THE QUINEAN 'PRESSING FROM ABOVE' ARGUMENT

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ABSTRACT

I show that what Quine calls 'pressing from above' is an argument for indeterminacy of translation that is generated by assuming the partial interpretation view of scientific theories. Furthermore, I argue that Quine's thesis should be understood as a reductio ad absurdum of partial interpretation and/or the view that the meaning of a term determines a unique extension for the term.
The Quinean 'Pressing From Above' Argument

The thesis called the indeterminacy of translation (hereafter IT) has a peculiar status. Everyone is interested in it but no one seems to know precisely what it is. In a paper subsequent to *Word and Object*, "On the Reasons for Indeterminacy of Translation," Quine recognizes that his position has not been widely understood. He tells us that there are two distinct ways of pressing for indeterminacy—one can press from above and one can press from below. The most important task is pressing from above. The gavagai example pertains to pressing from below. Emphasis by commentators on this example, Quine believes, has instigated a detour from his more important argument. Pressing from below involves marshalling forces for indeterminacy that are grounded in the inscrutability of terms. I shall say nothing further about this line but rather proceed to examine pressing from above. I hope to show that at least in "On Reasons" IT is presented as a fairly straight-forward consequence of the partial interpretation view of theories.

I

Quine's argument throughout "On Reasons" is directed to a specific group of readers--those who recognize a certain "indeterminacy" in physical theories. Quine believes that the indeterminacy is widely recognized. Exactly what indeterminacy does he have in mind?

He tells us that physical theory is underdetermined by all possible observations. "Physical theories can be at odds with each other and yet compatible with all possible data even in the broadest sense. In a word, they can be logically incompatible and empirically equivalent. This is a point on which I expect wide agreement, if only because the observational criteria of theoretical terms are commonly so flexible and fragmentary." To be sure a


physical theory is underdetermined by past evidence and future evidence if for no other reason because a counter instance to the theory could happen to go unobserved. But what are we to make of the stronger claim that physical theory is underdetermined by all possible evidence?

Quine's claim of wide recognition for the quoted thesis is false. My survey of the literature on theories has not revealed one writer who makes Quine's claim. Nevertheless, the logical empiricists make sufficiently similar claims to merit a close scrutiny of their views.

The last sentence of the above quotations is suggestive. Quine goes on as follows: "People who agree on this general point need not agree as to how much of physical theory is empirically unfixed in a strong sense; some will acknowledge such slack only in the highest reaches of physical theory, while others see it as extending even to common-sense traits of macroscopic bodies." Now this is familiar. It is widely agreed that physical theory is "empirically unfixed" or "undetermined by observables" to use Quine's phrases. And, indeed, the source of this is "because the observational criteria of theoretical terms are commonly so flexible and fragmentary." These views are part of the "Received View" on scientific theories. Perhaps if we spell out the empirical slack in scientific theories we can ground Quine's doctrine in it.

The logical empiricists begin their consideration of theories by recognizing a distinction between the theoretical ($V_t$) and the observational ($V_o$) terms of science. Then they proceed to worry about what sort of connection must exist between the two sorts of vocabularies, if $V_t$ is to have empirical content. An early position, one Hempel calls the "narrower thesis of empiricism," requires that $V_t$ terms be explicitly defined in $V_o$ terms.

Dispositional and quantitative terms were most recalcitrant to this procedure. The history of efforts to deal with these terms is of interest but need not concern us here. The important point is that the logical empiricists abandoned the narrower for a more liberalized thesis of empiricism.

No longer are explicit definitions required. The meaning of a theoretical term is partially specified by reference to observables. For example, the standard method for introducing a one place predicate 'Q' on the basis of a given vocabulary, V, consists of a reduction pair—sentences of the following form:

\[(s) \quad P_1x \rightarrow (P_2x \rightarrow Q_x)\]
\[P_3x \rightarrow (P_4x \rightarrow \sim Q_x)\]

Hempel explains the difference between explicit definition and reduction as follows: "A definition sentence for 'Q' provides a condition in terms of the given vocabulary, which is both necessary and sufficient for 'Q' and thus makes it possible to eliminate 'Q' from any sentence in favor of its definiens. A reduction pair or a bilateral reduction sentence provides a sufficient condition and a necessary condition for 'Q'; but the two do not coincide; thus the meaning of 'Q' is specified only incompletely, and the specifying sentences do not permit the elimination of 'Q' from all contexts in which it may occur."\(^4\)

Let us look a bit closer at (s). It can be transformed into (t).

\[(t) \quad (P_1x \cdot P_2x) \rightarrow Qx\]
\[Qx \rightarrow \sim (P_3x \cdot P_4x)\]

From this transformation one can see that the range of application of 'Q' is only specified in part. \(P_1 \cdot P_2\) and \(\sim (P_3 \cdot P_4)\) put only certain restrictions on the extension of 'Q'.\(^5\) Everything is 'Q' that is \(P_1 \cdot P_2\) and everything is \(\sim Q\) that is \(P_3 \cdot P_4\). The indeterminacy of the extension of 'Q' Hempel calls an indeterminacy in the meaning of 'Q'. The suggestive relation to Quine is obvious.

