

A Consideration of Hilary Putnam

THOMAS MICHAEL NORTON-SMITH
University of Illinois, Urbana

For the past few years, and in several publications,¹ Hilary Putnam has espoused an empirical brand of realism, internal realism,² which he believes to be the proper replacement for metaphysical realism. Putnam takes the latter view minimally to be (1) that there is a world which is independent of any particular model or representation which we, as theorists, might have of it, and (2) that there must be a determinant reference relationship between the terms in the metaphysical realist's language and pieces of the world' (RR, p. 125). The internal realist, on the other hand, regards all of the characteristics of the world as being theory-relative and that we can have no intelligible notion of how the world really is. How the world is to us is dependent upon a theory or representation which we have of it, and statements of the theory which assert reference relationships between terms of the theory and their referents are tautologies with respect to the theory (RR, pp. 132, 136).

I

In defending the internalist position, Putnam employs two important lines of argument, both of which assault the metaphysical realist's notion of reference as a determinant relationship between the terms of his language and pieces of the world. One of Putnam's arguments, which will be examined shortly, assumes the realist's acceptance of classical two-valued semantics and moves to what he believes are absurd consequences. His positive line of argument for the acceptance of the internalist position runs something like the following. Let the phrase 'state of affairs' neutrally name that situation which is to be modeled or represented. Now, given a state of affairs, there are a number of possible representations, models or theories of that state of affairs which depend upon the features or variables that one deems either as important or as extraneous. As a concrete example, consider the construction of theories designed to explain the behavior of electromagnetic radiation in the visible portion of the light spectrum. The selection of certain features yields the

model of light as a particle (which renders the photoelectric effect explicable) while the selection of other features of the state of affairs results in the model of light as a wave (which explains the phenomena of refraction and diffusion). The metaphysical realist would assert that there is a way which the world is, specifically, a way which electromagnetic radiation is, and that the two models of light merely pick out particular features of the world. Putnam's move, however, begins with the observation that certain true sentences of one theory are false when embedded in another theory of equal correctness,⁴ which, for Putnam, is evidence that such sentences express theory-relative properties. In our example, the sentence 'Electro-magnetic radiation travels as photons, i.e., as concentrated bundles of energy with a mass', while true in the particle theory of light, would be false in the wave characterization, hence expressing the theory-relative property of being a photon.

If one accepts Putnam's account of theory-relative properties of the world, it is only a short, fatal step to the realization that one's most cherished beliefs about the "real" properties of the world are incorrect: "The fact is, so many properties of THE WORLD--starting with just the categorical ones, such as cardinality, particulars, or universals, etc.--turn out to be 'theory-relative' that THE WORLD ends up as a Kantian 'noumenal' world, a mere 'thing in itself'. If one cannot say how THE WORLD is theory-independently, then talk of all of these theories as descriptions of 'the world' is empty." (RR, p. 133).

It is now easy to see how reference is treated in the internal realist's picture. If "being a particle" is a theory-dependent property of light, as opposed to being a property of a theory-independent bit of the world, then the statement "'photons' refers to photons" cannot assert the existence of a relationship between the term 'photons' and some independent bits of the world, namely, photons. For the internalist, there are photons only within the boundaries of the theory of light as a particle; and within that theory, it is a mere tautology that "'photons' refers to photons" because that's just how the term is used.

II

Although the foregoing line of argument provides some support for internal realism, I find Putnam's argument designed to show that the metaphysical realist's position is untenable to be far more controversial. For this reason, the remainder of this paper will be devoted to providing a clear statement of this argument and examining some of its defects.

