Dewey on Naturalism, Realism and Science

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An interpretation of John Dewey's views about realism, science, and naturalistic philosophy is presented. Dewey should be seen as an unorthodox realist, with respect to both general metaphysical debates about realism and with respect to debates about the aims and achievements of science.

1. Introduction. Everyone believes that their favorite philosophers are misunderstood. The problem will be especially acute insofar as one's favorite philosopher is oneself, but most of us extend the claim beyond this special case. Although everyone makes such claims about someone, I believe I am on firm ground in claiming that John Dewey is an unusually misunderstood philosopher.

Much of the blame for this misunderstanding can be assigned to Dewey himself, as his most important works are written in an opaque style, and terminologically he was both eccentric and uncompromising. So, my aim in this paper is to clarify and organize what I take to be some central claims in Dewey's epistemology and metaphysics, especially as they relate to science. Specifically, I want to make some of Dewey's ideas vivid to contemporary naturalistic philosophers. I imagine that many contemporary naturalists think of Dewey as well-meaning but woolly-minded, as someone with good instincts but a lack of rigor and a Hegelian hangover. I will argue that there is more to Dewey than that.

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How is Dewey's philosophy usually interpreted? There is no single interpretation, but many. And even sympathetic and careful commentators make important mistakes. For example, it is common to think that on the issue of realism in metaphysics, Dewey's basic allegiance is to a view that resembles some one of the current alternatives to strong realist positions. This position is sometimes seen as having affinities with verificationism (see Ryan 1995, 83 for an example of this reading). Another reading takes Dewey to be an early exemplar of "social constructivist" views (Hacking 1985, 61–62). The interpretation I will give here is opposed to both those claims, and it is opposed to the idea that there is any significant resemblance between Dewey's philosophy and modern forms of empiricist and constructivist anti-realism.

Before starting on the issues, I begin with a qualification: the interpretation I will give is restricted to the later part of Dewey's career (from about 1925 onward). Dewey began as a kind of Christian/Hegelian idealist. He then (thankfully) moved on to first a rather "classical" form of pragmatism, and then to the naturalistic view that I will focus on. Recognition of these three stages in Dewey's career is not controversial (Boisvert 1988). Throughout this paper I take Dewey's book *Experience and Nature* (1925, revised edition 1929) to be the most important of his works for metaphysical and epistemological issues. The other central works here are his more readable book from the same time, *The Quest for Certainty* (1929), and the mind-numbing late work *Logic* (1938).

2. Dewey's Naturalism and Its Relation to Realism. Though this paper is focused on Dewey, one larger aim of this project is to better understand the relationship between naturalistic philosophy and various realist metaphysical doctrines. Dewey's philosophy, during the period discussed in this paper, was overtly naturalistic. The term "naturalism" has, of course, been used in a variety of ways by philosophers (Kornblith 1985, Kitcher 1992). One kind of naturalism holds that philosophy should conduct its investigation of mind and knowledge (etc.) from within a framework provided by our best current scientific description of human beings and their relations to their environments. Philosophical work on these issues should also be informed by the details of continuing scientific work. These claims comprise one modern version of naturalism, and I suggest that they are also the core of Dewey's version.

Dewey's relations to realist positions in philosophy were perceived in his day to be complex and subtle. Dewey himself resisted signing on to an early twentieth-century realist revival movement (see the exchange between Dewey and the "six realists" reprinted in Dewey 1985). Some of Dewey's views on this issue derive from idiosyncratic details of his philosophy, and the details of early twentieth-century discussions. But other

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parts of Dewey's position have more general interest. For Dewey, some familiar statements of realist positions in metaphysics have a tendency to violate the constraints of naturalism. This will be the topic of much of the paper. I will argue that by the standards of *today's* debates, Dewey's philosophy does count as a version of realism. But Dewey's realism is affected by his naturalistic commitments in ways that are of enduring relevance.

