Putnam on Methods of Inquiry

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Abstract

Hilary Putnam's paradigm-changing clarifications of our methods of inquiry in science and everyday life are central to his philosophy. He takes for granted that the judgments of scientists are for the most part reasonable and not in need of philosophical support, and that no part of our supposed knowledge is unrevisable or guaranteed to be true. He infers from key episodes in the history of science that our language contains terms whose references may remain unchanged despite radical changes in our theories, and that some statements are so basic for us at a given time that it would be unreasonable to give them up at that time, even if our failure to be able to conceive of alternatives to them is no guarantee that they are true. These central methodological commitments lead him to theorize that meanings are not in the head, that there are empirically discoverable property identities, and that reference is the key to understanding truth and realism.

Keywords: apriority, Carnap, functionalism, inquiry, meaning, Quine, realism, reference, Reichenbach, science, trans-theoretical terms, truth

Hilary Putnam died on March 13, 2016, at the age of 89. At the heart of his vast philosophical legacy lie his fresh, brilliant, and paradigm-changing clarifications of our methods of inquiry in science and everyday life.

Putnam's career began in the 1950s, an exciting time for philosophy in the United States. A series of revolutionary breakthroughs in logic, mathematics, and physics had recently prompted a new generation of thinkers to reconceive the relationship between philosophy and the sciences. These new thinkers, among them Hans Reichenbach, W.V. Quine, and Rudolf Carnap, Putnam's main mentors in graduate school and the early part of his career, announced that, contrary to what many philosophers, among them Descartes, have claimed, the judgments of scientists are for the most part reasonable and not in need of philosophical support.

This bold new attitude toward science is integral to Putnam's philosophy. He argues, for example, that the supposed paradoxes of time-travel dissolve when we employ the techniques of physics, and that the commonsense view that future events are as yet undetermined, hence less real than present events, is refuted by special relativity. In the latter case, Putnam concludes, "the problem of the reality and determinateness of future events is now solved.… [and] it is

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solved by physics, not philosophy" (Putnam 1967: 204). He digs into the details of contemporary theories of space-time to challenge Reichenbach's claim that these theories rest on conventional definitions, such as definitions of straight lines as light ray paths and congruence in terms of transport of rigid rods. For many years Putnam also argued that one lesson of quantum mechanics is that we need to give up the distributive laws of truth-functional logic. Though he later changed his mind on this point, he always agreed with Quine that no part of our supposed knowledge, no matter how clear it seems to us or how firmly we now hold it, is unrevisable or guaranteed to be true; and that insofar as traditional philosophical conceptions of reason, justification, and apriority conflict with this principle, they should be abandoned.

In one of his most important early papers, "The Analytic and the Synthetic" (Putnam 1962a), Putnam criticizes Carnap's analytic-synthetic distinction in ways that both challenge and extend Quine's earlier arguments against it. Before the development of relativity theory, Putnam explains, physicists were unable to see any way in which '$e = \frac{1}{2} mv^2$', an equation for kinetic energy, could be false. They held it immune from disconfirmation by new empirical evidence, and it was reasonable for them to do so. By Carnap's logical empiricist principles, Putnam notes, the methodological role of the equation is best explained by describing it as true by definition of kinetic energy. After Einstein developed relativity theory, however, scientists revised '$e = \frac{1}{2} mv^2$', replacing it with a more complicated equation that fits the new theory, and concluded that '$e = \frac{1}{2} mv^2$', while approximately true, is strictly speaking false, hence not true by definition.

To make sense of such cases, Putnam introduces the idea of a "law-cluster" term, which figures in many different laws of a theory. He observes that we can give up some of the laws in which such a term figures without concluding that the reference of the term has changed. For instance, we can continue to use a given term to refer to kinetic energy while radically changing our theory of kinetic energy. Such terms are, in a word, *trans-theoretical*.