Putnam wishes to argue that the moderate realist position (that is, the metaphysical realist position)

which accepts both (i) classical notions of truth and reference, and (ii) naturalism with respect to powers of the mind, is untenable by virtue of certain model-theoretic results derived in classical two-valued semantics, most notably, the Lowenheim-Skolem Theorem (and, in RR, the Godel Completeness Theorem).⁵ The argument runs as follows:

Suppose an individual X, such that X accepts

- (i) Classical two-valued semantics with all of its model-theoretic results including the classical notions of truth and reference.
- (ii) Naturalism with respect to our mental powers.
- (iii) The view that all significant theories admit of first-order formalization (This may be a bit of a generalization, but it will be a necessary one; actually, Putnam does mention as candidates for first-order formalization total science, belief systems--"all our beliefs"--and theories of language use--"the total use of language") (MR, p. 466).
- (iv) The brute fact that the intended interpretations of the terms in a theory are fixed.

By virtue of (i), X accepts the Lowenheim-Skolem Theorem, that is, that a satisfiable first-order theory in a countable language has a countable model. Moreover, X accepts by (i) the relativity of set-theoretic notions as suggested by the Lowenheim-Skolem Paradox to the effect that the axioms of a formal system cannot capture intended interpretations;⁶ specifically, given a significant theory T, the axioms of T cannot fix an intended interpretation, which is to say that satisfaction of the theoretical constraints⁷ of T leaves interpretations unfixed. Nor can operational constraints fix interpretations, for the downward Lowenheim-Skolem provides for a countable submodel of T, that is, a submodel such that the same sentences of T appear to be true. Hence, if by (iv) X accepts that interpretations are fixed, it must be by some other method than by the satisfaction of constraints on the theory T.

Could X claim that interpretations are fixed by intentionality? No, for this would be in violation of (ii), the denial of any non-natural power of the mind. Could X instead claim that understanding in some way fixes interpretations? In order to do so, understanding would have to be a natural process by (ii), which Putnam takes to be knowing the manner in which a language is used. But, the total use of language (operational plus theoretical constraints) is itself a first orderable theory by (iii), and language use reduces to

the satisfaction of certain constraints on a theory, which, as was argued above, cannot fix an interpretation. Therefore, if X holds (i), (ii) and (iii) simultaneously, he must conclude that interpretations cannot be fixed. The addition of tenet (iv) yields the contradiction that interpretations both are and are not fixed; hence, X cannot consistently hold tenets (i), (ii), (iii) and (iv).

Putnam allows two choices at this juncture: one may either reject (ii) and opt for a magical grasp of concepts (which would constitute an appeal to something over and above theoretical constraints as exhaustive for understanding) or one may take Putnam's view, rejecting (i) and opting for internal realism wherein 'truth' and 'reference' undergo a radical reinterpretation (MR, pp. 465-66).

An alternate manner of viewing the problematic situation is to suppose that T is an ideal theory, meeting all of the operational and theoretical constraints which one would want in a theory (e.g., T is consistent, elegant, simple plausible, a useful predictive device, etc.) but may still be false by (i). That is, if T is false, then the reference relationship between the language of T and the world may not be the intended relationship. But, if the interpretation meets all of the operational constraints, which means that all of the right sentences come out true, and if T meets all theoretical constraints as well, then the notion that T might be false, that the interpretation is not the intended one, that reference might be anything more than the meeting of theoretical constraints, "appears to collapse into unintelligibility." (RR, pp. 125-26, MR, pp. 471-74).

III

In criticizing Putnam's argument that the metaphysical realist who adopts (i), (ii), (iii) and (iv) simultaneously is reduced to an absurd position, I would like to make three specific points:

(1) Putnam contends that the metaphysical realist accepts classical two-valued semantics with all of its model-theoretic results; but there is one result which he seems to ignore which could be telling against his account, namely Godel's Incompleteness Theorem.

(2) Putnam contends that the naturalistic minded realist believes that there are no mysterious powers of the mind (e.g., "intentionality" or a Platonic grasp of ideas) which he takes to mean that understanding a language reduces to the satisfaction of operational and theoretical constraints in the theory of total language use (MR, pp. 474-75). But, John R. Searle performs a thought experiment in "Minds, Brains, and Programs" which suggests that perhaps the naturalistic thesis, as Putnam recounts it, should be discarded or modified.

