

Quine: whither empirical equivalence?

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Received February 1995; revised April 1995

I criticize W.V.O. Quine's conception of empirically equivalent theories and favour Bertrand Russell's, however, my critique is tailored to Quine and is very much my own. After introducing Russell's and Quine's basic ideas and sketching initial criticisms, I proceed to a deeper critique. I argue that 'Theories T1 and T2 are empirically equivalent' is logically incomplete, that is, without a determinate truth-value. We need instead 'Theories T1 and T2 are empirically equivalent to observer O at time T'. Finally, I draw some consequences of my critique for Quine's various theses.

Ek kritiseer W.V.O. Quine se konsepsie van empiries ekwivalente teorieë en motiveer my voorkeur vir Bertrand Russell se konsepsie. My kritiek is egter geïnspireer deur Quine en is my eie. Nadat Russell en Quine se basiese idees geïntroduseer en aanvanklike kritiese opmerkings geskets is, vervolg ek met meer diepgrypende kritiek. Ek argumenteer dat die stelling 'Teorieë T1 en T2 is empiries ekwivalent' logies onvoltooid is, dit is, dat dit sonder 'n bepaalde waarheidswaarde is. Wat ons eerder behoef, is die stelling: 'Teorieë T1 en T2 is empiries ekwivalent vir waarnemer O by tyd T'. Ten besluit ontwikkel ek sommige van die gevolge van my kritiek vir verskillende aansprake van Quine.

If two theories are empirically equivalent, are they both true or both false? Are they equally descriptive of reality? Do they convey the same meaning? Are they not in some sense the same theory, and merely organized differently? Consider the astronomies of Ptolemy and Copernicus. They predict heavenly motions equally well. Yet Ptolemy says the sun revolves about the earth, while Copernicus says the opposite. Copernicus has the simpler view, eliminating the epicycles of Ptolemy, and also seems confirmed by photos taken by astronauts. — Then was Copernicus 'right' and Ptolemy 'wrong'? — But what about the fact that their astronomies are systematically intertranslatable? — Or does the greater simplicity of Copernicus destroy the empirical equivalence?

Going beyond these dilemmas in philosophy of science, what about philosophical theories in general? Are all *a priori* theories empirically equivalent by default? How about metaphysical theories such as Locke's dualism, Berkeley's idealism, and Hume's neutral monism? Surely it is a contingent matter whether bodies, minds, or sense-impressions exist. Yet *pace* Dr Johnson, Berkeley cannot be refuted by kicking a stone. Berkeley has an interpretation which assimilates what Johnson considered a disconfirming event. Might not one of these theories be true and the rest false? Or do they all say the same thing about the world, namely nothing? Does not Berkeley merely reparse each Lockean body as many ideas?

It looks like we need a theory of empirical equivalence. The later Bertrand Russell bases his on sharply separating his realist correspondence theory of truth from his largely holistic and pragmatic theory of scientific knowledge. Russell's theory of empirical equivalence consists of three points. First, of empirically equivalent theories *T1* through *Tn*, at most one is true. Second, we cannot know which one, if any, is true, since the theories are 'empirically indistinguishable' (Russell 1985: 304; Russell 1954: 28; Russell 1974: 111; see also Russell 1981: 148). Third, given the first two points, the best thing is to avoid mistakes by using Occam's razor — by not positing any entities we need not assume. Thus bodies *may* exist, but we need not assume them if we can 'construct' them out of entities we do know exist. Indeed, Russell holds, Venus logically *may* exist only on Mondays, Wednesdays, and Fridays, consistently with all our ordinary experience, and we could never confirm or disconfirm it (Russell 1976: 481; see also Russell 1985: 304; Russell 1954: 28–29). If

Locke's theory is *T1*, Berkeley's *T2*, Hume's *T3*, and the Monday-Wednesday-Friday hypothesis *T4*, then at most one of *T1* through *T4* is true. But we cannot empirically tell which one is true, since the theories are empirically equivalent. Here there are indefinitely many rivals, such as the Tuesday-Thursday theory, most of which we would like to eliminate as arbitrary and trivial. But in Russell's scheme, the immediate data of sense are a barrier we cannot empirically go beyond, and even the serious theories are about what lies beyond that barrier. In 1948 Russell finally invokes five postulates of nondeductive inference in support of a probabilistic physical realism that obtains every day of the week (Russell 1976: 487–496). But Russell admits that such postulates cannot be empirically justified, and thus go beyond empiricism (Russell 1976: 179–181). In fact, they seem to postpone his realism to his inductive logic.