My discussions of realism will use the distinction made by Michael Devitt (1991) between *common sense realism* and *scientific realism.* I will treat these as raising separate, although related, problems in the interpretation of Dewey's philosophy.

We will begin with "common sense" realism. Devitt understands common sense realism as involving a commitment to the objective, mind-independent existence of familiar middle-sized objects like stones, trees, and cats. As we will see, Dewey had reasons to resist formulations like this. But we can follow Devitt's discussion by focusing initially on questions of realism as applied to macroscopic aspects of the world's structure that are encountered in everyday life, as opposed to unobservable aspects of the world described by scientific theories. (Distinctions of roughly this kind were not foreign to Dewey; see 1929a, chap. 1.)

Dewey's view about this first set of issues follows directly from his naturalism. Humans are biological systems inserted into a common natural world with a definite structure. Human thought has real contact with various parts of the world beyond it, via natural channels described by biology and other sciences.

So far Dewey is fundamentally in agreement with modern realist naturalists, like Devitt and Fred Dretske (1995). There are differences between Dewey's view and those of Devitt and Dretske, but these differences mostly have an "in-house" character. They have to do with what *kind* of naturalistic theory we should give of the role of mind in the world as a whole.

For Dewey, when we want to make philosophical claims about thought, mind, or intelligence, we must take as the natural "unit" for analysis a large, inclusive structure. A theory of mind is not a theory of the nature and role of a set of inner episodes. Neither is it a theory of the nature and role of the brain, or the brain plus a set of sense organs attached at one end and actuator devices attached at the other. The "unit" for discussion in philosophy of mind and epistemology is larger in two ways. First, mind is something that only exists in a social medium of symbol use. And more important for our present purposes, we must treat thought as something connected to distal environmental conditions at both ends. Dewey has an especially "wide" version of what is sometimes called "wide psychology." Thought is a response to specific kinds of environmental conditions, and the function or role of mind is to guide the agent in the physical transfor-

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mation of those conditions, via action. As a consequence of this, all of Dewey's claims about the role of thought, or mind, or knowledge in the world are claims about a system that *includes action and its consequences.*

Now we can identify a source of perennial misunderstanding. Dewey likes to make claims that appear to ally him with what would now be considered a strong form of constructivism, with metaphysical implications. For Dewey, the role of thought and knowledge is not to passively reflect a pre-existing world, but to *change* reality. The outcome of a successful inquiry is a *transformation* of the situation.

Dewey says things like this, and so of course do modern opponents of realist metaphysical views; Goodman (1978) in philosophy and Woolgar (1988) in sociology of science are examples. But when Dewey makes these claims about how thought changes the world, he does not mean it in *anything like* the sense of recent anti-realism. When Dewey says these things, he is making a claim about "mind" and "knowledge" in his larger sense; he is including the causal role of behavior. Thought changes the world, but only via its effects on action.

Dewey has an interesting analysis of where one family of erroneous metaphysical views come from. "Idealist" views, Dewey says, want to retain the idea that mind is active and creative, within a view that truncates the larger structure that Dewey sees as comprising the mental aspect of nature. That results in the strange idea that the world in some way depends on the mind, without this dependence going via the channel of action (Dewey 1929a, 126 and 1929b, 159). Elsewhere (1996, chap. 5) I have suggested that Dewey's diagnosis here applies to some recent forms of anti-realism and social constructivism, as well as to the idealisms of his own time.

Now we can see why Dewey will resist Devitt's formulation of "common sense realism." Devitt's formulation, and many like it, assert the *mind-independence* of the familiar contents of the world. For Dewey, the role or function of mind is precisely to be a factor in the transformation and modification of the contents of the agent's environment. Insofar as the contents of the world make their own way independently of the activities of thought, thought has failed. A naturalistic theory of the role of mind in nature is partly a theory of a special set of dependence relationships between the mind and external objects.