The reduction method is not restricted to one place predicates. Nevertheless, these ideas shall not be developed with relation to a theory. The above method of introducing theoretical terms has been incorporated into the standard view of scientific theories—the view of theories I believe Quine has in mind.


\(^5\)Assuming that the extensions of \((P_1 \cdot P_2)\) and \((P_3 \cdot P_4)\) do not coincide.
The standard view of a scientific theory as found in the writings of Carnap and Hempel is basically that of a partially interpreted formal system. I shall use Hempel's definition as a more precise formulation.

Within a specified framework, let $T$ be a theory characterized by a set of postulates in terms of some finite set of primitives $V_t$ which will be called the theoretical vocabulary; and let $V_b$ be a second set of terms, to be called the basic vocabulary, which shares no term with $V_t$. A finite set $J$ of sentences will then be said to constitute an interpretative system for $T$ with the basis $V_b$ if (a) $J$ is logically compatible with $T$; (b) $J$ contains no extra-logical term that is not an element of $V_b$ or $V_t$; (c) $J$ contains every element of $V_b$ and $V_t$ essentially, i.e., $J$ is not logically equivalent to some set of sentences in which at least one term of $V_b$ or $V_t$ does not occur.°

The standard logical framework is the first-order predicate calculus with identity. The basic vocabulary (terms which refer to directly observable physical properties) is supposedly antecedently understood.

Our interest is primarily in the interpretative system, $J$. On the partial interpretation view (hereafter PI) a particular theoretical term, $T_y$, may be given a necessary and a sufficient condition in terms of $V_b$. But it need not, and generally is not. Just as the Carnap reduction pair did not provide an explicit definition, the interpretative sentences of $J$ generally do not provide explicit definitions. $J$ may provide a necessary condition for $T_y$ and some other sufficient condition. Perhaps just a necessary or just a sufficient condition will be provided or perhaps neither.

Before continuing, a possible source of confusion must be removed. The logical empiricist's accounts of theories and theoretical terms have undergone considerable changes. The story told with respect to (t) and its counterpart in theories will not fit many of the earlier empiricists' writings even granting an abandonment of the narrower

°Hempel, p. 692.
thesis of empiricism. Suppose that 'Q' is introduced into a theory (T') solely on the basis of (s). Suppose further that (s) exhausts the meaning of 'Q'. Then it will not make sense to ask whether some a, which is \( \sim (P_3 \cdot P_4) \) and also \( \sim (P_1 \cdot P_2) \), is 'Q'. To be a 'Q' simply means to be implied by \( (P_1 \cdot P_2) \) and to imply \( \sim (P_3 \cdot P_4) \). Hence, there will be no indeterminacy in the extension of 'Q'.

For the indeterminacy to arise more realistic assumptions about meaning must be made. (s) does not exhaust the meaning of 'Q' but rather captures part of the pre-analytic meaning of 'Q'. This is the view found in later writings of some logical empiricists. Hempel, for example, distinguishes three concepts of significance for theoretical terms; (a) pragmatic intelligibility, (b) empirical significance, and (c) semantical significance.

A term is pragmatically intelligible in the sense that a scientist knows how to use the terms. He can speak the language of the science and knows how to connect the terms with the observational vocabulary. A term is empirically significant in so far as it is connected to \( V_B \) therefore allowing for potential empirical evidence to be relevant to the sentences expressed in \( V_T \). Finally, a sentence containing theoretical terms can be semantically significant in the sense of being true or false. It will be helpful to quote Hempel at some length on this point.

Let \( T \) be interpreted by a system \( J \) which does not furnish for every \( V_T \)-sentence an equivalent in terms of \( V_B \). Then it is nevertheless quite possible to provide a necessary and sufficient condition of truth for every sentence expressible in terms of the theoretical vocabulary. All that is needed for the purpose is a suitable metalanguage. If we are willing to use a metalanguage which contains \( V_B, V_T \) and \( J \), or translations thereof, then indeed each \( V_T \)-sentence has a truth criterion in it, namely simply its restatement in, or its translation into, that metalanguage. 7

7 Hempel, p. 695.
Given the semantical significance of theoretical sentences one can see how to make sense of the earlier discussion of "a being 'Q'." The sentence has a truth value but given the empirical underdetermination of 'Q' that truth value cannot be determined on T'.