In short, there may be more compelling reasons for rejecting (ii) of the argument than rejecting (i) as Putnam opts.

(3) Putnam contends that the metaphysical realist must admit that all significant theories, for example, total science, belief systems or theories of natural language be first-order formalizable in order to apply the Lowenheim-Skolem argument; but this is, at best, a dubious contention.

(1) Putnam attempts to show that the metaphysical realist's position reduces to absurdity by proposing that he cannot both accept the results of classical two-valued semantics, specifically, the Lowenheim-Skolem Theorem and the Godel Completeness Theorem, as well as a naturalistic theory of the use of language. However, it looks as though Putnam does not allow the metaphysical realist all of the results which model theory provides.

Consider an ideal theory T, of the type provided for in (iii) above, that is, such that T is first-order formalizable, meets operational and theoretical constraints, and, at least in the case of a theory of natural language, is complex enough to be adequate for arithmetic (this will be the case, for the first-order formalization of arithmetic can be embedded in the theory of language).

Now, if T meets all of Putnam's theoretical constraints, then it will be both consistent and a useful predictive device. Being the latter, one would expect T to contain reliable generalizations, which is to say that one would not want T to be such that there is a predicate $Px \in T$, where for all n in a class of individuals under an interpretation, $T \vdash P(n)$ and $T \vdash \neg(x)Px$. For instance, the theory of light as a particle T, would not do well to have the predicate Px , where $T \vdash Pa, Pb, \dots, Pn$, and yet prove $\neg(x)Px$. Hence, our theory would not be omega-inconsistent, which is to say that not only must consistency be a theoretical constraint, but omega-consistency must be as well.⁸

Therefore, T will be:

- (i) first order formalizable
- (ii) omega-consistent
- (iii) adequate for arithmetic

and, by Godel's Incompleteness Theorem, there will be truths (about total science, a belief system or a theory of the use of language) which will escape the formalization of T: for Godel showed that provability is a weaker notion than the classical notion of truth regardless of the axiomatic system involved.

How can these observations be a problem for Putnam's argument? Putnam holds that the metaphysical realist views all significant theories as being first-order formalizable. This being the case, one of the

theoretical constraints to be satisfied by T is that all of the "right" formulas be derivable in the formalization, that is, we get all of the proofs that we want. Further, the derivations of T which we have in hand appear to be true; observational constraints are satisfied. But, for the metaphysical realist who accepts model-theoretic results, no formalization of the ideal theory T, will capture every truth regardless of the results obtained by formal manipulation of the language and observational confirmation. Thus, for the realist it is simply not unintelligible that ideal theories, meeting all operational and theoretical constraints, might still be false, for he would resist the move to equate truth with the satisfaction of the latter if construed as producing the right derivations. Formal systems of the ilk required by Putnam will always be inadequate, that is, incomplete, by Godel's Incompleteness Theorem.

Giving the point a Tarskian cast, the metatheory of language use, that is, the theory which speaks of the operational and theoretical constraints to be satisfied by a theory of language use, will be of the same order as the latter. This being the case, then the metaphysical realist cannot accept that there is some kind of equivalence between truth and the satisfaction of theory constraints, for if the order of the metalanguage is at most equal to that of the language itself, then a definition of truth which is materially adequate cannot be constructed.'

(2) In his essay, "Minds, Brains, and Programs,"¹⁰ John R. Searle performs a thought experiment in order to voice his intuition that instruments which implement formal systems cannot be said to understand (or to have other cognitive states) by virtue of the formal programming.

Searle, who does not understand Chinese, imagines himself locked in a room and given a large batch of symbols. Further, Searle supposes that he is given a second batch of symbols together with rules written in English which he understands quite well. The English rules indicate how Searle is to correlate one set of formal symbols with another by virtue of their shapes alone. Finally, Searle imagines that he is given a third set of symbols with English instructions to the effect that he is to correlate the third batch with the first two batches and respond employing certain of the symbols. Now, a Chinese speaker outside of the Searle-in-the-box system would say that the first batch of symbols constituted a script written in Chinese, the second, a story, and the third batch was a series of questions to which Searle provided answers in Chinese employing the English formation rules.