Russell also argues that, quite aside from any metaphysical realities, infinitely many rival theories predicting future empirical observations, 'all of which have exactly the same inductive evidence in their favour,' are compatible with any given finite set of past observations, notably with the set of all human observations up to any given date. Most of these theories will involve artificial predictions of changes in the course of nature. But the problem remains: how can we tell which theory is true? (Russell 1976: 312–313; see Russell 1954: 232; Russell 1974: 111; Russell 1981: 148).

I like Russell's theory of empirical equivalence, at least the first two points of it. But his theory seems not the best or most natural one for natural scientists to use. That honour seems reserved for a theory called naturalism. As an historical doctrine, naturalism has been roughly the theory that science is the criterion of truth, or that there is no truth beyond science. Naturalism seems to imply that equally capable scientific theories must be equally true. The theory had a modest following in the 19th century, but was dismissed for roughly the same reasons pragmatic theory of truth was dismissed. Enter now America's greatest living philosopher, Willard Van Orman Quine, who offers a sophisticated technical philosophy developing naturalism's deepest insights. Whether Quine succeeds is the topic of this article. My critique of Quine, though resembling in a general way Russell's rejection of holistic theories of truth, including both Joachim's monistic theory and Neurath's linguistic theory, is tailored to Quine and is very much my own. But Russell does provide a

main alternative to Quine.

In Section 1, I shall briefly describe Quine's basic theses and make an initial case against them. In Section 2, I shall argue that any theories Quine deems empirically equivalent logically can be empirically equivalent to some observers but not to others. Last, in Section 3, I shall draw some dire consequences for referential inscrutability, indeterminacy of translation, and naturalistic verificationism. Though naturalism is strictly one thesis among many, Quine's naturalism may be more broadly glossed as the bundle of theses discussed in Section 1, along with their evident consequences as discussed in Sections 2 and 3.

1. Quine's naturalistic theses

I begin with Quine's main theses and some initial criticisms.

Quine's thesis of *naturalism* is 'the recognition that it is within science itself, and not in some prior philosophy, that reality is to be identified and described' (Quine 1981: 21). We 'forgo the transcendent or God's-eye view and only speak ... from within our science' (Quine 1994: 496). We 'recognize "real" as itself a term within our scientific theory' (Quine 1994: 504). Realism amounts mainly to the fact that observations can falsify our theory: 'Man proposes, nature disposes' (Quine 1994: 500). But what empirical observations could possibly 'dispose' of, that is, falsify or even be relevant to the truth of, *naturalism*? We might give rational arguments for naturalism. But, Quine holds, reason itself can be described only within science, and so must be naturalistically underpinned by observation. But how could nature 'dispose' of *reason*? Merely assuming that reason exists only within science begs the question. Also, is not science real? — Then can science be described only within itself? Or does not naturalism rather presuppose science as that within which reality can be described?

Immanentism is the thesis that all truths and all facts are immanent in scientific theory. This closely parallels the theory of naturalism. Immanentism is given to us by Tarski (Quine 1987: 316). My criticisms are parallel too: What empirical observations could possibly 'dispose' of immanentism? And what about the fact that science exists? Is science then immanent in itself? Or does not immanentism rather presuppose science for truths and facts to be immanent in?

Philosophy-as-science is the thesis that ontology and logic are part of natural science (Quine 1971: 42–46; 1987: 430). Again, what empirical observations could be relevant to philosophy-of-science? Just how scientific is philosophy-as-science?

Verificationism is the thesis that a statement's meaning, if any, is the empirical evidence relevant to determining its truth or falsehood. So a statement is meaningless if no empirical evidence can confirm or disconfirm it (see Quine 1992: 16–18, 94; see 1987: 155–156). This is often called 'weak' verificationism. Quine's grounds for it are naturalistic and pragmatic. The stock criticism is that even weak verificationism is itself unverifiable.