Of course, realists like Devitt would never dream of denying *this* kind of dependence relation between the external world and thought. Devitt elsewhere makes it explicit that it is no part of his realism to deny ordinary causal traffic between thought and the rest of the world. But from Dewey's standpoint, the traditional blanket concept of "mind-independence" is simply not the right concept to work with when expressing and defending realism, and it should not appear in official formulations of the view. This

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is because everything hangs on which *kinds* of dependence relation a philosophy recognizes between thought and the rest of the world. The naturalist looks to the sciences for a description of these relations. Realism involves recognizing these and then denying that there are any other dependence relations, such as those found in idealist metaphysical systems.

So far, the disagreement between Dewey and mainstream modern forms of realism, like Devitt's, does not look substantial at all. There is a complication to address though. So far the discussion has concerned only the most familiar and unproblematic kinds of causal dependence between thought and the world. Dewey also recognizes a more controversial form of dependence.

Consider a case where some new theory or idea creates a new possibility for action—this might be the discovery of a new way of removing a useful metal from its ore. Dewey says that ideas change the world via their effects on action, as we saw. But he also thinks that new ideas of this kind effect changes to the world even *before* action has ensued, because a new set of *potentialities* for action has been created. The total causal network that connects an object with other things in the world *via* actions directed upon it has changed (see especially Dewey 1922, 206 and 1929a, 125).

This does introduce complications. As ideas change, there is a kind of immediate action-at-a-distance change made to the things being thought about. That looks bad. But this change involves no more than the fact that new possibilities for action have arisen; the sense in which thought transforms or affects the world is still constrained by the local causal powers of human action. For Dewey, the naturalist should accept these relationships as real.

Many contemporary realists will want to resolve this problem with the aid of a metaphysical distinction having to do with change. According to this distinction, there are two kinds of changes, *real changes* and *Cambridge changes.* The terminology was introduced by Geach (1972). The distinction has not been understood uniformly since then, but the basic idea is that Cambridge changes are changes that involve no intrinsic alteration to an object but just a change to the relations it stands in. Real changes to objects involve change to intrinsic properties.

So the realist might want to clear the matter up by saying this: mind acts to transform the world when it is an agency in bringing about real changes to external objects, and mind can only do this via the channel of action and via ordinary causal processes. Mental or theoretical changes can also bring about Cambridge changes in various things, without those causal processes being involved. But Cambridge changes are trivial; any real change anywhere implies Cambridge changes to everything in the world. So Cambridge changes have no importance here.

This position sounds very reasonable, but Dewey will resist it. He will

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resist it because it seems to downgrade the role of *relations* in the world. Dewey constantly fought against views that tried in any way to see relations as metaphysically secondary or inferior, in comparison with intrinsic properties. So for Dewey, a change to relational properties is, in many cases, just as "real" as a change to intrinsic properties. The role of mind in transforming the networks of relationships and potentialities that connect things in the world is part of what a theory of mind should *stress,* not something it should disregard as unreal.

In another paper (forthcoming) I discuss this difficult issue at length as it figures in Dewey's philosophy. For present purposes though, I suggest that this quirk in Dewey's view does not compromise the realist and naturalistic nature of his views. All of these radiating changes to relations that Dewey insists are real products of the mind are (i) not at all dependent on a perspective, conceptual scheme, or point of view, and (ii) real and important only in virtue of the role of mind in directing action, and in virtue of the real but limited causal capacities of that action. These are my reasons for viewing Dewey's disagreements with modern naturalistic realism as "in-house" disputes that have largely to do with what the exact content of a naturalistic theory of mind should be, and partly to do with a separate set of metaphysical issues concerning the status of relations.

3. Instrumentalism and Scientific Realism. The previous section aimed to make clear some very basic elements of Dewey's naturalistic attitude to metaphysical issues. So far we have only looked at questions involving macroscopic and accessible aspects of the world. Let us now look at some problems in the philosophy of science more narrowly construed, especially the issue of scientific realism. Here it will turn out that a number of different misconceptions about Dewey's views can be corrected together. But I should also add that the interpretations given in this section are more cautious than those in the previous section.