The point of this thought experiment is the following: to an outside observer who was a speaker of Chinese the Searle system (which consists of Searle locked

in a room with his English instructions for manipulating symbols) seems to understand Chinese; the system seems to read Chinese as well as to answer questions employing the language. However, Searle, the implementer of the formal programming, produces what would appear to be answers by manipulating formal symbols--he does not understand Chinese at all. That is, understanding is not captured by implementing a formal system (Searle, pp. 284-85).

I wish to adopt Searle's intuition and apply it to Putnam's contention that the metaphysical realist should accept (ii), that is, that there are no mysterious powers of the mind (which commits the realist to the view that understanding a language reduces to knowing how to use the language, that is, to the satisfaction of the operational and theoretical constraints of a theory of total language use).

Recall that Putnam has the realist assent to the formalization of the total use of language. We may allow, then, that Searle has received complete instructions in English (the metalanguage) for the manipulation of the symbols of Chinese (the object language). No doubt, the operational and theoretical constraints of the theory of the total use of the Chinese language are all satisfied by the activity of the Searle-in-the-box system; as a matter of fact, although Searle does not understand Chinese, the system's responses would fool an actual language user. But again, the symbol manipulator simply does not understand Chinese, even though the system uses it correctly; it seems that something more is needed for understanding, which is to say that contrary to Putnam's view, something more than the satisfaction of constraints is required for the fixing of intended interpretations."

One might object at this juncture that the question of whether or not Searle understands Chinese is ancillary to the question of whether or not the Searle system understands Chinese; after all, the system is meeting the theoretical constraints of the theory of the use of Chinese, not Searle himself--the system fools the native speaker of Chinese. But, if we allowed that the formal programming plus the implementer of the programming together could understand Chinese, I believe that this would commit us (as well as Putnam) to the view that understanding is a rarified kind of cognition which would not minimally capture what we would like understanding to be. Understanding is not in using a language correctly, something which the Searle system does but Searle does not, but in knowing how to use the language, something which neither Searle nor the system can do. Analogously, my chess computer (I blush to admit) consistently beats me on the tournament level--its actions meet all constraints of the theory of chess. But, I am consoled in knowing that although the computer plays by the rules it doesn't know when it has

made a game winning move. So it seems that even if one attempts to talk about the system's understanding instead of Searle's understanding, intuitions indicate that the system, although satisfying all language use theory constraints, just doesn't as the naturalistic realist would assert, understand.

The point I wish to make is this. If I were a devout realist who accepted the naturalistic thesis, the foregoing considerations adopted from Searle would move me more towards rejecting assumption (ii) in Putnam's argument than rejecting assumption (i). Doing so may render understanding mysterious, but classical two valued semantics remains intact.

(3) Recall that in setting up the argument, Putnam asserts that the metaphysical realist must make some assumptions about (i) semantics, and about (ii) non-natural mental powers. Moreover, recall that after the realist's position was "reduced to absurdity," Putnam proposed that one might either drop assumption (ii) and become a non-naturalist with respect to understanding, or drop (i) and become a verificationist. However, he surreptitiously asserts that the metaphysical realist must accept (iii), that is, that there are first-order formalizations of total science, belief systems and total language use. If not, then the Skolemization move which requires consistent sets of first-order sentences cannot be pulled off.