Holism is the thesis that statements face obdurate experiences together as a theory which can be adjusted in different ways to accommodate the experiences. No specific statement in the theory need be rejected, though typically some will be easier to reject than others. This is basically Otto Neurath's theory of the unity of science, anticipated by Pierre Duhem. Neurath likens science to a ship at sea which we can repair only by using the planks that already constitute her (Quine 1960: 3). Quine grants that large parts of science are largely independent of each other, and also exempts immediate occasions of use of observation statements from holism (Quine 1987: 427, 619–620). But Quine sees holism as refuting the thesis that every sentence of science

has its own independent empirical content (Quine 1992: 14–16; 1971: 42–46).

Underdetermination of science is the thesis that no matter how many empirical observations we make, they will not determine any one scientific theory as being 'the true' theory. There will always be other theories that can accommodate the observed data (Quine 1992: 96–102; 1971: 45). This theory is very closely related to holism, and also to Russell's metaphysical and inductive arguments described above concerning empirical indistinguishability.

Inscrutability of reference is the thesis that any term which seems to refer to a certain object can be reinterpreted as referring instead to a proxy for that object. For instance, 'The rabbit' seems to refer to a rabbit, but could be viewed as referring to an undetached rabbit part. 'The rabbit is running' would be translated accordingly as, 'The undetached rabbit part is attached to a rabbit that is running' (Quine 1992: 50–52).

Indeterminacy of translation is the thesis that for any given sentence S, say in foreign language L, there can be two translation manuals in English, T1 and T2, such that T1 translates S as S1 and T2 translates S as S2, each translation agrees perfectly with all linguistic behavior of the foreign language speakers, yet S1 and S2 are not 'interchangeable in English contexts' (Quine 1992: 48).

Ontological relativity, since 1981 anyway, has been the thesis that references or 'ontological commitments' to objects are always relative to a translation manual, since such manuals are the only meaningful way to specify which objects we are talking about. The theory is deliberately meant to amount to little, if anything, more than inscrutability of reference (Quine 1992: 51–52).

Physicalism is the thesis that there are only physical states and events. Quine does allow mental ways of grouping physical states and events, which he calls anomalous monism, following Davidson (Quine 1992: 72). I see physicalism as Quine's second-deepest thesis.

No entity without identity is the thesis that entities must have sufficient conditions of identity. (Quine 1992: 52; 1971: 75–76; 1960: 114–115). Quine requires that a sufficient identity condition be public and verifiable. I see this as Quine's deepest thesis.¹

Quine affirms the following relationships. (1) Verificationism and holism conjointly imply indeterminacy of translation. (2) The underdetermination of science implies indeterminacy of translation. (3) Inscrutability of reference implies indeterminacy of translation of terms but not of sentences. (4) Holism implies the underdetermination of science. (5) Indeterminacy of translation implies the inscrutability of reference. (6) 'The inscrutability of reference implies ontological relativity.' Relationships (1)–(4) and (6) come from Quine 1987: 155–156, 459; and (5) comes from Quine 1969: 45–49. These relationships leave out naturalism, immanentism and philosophy-as-science. I therefore suggest the following relationships. (6) Immanentism implies naturalism. (7) Naturalism does not imply philosophy-as-science. Naturalism is compatible with denying that philosophy can say anything about the world. Indeed, naturalism is compatible with viewing philosophy as mere poetry, in the manner of the logical positivists (Ayer 1952: 44). (8) Philosophy-as-science does not imply immanentism, as there may be non-immanent realms that are neither science nor philosophy (phenomenology, common sense, perhaps mysticism). (9) But philosophy-as-science does imply naturalism. (10) Holism does not imply philosophy-as-science, since holism is compatible with philosophy-as-poetry. (11) Holism and verificationism do not conjointly imply indeterminacy of translation for any observation sentence on actual occasions of its use. On such

occasions the requirement of intersubjective checkability mandated by Quine's private language argument overrules indeterminacy of translation (Quine 1987: 74, 367; 1960: 45). This is an exception to relationship (1). But any terms which occur within observation sentences remain referentially inscrutable on verificationism conjoined with holism.² (12) Note that relationships (2) and (4) conjointly entail that holism alone implies indeterminacy of translation, rendering relationship (1) inelegant. (13) I see no entity without identity as physicalistic enough to imply physicalism, and physicalism as inevitably implying holism and verificationism—and probably therefore also immanentism, and therefore naturalism.