In another of his ground-breaking early papers, "It Ain't Necessarily So" (Putnam 1962b), Putnam presents an example that challenges not only Carnap's logical empiricist principles, but also a wide range of more traditional conceptions of the role of reason in inquiry. Putnam observes, for instance, that our theories of the geometry of physical space have changed since the eighteenth century, when the principles of Euclidean geometry were so fundamental to our way of thinking about physical space that we could not then conceive of any alternatives to those principles. This may seem at first to suggest that when we developed alternatives to Euclidean geometry for physical space, we also thereby changed the meanings of the terms that we used to describe physical space, in a sense of "change the meanings" that implies that it would be incorrect to regard those terms as trans-theoretical, as retaining their reference despite the radical changes in our theory of physical space. Putnam rejects this response. In a characteristic passage that demonstrates his disarmingly direct and clear way of thinking about difficult technical topics, he writes,

> [Modern physics says that] our space has variable curvature. This means that if two light rays stay a constant distance apart for a long time and then come closer together after passing the sun, we do not say that these two light rays are following curved paths through space, but we say rather that they follow straight paths and that two straight paths may have a constant distance from each other for a

> long time and then later have a decreasing distance from each other. […] If anyone wishes to say, "Well, those paths aren't straight in the old sense of 'straight'," then I invite him to tell me *which* paths in the space near the sun are "really straight." And I guarantee that, first, no matter which paths he chooses as the straight ones…[they] will look crooked, act crooked, and feel crooked. Moreover, if anyone does say that certain non-geodesics are really straight paths in the space near the sun, then his decision will have to be a quite arbitrary one; and the theory that more or less *arbitrarily* selected curves near the sun are "really straight" […] would certainly *not* be a mere decision to "keep the meaning of words unchanged" (Putnam 1962b: 242).

Putnam argues that while our theory of physical space has changed radically since the eighteenth century, it is nevertheless correct to regard the terms that scientists in the eighteenth century used to refer to paths through physical space as trans-theoretical and to conclude that many of the sentences about physical space that scientists accepted in the eighteenth century, such as "Physical space is Euclidean," are false.

Putnam thinks there is an important *methodological* lesson to be learned from this case: some statements are so basic for us at a given time that it would not be reasonable to give them up at that time, even if our failure to be able to conceive of alternatives to them is no guarantee that they are true. As I mentioned earlier, Putnam thinks scientific judgments, even those to which we see no coherent alternatives, need no special philosophical justification. He concludes that if a person cannot specify any way in which a statement *S* may be false, it is reasonable for her to accept *S* and hold it immune from disconfirmation. An immediate consequence of this conclusion is that

> The difference between statements that can be overthrown by merely conceiving of suitable experiments and statements that can be overthrown only by conceiving of whole new theoretical structures—sometimes structures, like Relativity and Quantum Mechanics, that change our whole way of reasoning about nature—is of logical and methodological significance, and not just of psychological interest (Putnam 1962b: 249).

Putnam returns to this central methodological point repeatedly, exploring and clarifying it from many different points of view.

Putnam's compelling observations about theory change, first published in the 1960s, discredited the then standard theories of reference and meaning. His proposal that we view some of our terms as law-cluster (i.e. trans-theoretical) terms was a first step away from standard theories. A second step was to extend his notion of trans-theoretical terms, which he first introduced primarily to make sense of cases in which a single inquirer *changes* her view from one time to another, to cases in which two or more inquirers (or speakers) *simultaneously* use a term with the same reference despite large differences in the theories or beliefs they associate with the term. In this key step Putnam observes that we typically assume that ordinary English speakers can use the term 'elm' to refer to elm trees, and 'beech' to refer to beech trees, even if they know very little about elms and beeches, and cannot tell them apart. To distinguish elms from beeches, or to learn about these trees, such ordinary speakers rely on others who know more about them. We rely, in short, on what Putnam calls the division of linguistic labor. He proposes that we reject any theory of reference that implies that ordi-

nary speakers cannot refer to (or think about) elms when they use the term 'elm', even though they do not know much, if anything, about elms, except, perhaps, that they are trees. He also argues that the references of such "natural kind" terms are dependent, in part, on the environment in which they are applied, even if it takes years of inquiry and theorizing to discover what the references are. Finally, he argues that to discover the reference of a term and learn about its properties is also to clarify what it is true of, and thereby also to clarify one key component of the meaning of the term, namely, its contribution to the truth conditions of sentences in which it occurs. He theorizes that the meanings and references of a speaker's words are determined in part by causal relations the speaker bears to other speakers in her community and to the environment in which she applies the terms. All these points lead him to his famous conclusion that "meanings ain't in the head" (Putnam 1975a: 227).