Assuming that I have captured the view of theories which Quine's argument presupposes, one should be able to ground IT on it. Quine asks us to imagine trying to translate a radically-foreign scientist's theory. He is willing to grant that we manage to translate the foreigner's logical framework. Filling out Quine's example, let us suppose the following axioms result:

1) (x) (Fx → Gx)
2) (x) (Gx → Hx)

For the purpose of this exercise Quine is also willing to suppose that we have a translation for what holders of the Received View of Theories call observation predicates. Therefore let 'Fx' mean 'x has symptom a' (where a is some set of symptoms: fever of above 107°F, sore throat, etc.) and let 'Hx' mean 'x will die within 24 hours'. One empirical law follows from the theory ((x) (Fx → Hx)) and it can be translated.

Suppose 'Gx' is a theoretical term. What does it mean? To capture the meaning we have to project analytical hypotheses whose justification Quine tells us "is substantially just that the implied observation sentences match up (for us and the foreigner)."

At this point the indeterminacy of translation arises--"but now the same old empirical slack, the old indeterminacy between physical theories recurs in second intention." The theoretical term 'G', given PI, has only part of its meaning empirically determined (first intention), i.e., certain restrictions are put on the extension of the term. When one goes to translate (second intention) the foreigner's term one has a choice as to how to translate it. (The only restrictions are that the translation must be compatible with the restrictions laid down by the interpretative system J.) For example, one might be able to translate 'G' as 'has a destroyed liver' or perhaps as 'is infected with bacteria of gamma type'.

Quine's point must be understood in the context of his continual efforts to offer a critique of traditional accounts of meanings (senses, intentions, etc.). We need
not consider the details of any of these theories but the operative feature that Quine is after is that intentions are entities in the mind which somehow determine a unique extension for the term. "Seen according to the museum myth, the words and sentences of a language have their determinate meanings. To discover the meanings of the native's words we may have to observe his behavior, but still the meanings of the words are suppose to be determinate in the native's mind, his mental museum..."8

Returning to the foreigner's theory, imagine the domain to be all hospital patients and imagine that there are just twelve such patients. Further suppose that four of those have 'F' and those four plus two additional patients have 'H'. We can diagram the situation as follows:

\[
\begin{align*}
\text{P}_1 &: & \text{F} \cdot \text{H} \\
\text{P}_2 &: & \text{H} \\
\text{P}_3 &: & \text{H} \\
\text{P}_4 &: & \text{P}_5 \\
\text{P}_6 &: & \text{F} \cdot \text{H} \\
\text{P}_7 &: & \text{F} \cdot \text{H} \\
\text{P}_8 &: & \text{P}_9 \\
\text{P}_{10} &: & \text{F} \cdot \text{H} \\
\text{P}_{11} &: & \text{F} \cdot \text{H} \\
\text{P}_{12} &: & \\
\end{align*}
\]

Now given the theory at issue and PI, the extension of 'G' is only limited, not fixed. (1, 4, 5, 8, 9, 12) are excluded from the extension and (6, 7, 10, 11) are included but (2, 3) are indeterminate. Then if we take the translator as attempting to assign a sense to the speaker's terms, and take the sense as specifying a particular extension, the translator will have a choice of sense compatible with the empirical data. He could choose a sense that picks out (6, 7, 10, 11) or (2, 3, 6, 7, 10, 11) or (2, 6, 7, 10, 11) or (3, 6, 7, 10, 11).

The moral is that the empirical restrictions on translation provide no grounds for attributing one of a set of sense rather than another to a speaker. Quine seems to suggest that this epistemological quandary is grounds for

chucking meanings as mental entities that determine the extension of our terms. It is not simply that talk of sense is empirically uninteresting but that it is nonsense.

The question whether ... the foreigner really believes A or believes rather B, (A and B stand for physical theories.) is a question whose very significance I would put in doubt. This is what I am getting at in arguing the indeterminacy of translation.

Suppose they accord perfectly not only with behavior actually observed, but with all dispositions to behavior on the part of all the speakers concerned. On these assumptions it would be forever impossible to know of one of these translations that it was the right one, and the other wrong. Still, if the museum myth were true, there would be a right and wrong of the matter; it is just that we would never know, not having access to the museum. See language naturalistically, on the other hand, and you have to see the notion of likeness of meaning in such a case simply as nonsense.