Suppose, then, that we explicitly state (iii) as an assumption made by the realist which is to bear equal weight with (i), (ii) and (iv). The result of this move is a third option which Putnam ignores (and which seems the most reasonable), namely, to drop (iii) instead of dropping (i) or (ii); there seems to be no reason to believe that a total science, belief system or total use of language can be expressed solely in a first-order formalization. As an example illustrating this point, consider Richard Grandy's contribution from his Advanced Logic for Applications:

It has been recently suggested that first order logic is inadequate to express certain statements of natural languages. For example, if there are four place "atomic" expressions of English $F(x,y,z,w)$ then it might be the case that for every value of x we can find a w such that $F(x,y,z,w)$. If the choice of y depends only on x and the choice of w depends only on z , then neither $(x) (Ey) (z) (Ew) Fxyzw$ nor $(z) (Ew) (x) (Ey) Fxyzw$ fully captures the truth of the matter for the first of these is true even if the choice of a value of w depends on x and y as well as z . Similarly, the second is true even if the choice of y depends on z and w as well as x .¹²

The move which is instrumental in winning assent for Putnam is the Skolemization of the entire theory, creating the possibility of unintended interpretations. Moreover, it was necessary that the metatheory, that is, the theory which speaks of the operational and theoretical constraints be first-orderizable as well: "In short, one can 'Skolemize' absolutely everything. It seems to be absolutely impossible to fix a determinant reference (without appeal to non-natural mental powers) for any term at all. If we apply the argument to the very metalanguage we use to talk about the predicament . . . ?" (MR, p. 476).

But here's the rub. Apart from the problem of obtaining an adequate definition of truth in the metatheory, that very metatheory, which speaks of the operational and theoretical constraints to be met by the theory, quantifies over predicates,¹³ which is to say that the metalanguage, if formalizable at all, is more properly cast in a second-order formalization. But, if it is second-order formalizable, then one may employ the fact that there are formulas of second-order theories which are not satisfiable in finite or denumerably infinite domains,¹⁴ effectively short-circuiting the attempted move to Skolemize everything at the first step, for the Lowenheim-Skolem Theorem, as well as the Godel Completeness Theorem, have no second-order analogues.¹⁵

If Putnam were to admit that some theories, most notably, the theory of the use of language, have only second-order formulations, then the metaphysical realist has a last bastion against unintended interpretations à la Skolem; he has not found a manner in which reference is fixed which is over and above the satisfaction of operational and theoretical constraints, but there is at least the possibility that something does.

NOTES

¹Among these publications are the following: "Realism and Reason," Meaning and the Moral Sciences (Boston: Routledge and Kegan Paul, 1979), hereafter RR, "Models and Reality," The Journal of Symbolic Logic, Volume 45, Number 3, September 1980, hereafter MR, Reason, Truth and History (New York: Cambridge, 1981), hereafter RTH.

²Although Putnam calls himself an internal realist, he's actually playing "fast and loose" with the term. If one accepts Michael Dummett's semantic characterization of realism in his paper "Realism," Synthese 52 (1982), hereafter R, and it seems that Putnam does in

part, then his position would be better characterized as a form of anti-realism, for Putnam, among other things, dispenses with the classical notion of reference as playing a crucial role in the semantic account of meaning. Internal realism, as will be seen, is actually a brand of verificationism.

³This second assumption which Putnam requires the metaphysical realist accept moves realism from the realm of ontology to semantics. Dummett, making a similar move (see note 2), construes realism as a semantic thesis for the dubious reason that "realism about the future or about ethics, do not seem readily classifiable as doctrines about a realm of entities." (R, p. 55). Regardless of the reason for the move, Dummett asserts that the realist must assume (i) that the statements of a given class are determined by reality as either true or false, and (ii) one must have a certain conception of how they are so determined, which, for the realist amounts to an acceptance of classical two-valued semantics, complete with its conception of reference (R, pp. 56-57). That the metaphysical realist accepts classical two-valued semantics is vital for Putnam's argument against the position.

Putnam further asserts that, as a consequence of (2), there is exactly one true and complete description of how the world is (RTH, p. 49), which, as Hartry Field points out, is not a doctrine which any metaphysical realist ought to hold; all that the realist is committed to is that given a particular language, L, "there is at most one true and complete description of the world" which employs the concepts represented in L, although such a description is not guaranteed because of the possibility of a natural "slippage" between the terms of L and their referents. (Hartry Field, "Realism and Relativism," The Journal of Philosophy, Vol. 79, No. 10, October 1982, p. 554.)