The relationships just described may seem like a shell game, but surely they are more sophisticated than sophistical. Perhaps Quine's theses do not have independent contents, after all!

One could easily attack Quine's most basic thesis, no entity without identity, as too physicalistic, or attack physicalism as bad mind-body metaphysics. But this is too easy even for an initial criticism. All the fun and interest is rather in seeing how well Quine can work out his views in detail. If he can, then his deepest theses would seem largely defensible.

All of Quine's naturalistic theses, of course, would be objective facts if they obtained, and would presuppose objective facts. Examples of presuppositions abound. Underdetermination requires both empirical facts and a theory to be underdetermined by them. Empirically equivalent theories require empirical facts and two theories which explain the facts equally well. This is not to mention Quine's presupposition of empirical statements, theoretical statements, and empirical terms (which are the 'parts' of empirical statements by which empirical statements 'link up with scientific theory, bearing evidence' (Quine 1987: 336). As Quine no doubt would be the first to tell us, translational indeterminacy and referential inscrutability presuppose physicalism and weak verificationism as already established by his assumption of the naturalistic perspective. All of his views and presuppositions, Quine would cheerfully admit, are not immune from revision in the light of ongoing experience. They are just the deep part of theory and *less* immune from revision than the rest of theory.

Few, if any, consider Quine a radical ontological relativist. The title of Quine's paper 'Ontological Relativity' is not to be taken at face value; that would make nonsense of his robust realism of physical objects and his mathematical Platonism of classes.³ Despite some of Quine's language in that 'murky' paper, Quine's naturalistic theses pertain not to reality so much as to various aspects of our talk about reality. Quine deems his naturalism a 'reconciliation' of 'my realism' with 'man's creative role in science' (Quine 1987: 316). Indeed, Quine's separation of realism from theories of truth (and from science qua truth-search) anticipates that of Michael Devitt. Since Quine claims to be a 'robust realist,' he can hardly hold any very radical ontological relativity; in fact his ontological relativity amounts to little, if anything, more than immanentism (Quine 1981: 21–23). This sense of moderation and accommodation makes Quine hard to attack. He is clearly aiming to co-opt and assimilate opposing views.

The trouble with naturalism, immanentism, and philosophy-as-science is not that they are shallow and full of presuppositions, but that they are too deeply committed to making science an ultimate perspective. Quine's devotion to systematically expounding such a perspective gives his philosophy greatness. Quine's declaration, 'I... repudiate the Cartesian dream of a foundation for scientific certainty firmer than scientific method itself' (Quine 1992: 19) is moving. As Benardete concedes, 'Nor should I wish to deny that it is the downward dialectic which possesses a power and an author-

ity to which the upward dialectic can only fitfully aspire' (Benardete 1964: 285). Quine is moving downward from a lofty hope indeed.

The best way to deal with such ultimate theories is surrender: to understand them, and perhaps explode them, from the inside. I propose to do so for the remainder of this section. I assume, then, that the truth values of all our statements are scientifically interdependent to the extent Quine himself does. I shall consider what are very broadly speaking observational facts, and shall assess with what scientific adequacy we may account for them.

Surely some observable facts are: (1) Science has enriched philosophy by developing new concepts and new applications of concepts to the world. (2) There is a vague borderland between science and philosophy. (3) Philosophy often attempts to explain common-sense data which are, broadly speaking, observational. (4) Viewing philosophy as part of science, broadly understood as our organized knowledge of the world, is illuminating. But (5) facts (1)–(4) are limited by the fact that philosophy at its deepest seems not revisable on empirical grounds, since on that level it already interprets all empirical evidence. There are seeming counter-examples such as the 'supersession of Aristotle's philosophy by ongoing science'. But facts (1)–(5) do obtain even in such cases. Aristotle at his deepest might possibly be refuted, but not by ongoing science. Aristotle at his deepest would be *adapted* to ongoing science. And fact (5) goes against Quine's views.

