to contemporary philosophy of science for at least two reasons. First, Dewey’s conception of scientific explanation avoids the reification of science as an entity separated from practical experience. Second, Dewey supplants the realist-antirealist debate within the philosophical literature concerning explanation, thus moving us beyond the current stalemate within philosophy of science.

Nature retains her veil, despite our clamors:
That which she doth not willingly display
Cannot be wrenched from her with levers, screws, and hammers.
– Goethe 1808/1964, Faust I

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In his essay, “Aspects of Scientific Explanation,” Carl Hempel begins his argument for the deductive-nomological theory of explanation with an example about soap bubbles from John Dewey’s book How We Think (Hempel 1965, 335–336; Dewey MW 6, 235–238). Later in the essay, Hempel draws on another example utilized by Dewey: explaining the rising of water by using a pump (Hempel, 364–365; Dewey LW 8, 272). Despite explicitly drawing upon Dewey for at least one of these two examples, Hempel nowhere acknowledges Dewey’s own conceptions of science or scientific explanation.

In fact, the literature concerned with scientific explanation, which develops into one of the major areas of the philosophy of science in the latter half of the twentieth-century (see Salmon 1989), rarely contains mention of John Dewey’s work, although Dewey could be considered one of the most influential American thinkers to his contemporaries who wrote on the subject in the first half of the century. At best, Dewey is mentioned in the literature concerning scientific explanation as the father of early instrumentalism (e.g. in Fine 2001).
The fact that he had a thorough conception of scientific theory and practice has been neglected. Perhaps even more tragic for the philosophy of science in the latter half of the twentieth century – especially for the work surrounding scientific explanation – has been the inattention towards the conception of scientific explanation contained within Dewey’s work. This neglect is tragic for at least two reasons. The first is that Dewey provides an understanding of scientific activity that is not partitioned from other activities, thus avoiding the reification of science as an entity or enterprise, of which many philosophers of science since Dewey have been guilty, especially those who work on scientific explanation. This lack of separation between scientific activity and other modes of experience also signifies Dewey’s recognition that experience is multiply perspectival, and no single type of experience is inherently more valuable than other types. The second reason is that Dewey’s conception of scientific explanation supersedes the realist-antirealist split within the philosophy of science, which is a fissure that has existed in the explanation literature for most of the latter half of the last century.

The negligence toward Dewey’s thought within philosophy of science is based upon a number of factors, which I will not explore in any great detail here, but it is worth mentioning a few of the likely reasons for the eclipse of Dewey’s work within this philosophical field of study. The first is probably due to a general bias against Dewey’s work that is caused by what Oliver Wendell Holmes referred when commenting upon the writing style in *Experience and Nature*: “incredibly ill written” and “So methought God would have spoken had he been inarticulate but keenly desirous to tell you how it was” (quoted in Ralph Ross’s *Introduction to Reconstruction in Philosophy and Essays*, 1920, *MW* 12). Another is probably due to the reasons given by Ernest Nagel in his essay on Dewey’s theory of natural science, which include the criticism put forth by Holmes concerning Dewey’s literary style, as well as the “antecedent ideological commitments on the part of his readers” that prevented many from buying into his logic (Nagel 1950, 246–247). Nagel also claims that Dewey “writes about natural science like a philosopher, whose understanding of it, however informed, is derived from second-hand sources” (247). Perhaps Nagel’s strongest criticism that is the most apt with regard to the late twentieth-century inattention to Dewey’s work on science is the fact that Dewey “employs home-grown arguments and formulations even where more convincing ones are readily available” (247). This creation of arguments – rather than derivation of arguments – perhaps led to Dewey’s isolation “from important and allied contemporary streams in the philosophy of science” (248).

Dewey’s most important work on science, which is from his later period (1925–1952), comes at a time when philosophy within the United States was becoming increasingly specialized. His conception of scientific explanation might have suffered from the movement toward specialization. Hans Reichenbach called this the “second phase” of empiricism “in which highly technical investigations form the indispensable instrument of research, splitting the