II

Before providing a few evaluative remarks on the upshot of Quine's argument, I wish to check the fit of my reconstruction with Quine's words in "On Reason." On three points the fit is excellent: (i) Quine claimed that the source of the indeterminacy was in the flexible and fragmentary criteria for the application of theoretical terms. It was just this feature of theoretical terms that I exploited (via PI) to generate my analysis. (ii) Quine says that the degree of indeterminacy we accept will depend on the extent that we think the feature in (i) permeate the science. We can make sense of this in light of the disputes over what terms are really theoretical and what terms are not. The boundary between the observational and theoretical elements is notoriously difficult to determine. (iii) Quine claimed that IT was at "second intention." The indeterminacy of translation is not just an instance of the empirically underdetermined character of physics. On the contrary, the indeterminacy of translation

is additional. Where physical theories A and B are both compatible with all possible data, we might adopt A for ourselves and still remain free to translate the foreigner either as believing A or as believing B.11 This accords with my presentation; for indeterminacy affects every theory and does not depend on some special relationship between linguistics and physics. Within linguistics itself the indeterminacy arises at second intention. There is an indeterminacy of the theoretical terms given PI but Quine's indeterminacy is additional and arises when one attempts to translate those terms.

Unfortunately, on a fourth point the fit is a bit ragged. I quoted Quine as claiming that we could have two theories compatible with all possible data yet incompatible with each other. I denied that this position was common fare among philosophers of science. I see no interesting way to obtain this result from the view of PI explicated.

Regarding PI, all that can be said is that the empirical meaning of 'G' is only partially determined. If we adopt meanings one can construct a theory T' that has 'G' picking out (6, 7, 10, 11) and another theory T" that has 'G' picking out (2, 6, 7, 10, 11) by selecting suitable sense for 'G'. But even here '2 is $G'$ on T' and '2 is $G'$ on T" are not contraries for 'G' means something different on each theory. The sentences are incommensurate. But this result seems capable of serving the purposes of the preceding arguments. It will make Quine's point to have 2 different theories that share essentially the same vocabulary and explain all the same data.

III

I want to conclude by considering three critical remarks on the arguments in "On Reasons." 1) One might argue, against Quine, that it is not obvious that T' and T" are both compatible with all possible observation sentences. What is to prohibit the addition of further sentences to the interpretative system J in order to determine whether T' or T" is true? Since we have already admitted that the correspondence rules do not exhaust the meaning of the theoretical terms, the addition of new interpretative sentences will not force us to admit that we have a new theory.

This rejoinder will not work. True, we could add correspondence rules to T' and T" falsifying perhaps one theory or both. But the general point remains--for any theory compatible with a body of observation sentences we will be able to construct another theory that is incommensurate with it, yet able to explain the same data. Given the extensional slop introduced by PI this will always be possible. And given this possibility when we proceed to translate, IT will be around to haunt us.

2) A more promising rejoinder might go as follows: all that I have shown, in explicating Quine, is that a hypothesis is not forced on one by the empirical evidence. But there may be other considerations in the full cannon of scientific method that allow one to attribute truth or falsity to a hypothesis. What is needed is some structural feature of a theory that can be characterized independently of the theory's fit with empirical data. Simplicity, generality and explanatory power are common candidates.

Quine does not believe that any of these additional constraints will do the job. All possible evidence and a full cannon of scientific method are not enough. Quine takes up just this point in "On Reasons" and decides "we can imagine...the possibility that A and B (two theories) are both reasonably attributable."

To say what Quine believes does not, of course, settle the matter; one must look at how the full cannon can be utilized to attribute truth--something I cannot do here. But the antecedent probabilities are certainly with Quine. The favorite constraint, simplicity, has given rise to well known and notorious problems. A definition and measure of simplicity have proven most recalcitrant to philosophical analysis. Furthermore, simplicity does not appear to be an absolute property of a theory, i.e., it is relative to various logically equivalent transformations of the theory. Lastly, there is no convincing argument that links the simplicity of a theory with its likelihood of being true.

Nevertheless a problem does remain for Quine--the problem of explaining how the actions of scientists in

12See L. Sklar, Space, Time and Spacetime (Berkeley: University of California Press.)
attributing truth to a particular theory are reasonable. Given the general spirit of his work, this is something one would expect him to carry out eagerly.

3) As I have presented the arguments in "On Reasons" it turns out to be a negative thesis, viz., a reductio ad absurdum argument of PI and a certain sort of sense and reference theory of meaning. But Quine also seems to think of IT as a positive thesis. An argument for the positive part of this thesis cannot come from PI given the need for the realistic assumptions necessary to obtain empirical underdetermination of theories from PI. These assumptions are rejected by Quine's positive philosophy.

What is the positive thesis? "On Reasons" gives us little help in providing an answer. Somehow, in Quine's view, there are supposed to be several possible translations of a given theory, yet there is no fact of the matter when it comes to translation. And what are the criteria for individuating these translations? Surely, mere inscriptive differences are not enough. We do not want "Dog" and "DOG" to be two different translations of "dog." But Quine cannot use meanings of the sense and reference sort to do the job. He owes us an answer.

I have attempted to examine the argument for indeterminacy as it occurs in "On Reasons." There might be more to Quine's thesis. But the above is, at least, one of his arguments and, as presented, it is free of the murkiness associated with IT.

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