Thus, perhaps like all great philosophies, Quine's might be superseded on its own terms. For fact (5) can be accounted for best by a more moderate naturalism on which dialectical thinking is a purely rational science. Insofar as that traditional conception of dialectical thinking has stood the test of ongoing philosophical experience some two thousand years longer than Quine's view has, it seems established as more 'scientifically' adequate.

The Neurathian ship-at-sea holism that is suggested by Quine's version of naturalism must not be confused with the dialectical nature of philosophy, nor even with the theory of philosophy as consisting of data and theories which account for data. For to elaborate fact (5), it seems a mark of an adequate scientific theory that possible data can militate against it, while it seems a mark of an adequate philosophical theory that it is not possible for any data to militate against it. Recall the futility of Dr Johnson's attempt to refute Berkeley's idealism by kicking a stone to show its reality (*pace* Quine 1960: 3). Our distinction of marks of adequacy is validated by the actual observing and testing of philosophical and scientific theories better than Quine's theory of philosophy-as-science. Indeed, Quine's theory resembles an *a priori* pronouncement from on high compared to our own more empirical approach. For I have not appealed at all to the necessary truth, *a priori* truth, analytic truth, or even 'transcendent' truth, of facts (1)–(5) stated two paragraphs ago. I have appealed to the plausibility of the theory 'Philosophy is not empirical' only in the light of ongoing rational experience. Ironically, it is Quine who sees no need to appeal to experience to be a 'scientist'. For so far as I can see, Quine argues on purely rational grounds that logic must be the deepest part of scientific theory. So that the more purely logical my case against Quine's theories, the empirically stronger it is.⁴ And to claim that his purely rational argument must be 'really' indirectly empirical is to beg the question. Thus Quine's breath-taking picture seems self-undermining in the end.

2. Empirically equivalent philosophies

The initial case against Quine seems right to me as far as it goes. But it is too simple and easy. I shall now examine in detail the

famous problem of two theories that are confirmed equally well by all the empirical evidence. I shall follow Quine in assuming empirical equivalence for the sake of the argument where it seems reasonable to do so; I agree that showing empirical equivalence in practice is virtually impossible. Assume, then, that the problem applies to the conflict of Quine's philosophy-as-science theory, PAS, with my theory, Not-PAS, so that our evidence is equally strong. This fits Not-PAS well; Not-PAS implies that empirical evidence cannot disconfirm either of our theories. It also fits PAS well, since on PAS both our theories are equally remote from experience. Quine does not clearly rule against my theory or in favour of his own in his own account of the problem (Quine 1987: 156–157). For Quine distinguishes a sectarian position, on which one of our two theories must be true and the other false, and an ecumenical position, on which both of our theories are true. Quine also must consider how the three difficulties he raises with the ecumenical position might apply here. These three difficulties are as follows:

Difficulty (1)

The theories may be logically incompatible. This is just the present case: PAS and Not-PAS are contradictories. Quine solves this difficulty with ecumenicism by using Davidson's 'expedient' of 'reconstruing some theoretical term [in the sentence affirmed by one theory and denied by the other] as a pair of distinct homonyms' (Quine 1987: 156). This is just the old adage, 'When faced with an apparent contradiction, draw a distinction.' Now apply this often artificial way out to our dispute. Here there is just one sentence constituting PAS: 'Philosophy is part of science,' and just one constituting Not-PAS: 'Philosophy is not part of science.' Well, I for one am not about to be defeated by a claim that I 'must' mean by any of the constituent words of Not-PAS something different from what Quine means in PAS. It would be too easy to sidestep anyone who says you are wrong.

Difficulty (2)

On naturalism, there is no higher tribunal of truth than science, and this requires that the sectarian position be taken in every case. Quine solves this difficulty with ecumenicism by regarding the two theories as 'a single big tandem theory consisting perhaps of two largely independent lobes' (Quine 1987: 156). So that his theory and mine are equally correct, equally factual, assuming their empirical equivalence. This might be viewed as a generous concession on Quine's part to my Not-PAS. But again, it seems bizarre to rob me of the possibility of even *saying* that Quine is wrong, where my evidence is just as good as his. And since PAS and Not-PAS are contradictory, calling them 'largely independent' lobes of one theory seems rather an understatement. In fact, 'PAS or Not-PAS' appears not much of a 'scientific theory' at all.