Realism about "common sense" entities and "scientific" entities are taken to raise separate problems in contemporary discussion, and to some extent this is true also with Dewey. Dewey constantly emphasizes that knowledge is not the only, or the most fundamental, kind of contact that humans have with the familiar macroscopic structure of the world. We also experience things in direct ways that do not involve cognitive operations. This does not hold of the hidden structures posited by scientific theories. Dewey also makes claims about the meaning of scientific language, and about scientific "concepts," that seem to take his views close to semantically reductive forms of empiricism and away from a realistic interpretation of science (see especially Dewey 1929b, chap. 5). He claims that the meanings of scientific ideas are tied to their functional role in coordinating our dealings with more directly experienced things. These

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discussions have induced many interpreters to treat Dewey as rejecting the realist view that scientific theories are attempts to describe hidden real structures responsible for observable phenomena. This view of Dewey has been understandably encouraged by the fact that Dewey referred to his own view of knowledge and science as "instrumentalist." And Dewey was, in addition, implacably opposed to all theories of truth (or of the aims of thought) based on some kind of copying or correspondence relation.

But other parts of Dewey's work suggest a different reading, one in which Dewey's philosophy of science is an unorthodox form of realism, perhaps a relative of the "structural realism" of Worrall (1989).

Encouragement for the alternative, realist reading of Dewey comes from the exchange between Dewey and Reichenbach in Dewey's "Schilpp volume" (Reichenbach 1939, Dewey 1939). Reichenbach takes it to be quite straightforward that Dewey has a "nonrealistic" view of the objects of scientific theories. He gives a series of quotes from Peirce, James, Dewey, and Mach, all of which he takes to express versions of the idea that scientific claims that apparently refer to unobservable entities really just describe patterns in observables. Reichenbach takes "pragmatism" (including Dewey's view) to be a non-phenomenalist version of this semantic reductionism about scientific claims. And one of the main points in Reichenbach's essay is a criticism of Dewey's "non-realist" position. Reichenbach was no doubt surprised when Dewey strenuously objected to Reichenbach's interpretation, and insisted that his view of science is realist in the sense of Reichenbach's discussion.

So what is going on? My attempt at interpretation and diagnosis will begin from a different set of issues, and work back toward scientific realism.

In the previous section we found ways to make naturalistic sense of Dewey's claim that the function of mind and knowledge is to make directed changes to goings-on in the world. To what end are these changes made? Here, many would say, we encounter a different problem with Dewey's view. Dewey errs along with the rest of a large family of "pragmatist" philosophies in treating all problems of theoretical choice as *practical* problems, problems to be resolved by looking to the practical payoffs associated with the different options.

Dewey's epistemology does give a central place to practical problem-solving. But this practical orientation is compatible with a subtle and interesting set of ideas about science. In particular, it is a mistake to say that Dewey wanted to understand theory-choice in science as directed solely by practical concerns.

Another misunderstanding is related to this one. Dewey liked to think of his view of science as "instrumentalist." But this is *not* the familiar sense of instrumentalism which rejects the idea that scientific theories are aimed at describing the hidden structure that lies behind phenomena. And all of

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these interpretive problems are connected, once again, to Dewey's views about relations.

I noted earlier that Dewey insisted on the reality and importance of relations, as part of the make-up of the world. This commitment figures importantly in his philosophy of science. For Dewey, one of the features that is distinctive of science, when compared to other forms of investigation, especially in the ancient world, is science's focus on *relations and connections,* as opposed to intrinsic properties (1929a, chap. 4 and 1929b chap. 9). Science will try to understand one thing by seeing how it is connected with others, seeing what interactions are characteristic of it, seeing how it will combine, attract, repulse, and transform. The contrast here is with the Greek attempt to focus on the inner, intrinsic natures of things.