Putnam's paradigm-changing views of meaning and reference discredit previously standard views of properties, according to which two terms with which a speaker associates different criteria of application must express different properties. Putnam's view of meaning and reference instructs us to focus not on the criteria of application that speakers associate with those terms—criteria that may vary from speaker to speaker even for the same term, and that, in any case, according to Putnam, do not determine reference—but on the things to which the terms are actually applied. With this shift in focus, it became possible to see how there might be *empirically discoverable property identities*, such as the identity of the property of being a portion of pure *water* with the property of being a suitably large clump of contiguous H_2O molecules.

This new view of properties smoothed the way for Putnam's enormously influential hypothesis that certain types of mental properties, such as the properties of desiring food, of believing that food can be found in the next room, or even of being in pain, are identical with Turing-machine computational-functional properties. Unfortunately, as Putnam himself later pointed out, since meanings aren't in the head, his Turing-machine functionalism fails to capture such ordinary mental properties as desiring a drink of water, or believing that elm trees are deciduous. He eventually concluded that most of the explanations of behavior that matter to us in everyday life "[cannot] be reduced to any of the various levels of description of the functioning of our neurons, including the computational level" (Putnam 2015: 59). Putnam continued to believe that there is something right about the idea that to be in a mental state is to be in a functional state, but he opted for a "liberal functionalism" that makes essential use of commonsense and scientific vocabulary, such as "desires a drink of water," and "believes that water can be found in the next room," to ascribe "capacities to function" that "reach out to the environment" (Putnam 2012: 83).

Throughout his career (with occasional lapses that he later regretted—see Putnam 2015: 90-92) Putnam was committed to scientific realism and to realism about inquiry more generally. He took reference to be key to understanding truth, and hence key to understanding realism. He rejected efforts by Quine and others to deflate questions about reference and truth by replacing these notions with surrogates defined using techniques from mathematical logic. The problem that Putnam returned to again and again, in different forms, is not that the replacements fail to capture the supposed concepts of truth and reference, but that they fail to incorporate trans-theoretical terms, which Putnam sees as integral to our methods of inquiry. According to Putnam, no theory of truth or reference

that satisfies certain basic constraints, including the constraint that it incorporate trans-theoretical terms, can do without any appeal to norms of truth and meaning. For this reason, among others, he concludes that normativity cannot be purged from our understanding of truth, reference, or meaning, or, ultimately, from our understanding of inquiry itself.

This last point might seem to give aid and comfort to those who think philosophy is an *a priori* discipline, whose results are higher or firmer than anything one can learn from science. Putnam has no sympathy for this kind of philosophical recidivism. It ignores one of the key lessons of his investigations of radical theory changes in science: no part of our supposed knowledge, no matter how clear it seems to us or how firmly we now hold it, is unrevisable or guaranteed to be true. The way forward, Putnam thinks, is not to revive a belief in a special source of a priori knowledge, but to engage, instead, in serious and honest inquiries into methodological roles of statements in all the disciplines and practices that weigh with us, including not only mathematics and the natural sciences, but also the social sciences and a wide variety of nonscientific (e.g. political, moral, literary, artistic, and religious) disciplines and practices. It is only by engaging in such inquiries, he thinks, that we can "get an adequate global view of the world, of thought, of language, or of anything" (Putnam 1962a: 41).

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Cited works by Hilary Putnam

1962a, "The Analytic and the Synthetic," reprinted in Putnam 1975c, 33-69.

1962b, "It Ain't Necessarily So," reprinted in Putnam 1975b, 237-49.

1967, "Time and Physical Geometry," reprinted in Putnam 1975b, 198-205.

1975a, "The Meaning of 'Meaning'," reprinted in Putnam 1975c, 215-71.

1975b, *Mathematics, Matter, and Method: Philosophical Papers*, *Vol. 1*, Cambridge: Cambridge University Press.

1975c, *Mind, Language, and Reality*: *Philosophical Papers, Vol. 2*, Cambridge: Cambridge University Press.

2012, "Corresponding with Reality," in De Caro, M., and Macarthur, D. (eds.), *Philosophy in an Age of Science*, Cambridge, MA: Harvard University Press, 72-90.

2015, "Intellectual Autobiography," in Auxier, R.E., Anderson, D.R. and Hahn, L.E. (eds.), *The Philosophy of Hilary Putnam*, Chicago, Illinois: Open Court, 3-110.