Difficulty (3)

Dagfinn Føllesdal raises the third difficulty with ecumenicism, which finally leads Quine to affirm sectarianism. Namely, one theory may contain theoretical terms not reducible to or translatable to the other. Quine finds that here he must 'newly recover' sectarianism. For the theory with 'alien' terms abandons 'the scientist's quest for economy and... the empiricist's standard of meaningfulness' (Quine 1987: 157). If we cannot 'annex' the alien terms to our theory, then 'the other [theory] does not even make sense in our terms' (Quine 1987: 157). 'Scientifically undigested' terms include 'essence,' 'grace,' 'nirvana.'

My comments follow.

(a) Difficulty (3) applies poorly to the present case, since the only alien term is the word 'Not-' in Not-PAS. And this alien term might have appeared just as easily in PAS. As Frege noted long ago, 'Christ is not mortal' can be rewritten, 'Christ lives forever' (Frege 1970: 125). Likewise, PAS can be translated, 'Philosophy is not unscientific.' Here Quine's translational indeterminacy thesis defeats his own appeal to alien terms.

(b) It is a *non sequitur* to infer that a theory is false from the fact that it is empirically as good at predicting as ours, but contains a term not translatable into ours. The inference is neither formally nor intuitively valid, nor even plausible on the face of it. Note that this observation belongs to logic, the deepest part of science.

(c) The quest for economy may be better fulfilled by a simple theory with alien terms than by a complicated theory without alien terms. As for empirical meaningfulness, why, the theory predicts experience just as well as our own. What more could one want?

(d) The expression 'alien' is a relative one. Our own theory technically could be the one with 'alien terms'. And two theories can contain alien terms relative to each other.

(e) Amplifying comments (c) and (d), Quine himself admits, flip-flopping, that we may get 'the swing of the alien jargon without benefit of translation' (Quine 1987: 157).

(f) Amplifying (c), (d), and (e), both theories might be developed from the same ordinary language by equally easy steps. Then neither theory would be alien to us in any ordinary sense.

(g) Just like 'alien term', 'empirically meaningful term' and 'empirically equivalent theory' are relative terms. If Tibetan lamas say that the term 'nirvana' is empirically meaningful to them, and that a person's being in nirvana is publicly confirmable by them, and if they seem quite honest and not utter fools in other things, then I might reasonably infer not only that the term is empirically meaningful to them, and a publicly confirmable term for them, but even that their theory of mysticism and mine, though empirically equivalent and equally remote from experience *to me*, are not empirically equivalent *to them*. For they have access to all the observations on which I base my neurological theory, but they are also evidently observing more than I am in what is, so to speak, there before us all. The very presence of terms in the Tibetan theory which are alien to my theory should call into question any assumption our theories can be empirically equivalent *simpliciter*.⁵

(h) If we say 'term alien to everyone', then the Tibetans are cheated. Similarly for 'theory empirically equivalent to everyone'. Comment (g) entails that the statement 'Theories T1 and T2 are empirically equivalent' is logically incomplete. Theories are empirically equivalent only *to* some observer O at time T.

(i) Comments (g)–(h) might seem unfair in that Quine assumes empirical equivalence as a condition of the problem, but nirvana is not observable by the nonmystic. Note that 'alien term' is an equivocal expression meaning both (i) term neither present in nor definable in some theory and (ii) term we do not empirically understand. Now to understand a theory, including its terms, is to be able to understand experience in the light of that theory. This makes the expression 'empirical equivalence' ambiguous in a new way in turn. Even if we all have the same range of sensory stimulations, to experience nirvana or to perceive nirvana in another person may be to organize or integrate things in a way virtually impossible to most of us, yet in a way which the alien term easily enshrines for the Tibetans. It might be like seeing the hidden pattern in a picture puzzle, or seeing beyond the dust on a mirror. 'All are already in the Enlightenment, but few observe it.' In this sense of empirical observation, we cannot assume that two

theories are empirically equivalent until after we understand both of them. But then neither will have alien terms in sense (ii). It may emerge that the theories were never empirically equivalent in the first place. Most scientific theories are assessed using patterned or interpreted experience. But even if mystical experience were the cessation of interpreted experience, or somehow just supervenient, terms for it would be alien terms in sense (ii) for most people. They might intellectually grasp or even intuitively appreciate the old hidden-pattern and mirror-dust analogies, but they would not know what it is really like to observe the Enlightened world unless they have already done so.