So Dewey argued that science is distinctive in its taking relations and connections as subject matter. This is part of the explanation for the technological success that has accompanied modern science. An understanding of relations, connections, and interactions is the source of useful technology, the source of our capacity to control processes in nature through intelligence.

Dewey used the term "instrumental" in a very general way, as a term for the properties of things that involve relations, connections, potentialities, and interactions. He also used "instrumental" in more familiar ways having to do with means and ends, but it is the more unusual and more general usage that gives us the sense in which Dewey's philosophy of science is "instrumentalist." Instrumentalism for Dewey is a view about the *kind of structure* that science aims to describe, not a view about a nondescriptive role for theories or the goals of scientific work. "[T]he proper objects of science are nature in its instrumental characters" (1929a, 111; see also 90n, 121, 151).

Dewey thinks that science tries to describe instrumental properties, and these properties are practically important. But he does not think that decisions *within* science are made on the basis of specific practical goals and demands. He thinks the opposite; empirical inquiry that is directed and constrained by immediate practical goals is not science at all. Science is the study of instrumental properties of things *without* regard for immediate practical uses. In the vernacular sense in which "disinterested" means not guided or biased by immediate practical concerns, we can say that for Dewey science is *the disinterested study of instrumentality in nature.* That is not to say that, for Dewey, the pursuit of science itself is or should be severed from the world of practical human motivation and valuation. The decision to undertake science *at all* may be practically based, but decisions made *within* science follow a strategy of exploring "pure instrumentality" without regard for immediate practical tasks.

There are two contrasts Dewey liked to make between modern science

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and ancient Greek traditions. The high philosophical Greek tradition was not science because it disregarded instrumental properties, and because of non-empirical aspects of philosophical practice that were connected to this fact. And the work of artisans and craftsmen around the same time was not science because it was directed by immediate practical goals; it was "bound down to occasions of origin and use" (1929a, 103, also 151). So Dewey was very far from the view that theory-choice in science must be understood in terms of practical goals and payoffs.

It should now be becoming clear how a network of misunderstanding has grown up around Dewey's philosophy of science. His sense of "instrumentalism" is quite different from more familiar senses. When reacting to Reichenbach's "non-realistic" reading of his views on science, Dewey suggested that this kind of misinterpretation derives from his "identification of the scientific object with *relations*" (1939, 535). That is indeed the source of much of the problem.

Still, I should stress that the reading of Dewey in this section is tentative in some respects. The interpretation I am trying to defend is one in which the distinction between observable and unobservable aspects of the world is treated by Dewey as metaphysically unimportant in the same way that it is treated as metaphysically unimportant by more recent scientific realists. That is, when Dewey claims that science is concerned with relations, he is not trying to restrict the "reach" of scientific theories into the hidden structure of the world; he is making a claim about what *kinds* of things the theories are reaching *for.* This reading does face some problems, especially deriving from Dewey's discussions of the semantics of scientific terms and concepts. These discussions, as I said, sometimes seem to show sympathy with semantically reductionist forms of empiricism. And a detailed assessment of Dewey's view of how scientific theories relate to unobservable structure must also grapple with Dewey's hostility to copying and correspondence relations as they figure in analyses of truth and the aims of theory.

I will conclude by giving a summary sketch, using the language of more recent philosophy rather than Dewey's language, of the view that I think Dewey really held. Parts of this sketch have been defended in this paper, while other parts are more conjectural.

Scientific activity goes on within a natural world with a real, objective structure. One set of natural properties—relations, correlations, powers of interaction, dependences—are the focus of scientific strategies of investigation and description. Scientific description of these features of nature is in no sense restricted to the observable.