⁴Two theories will be equally correct on Putnam's view if they satisfy the same theoretical constraints, e.g., they are equally elegant, plausible, simple, useful, etc.

⁵Recall that Putnam, like Dummett, requires that the metaphysical realist accept classical two-valued semantics as a matter of course. Field takes issue with this assumption as far as it entails that truth involves a correspondence relation between signs and sets of things, suggesting that sophisticated variants of the redundancy theory of truth are held by some to capture all there is to say about truth. ("Realism and Relativism," p. 354.)

⁶Take your favorite axiomatic set theory with A, B, . . . , K as the closures of the axioms. By the Lowenheim-Skolem Theorem there is a domain, D, such that A, B, . . . , K are simultaneously satisfied and $O \langle D \rangle \ll (N)$. Now consider the set R which is a set in axiomatic set theory, is the set of all subsets of N, and by Cantor's Theorem is uncountable. The set R led Skolem to the view that the concepts of set theory, e.g., 'set', 'subset of a set', '1-1 correspondence', 'countable', etc., must be theory relative: a set which is uncountable in one axiomatization may be countable in another. (Stephen Kleene, Mathematical Logic (New York: John Wiley and Sons, Inc., 1968), pp. 323-24.)

⁷Among the theoretical constraints for T would be those characteristics of a theory listed in note 4. T satisfies operational constraints if all sentences of T seem to be true in the appropriate circumstances: "T has the property of meeting all operational constraints. So, if 'there is a cow in front of me at such-and-such a time' belongs to T, then 'there is a cow in front of me at such-and-such a time' will certainly seem to be true" (RR, p. 126).

⁸I am indebted to David Shwayder for this observation.

⁹Alfred Tarski, Logic, Semantics, Metamathematics, translated by J. H. Woodger (Oxford: Clarendon Press, 1969), pp. 268-78. This particular observation was made on two separate occasions by Hugh Chandler and Steven Wagner.

A somewhat similar line of argument is suggested by Robert Wengert, to wit: the metaphysical realist must employ the axiom of choice in order to prove the downward Lowenheim-Skolem Theorem, which is instrumental in Putnam's argument (it insures that operational constraints in a submodel are satisfied). But, the axiom of choice provides a method by which the metaphysical realist may select an intended interpretation in a manner which depends neither upon operational nor theoretical constraints. Hence, if Putnam allows the realist to employ the axiom of choice, he is allowing that the realist may fix reference in a classical manner: just what he wanted to show that the realist couldn't do.

¹⁰John R. Searle, "Minds, Brains, and Programs," Mind Design, edited by John Haugeland (Cambridge, Mass: The MIT Press, 1981), pp. 282-306.

¹¹"If we have more available with which to fix the intended model than merely theoretical and operational constraints, then the problem disappears." (MR, p. 474).

¹²Richard Grandy, Advanced Logic for Applications (Boston: D. Reidel Publishing Company, 1979), p. 128. Sentences such as Hugh Chandler's 'All properties are silly' suggest that a second-order formalization of natural language is in order.

¹³See note 12.

¹⁴Grandy, pp. 118-19.

¹⁵Putnam makes an initial move to counter the charge that natural languages are second-order creatures in "Models and Reality": "Some have proposed that second-order formalizations are the solution, at least for mathematics; but the 'intended' interpretation of the second-order formalism is not fixed by the use of the formalism (the formalism itself admits so-called 'Henkin models', i.e., models in which the second-order variables fail to range over the full power set of the universe of individuals), and it becomes necessary to attribute to the mind special powers of 'grasping second-order notions'." (MR, p. 481). But, given the brevity of the comment and the immensity of the problem it is meant to solve, I am not sure just exactly what his countermove comes to.