(j) The sectarian and ecumenical positions are both incompatible with Quine's weak verificationism. Weak verificationism is the theory that a statement is meaningful if and only if evidence for it is at least possible. On weak verificationism, the question whether one or both of two empirically equivalent theories is true is meaningless. There is no possible evidence! Thus both Quine's 'newly recovered' sectarianism concerning alien-term theories, and his ecumenicism concerning non-alien-term theories, seem equally meaningless on his own verificationism. Quine can appeal to his theory that logic is a deep part of empirical science, and try to 'verify' his views merely by arguing for them. But I can appeal to the same theory too, merely by arguing as I just have.

(k) My points do not depend on special considerations about mysticism or philosophy of science. Panayot Butchvarov shows that basing a system of ethical goods on a system of seven levels of being can be just as objective and rational as a purely metaphysical system of categories which do not jibe with the seven levels of being (Butchvarov 1989: 117–119). All three systems may be assumed to be equally close to, hence equally confirmable by, human experience. Yet ethical terms would be alien terms relative to the purely metaphysical system. Similarly, no doubt, for many philosophical systems of aesthetics, morals, political theory. The obvious rejoinder is that I am treating human experience as an unparsed blanket. But then so do theories which consider all things to have some ethical, aesthetic, or political significance. One may still object that I ought to parse human experience into aesthetic and moral aspects, not to say dimensions. But this way of rendering such theories empirically inequivalent neglects that all human experience in all dimensions must be evidentially considered in weighing their truth, due to the universality of their claims. On a more homely level, the relationship between aspects and evidence is misunderstood. That famous detective, 'The Thinking Machine', once solved a case by realizing that a secretary typing a business letter was also tapping a message in Morse code on her keyboard. The evidence for both communications was one and the same typing action. In like manner, all philosophers begin from the common experience of humanity; their alien terms come later.

(l) Quine has most recently distinguished four solutions to the problem of empirical equivalence: (1) sectarianism; (2) ecumenicism; (3) using sectarianism if one of the equivalent theories has alien terms, and using ecumenicism otherwise; here we count the sentences containing alien terms as neither true nor false; (4), Quine's latest position, following Davidson, requiring economy to apply to *theories* as in solution (3), but allowing language to embrace equivalent theories' *vocabularies* and so luxuriate in alien *terms*, as in solution (2); our truth predicate falls on the side of language (Quine 1990a: 14–15). This seems appealing. But nirvana would be more theoretic *and* more empirical than linguistic to the Tibetans, who are once again short-changed by Quine.

(m) Russell has the best solution: Leave any two empirically equivalent theories' indecisiveness to theory of knowledge. This wisely combines alethic sectarianism with epistemic ecumenicism (see Russell 1976: 148–158; Russell 1985: 304–305). Quine cannot use this solution due to his verificationism. Russell, however, rejects verificationism (Russell 1985: 305, 306–315). As a simple sectarian, Russell would say that the Tibetans and I cannot both be right, regardless of whether empirical equivalence is a relation among theories *simpliciter*, or is always relative to an observer.

3. Some consequences for Quine

Our critique of Quine on empirical equivalence has some implications for indeterminacy of translation, referential inscrutability, and weak verificationism.

Assume that two theories are empirically equivalent. One is that 'rabbit' means rabbit. The other is that 'rabbit' means undetached rabbit part. Here Quine must be ecumenical, since the theories merely shift each other's meanings around, and neither has a term alien to the other. Sectarrians would insist that just one of the theories is correct. But ecumenicists make both theories correct. On ecumenicism, *rabbit* means both 'rabbit' and 'undetached rabbit part' at the same time. But how can one public word have two meanings at the same time? This seems to scout ecumenicism as a theory of truth and fact. Note how far Quine departs from his old essay, 'Ontological Relativity', in which there would be no fact of the matter. For he is now committed to an overabundance of factual truths in all cases of sentence-by-sentence translational indeterminacy, and in all cases of term-by-term referential inscrutability, since none involves alien terms.