Scientific work does not only try to describe this network of properties; scientific activity is itself embedded within—is part of—this network. The results of science are often technologies that enable us to achieve new kinds

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of causal control over the flow of natural events. Those effects of science on nature are obvious, but there is also a more subtle sense in which scientific work transforms the networks of dependence relations with which it deals. Scientific work aims to construct theories, models, and investigative practices that bring scientists themselves, and the communities of which they are part, into special kinds of connection with the pre-existing networks of dependence relations. In so doing, scientific work *adds to,* and hence alters, those pre-existing networks. Those networks of dependence become newly connected to the domain of human thought and action. That is one reason why the concept of correspondence is inappropriate in a description of how a good scientific theory relates to the world. Scientific activity can be described, in a low-key and vernacular way, as an attempt to describe how the world is. But "describe" here (and in the previous paragraph) should be understood in a thin sense that does not commit us to a semantic theory using the concept of correspondence truth. For Dewey, even a moderate, abstract concept of correspondence will inevitably obscure the sense in which a scientific theory aims to "add structure" to the network of relations with which it is concerned.

This position is an unorthodox version of scientific realism, and one that may have features worthy of further exploration.

REFERENCES

Boisvert, Raymond (1988), *Dewey's Metaphysics.* New York: Fordham University Press.
Devitt, Michael. (1991) *Realism and Truth,* 2nd ed. Oxford: Blackwell.
Dretske, Fred (1995), *Naturalizing the Mind.* Cambridge, Mass.: MIT Press.
Dewey, John ([1922] 1988), *Human Nature and Conduct.* Reprinted in Jo-Ann Boydston (ed.), *John Dewey: The Middle Works, 1899–1924,* Vol. 14. Carbondale: Southern Illinois University Press.
——— ([1929a] 1988), *Experience and Nature,* revised ed. Reprinted in Jo-Ann Boydston (ed.), *John Dewey: The Later Works, 1925–1953,* Vol. 1. Carbondale: Southern Illinois University Press.
——— ([1929b] 1988), *The Quest for Certainty.* Reprinted in Jo-Ann Boydston (ed.), *John Dewey: The Later Works, 1925–1953,* Vol. 4. Carbondale: Southern Illinois University Press.
——— ([1938] 1991), *Logic: The Theory of Inquiry.* Reprinted in Jo-Ann Boydston (ed.), *John Dewey: The Later Works, 1925–1953,* Vol. 12. Carbondale: Southern Illinois University Press.
——— (1939), "Experience, Knowledge and Value: A Rejoinder", in Paul A. Schilpp and Lewis E. Hahn (eds.), *The Philosophy of John Dewey.* (Library of Living Philosophers). La Salle: Open Court, 517–608.
——— (1985), *How We Think, and Selected Essays, 1910–1911,* in Jo-Ann Boydston (ed.), *John Dewey: The Middle Works, 1899–1924,* Vol. 6. Carbondale: Southern Illinois University Press.
Geach, Peter T. (1972), *Logic Matters.* Oxford: Blackwell.
Godfrey-Smith, Peter (1996), *Complexity and the Function of Mind in Nature.* Cambridge: Cambridge University Press.
——— (forthcoming), "Dewey and the Question of Realism."
Goodman, Nelson (1978), *Ways of Worldmaking.* Indianapolis: Hackett.
Hacking, Ian (1985), *Representing and Intervening.* Cambridge: Cambridge University Press.

https://doi.org/10.1086/341765 Published online by Cambridge University Press

Kitcher, Philip (1992), "The Naturalist's Return", *Philosophical Review* 101: 53–114.
Kornblith, Hilary (ed.) (1985), *Naturalizing Epistemology.* Cambridge, Mass.: MIT Press.
Reichenbach, Hans (1939), "Dewey's Theory of Science", in Paul A. Schilpp and Lewis E. Hahn (eds.) *The Philosophy of John Dewey.* (Library of Living Philosophers). La Salle: Open Court, 159–192.
Ryan, Alan (1995), *John Dewey and the High Tide of American Liberalism.* New York: Norton.
Woolgar, Steven (1988), *Science: The Very Idea.* London: Tavistock.
Worrall, John (1989), "Structural Realism: The Best of Both Worlds?" *Dialectica* 43: 99–124.

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