Assuming that Verificationism and Not-Verificationism are empirically equivalent, and that 'Not' is a term we all know, Quine is clearly committed to a new ecumenicism here as well.

In *Pursuit of truth*, the 'attitudes' of sectarianism and ecumenicism are Orwellian equals. Quine says, 'No wonder the cosmic question whether to call two such world systems true should simmer down, bathetically, to a question of words' (Quine 1992: 100–101). Thus ecumenicism is more equal than sectarianism. Quine is saying that ecumenicism is better than sectarianism when it comes to deciding between ecumenicism and sectarianism as 'attitudes' or 'world systems'. For making the choice 'a question of words' is making ecumenicism the arbiter of the dispute.

Ernest Nagel does the same thing in *The structure of science*. After Nagel lists three main rival philosophies of science in Chapter 6 — descriptivism, instrumentalism, and realism — he concludes that since they are empirically equivalent — 'each can assimilate [all] the facts,' — 'the opposition between these views is a conflict over preferred modes of speech.' In other words, the three views are equal. But realism is less equal than the others. For Nagel is saying that a modes-of-speech theory is better than realism when it comes to deciding between realism and modes-of-speech theories. Realism, of course, is sectarianism. Descriptivism and instrumentalism are versions of ecumenicism (Nagel 1979: ch. 6).

Now Nagel can plead a sharp distinction between philosophy and science. Thus Nagel can admit descriptivism, instrumentalism and realism as equals on the level of science, and reject realism on the level of philosophy. But thanks to philosophy-as-science, Quine cannot. Are there 'higher levels' of scientific truth, much in the manner of Plato's Divided Line? — Might PAS be true and Not-PAS false only on a certain lowly sectarian level?

Pursuit of truth is the distilled essence of Quine's teachings

with some new moves. What Quine now means by compensating adjustments in rival translations is very clear. For a proxy function f that maps any object x one-one onto some object $f(x)$, any sentence 'Px' may be reinterpreted 'as meaning that x is f of a P ' (Quine 1992: 31–32). To echo an old example, let x be a rabbit, $f(x)$ be one of its undetached parts, and let P be having whiskers. Then 'Px' means that rabbit x has whiskers, but may be reinterpreted as meaning that undetached rabbit part $f(x)$ is part of a rabbit that has whiskers. The compensating adjustment is that P now means being part of a rabbit that has whiskers. The compensating adjustment nullifies or cancels out the first change. That is, in the words of *Investigations* #271–#272, the 'hypothesis' of reinterpretation is a 'mere ornament', an idle wheel. Thus in the words of *Investigations* #293, the pair (or group) of mutually compensating adjustments 'has no place in the language-game at all; not even as a something: for the box might even be empty... [O]ne can "divide through" by the [mutually compensating adjustments] in the box [or translation]; they cancel out, whatever they are.' And in the words of *Tractatus* 5.254, mutually canceling operations 'vanish'. Double, quadruple, or octuple negation can be mutually compensating adjustments to our translation, say, of Frege's assertion sign, or of the period ending any English indicative sentence. Thus Quine's mutually compensating adjustments are not only idle embellishments on already determinate meanings or references, but they simply 'vanish'. But how can any of this be reconciled with ecumenicism's superabundance of facts and truths?

We are now in a position to see that the only thing wrong with reference is Quine's own hypothesis of mutually compensating translation. This hypothesis of systematic reference inversion is exactly as scientifically useless as the systematic colour inversion hypothesis or the hypothesis that everything is now twice as large or twice as slow as before (including yardsticks and clocks). Indeed, if Quine were consistent in his verificationism, he would rule out all these hypotheses, including his hypothesis of systematic reference inversion, as cognitively meaningless. For nothing can count as empirical evidence for or against any of them. And this is just what leads, or should lead, Quine to admit reference in 'home languages'.

Indeed, Quine calls this 'analytical' or 'term by term' inscrutability of reference 'trivial and indisputable', if not an idle wheel. He says mutual compensations across whole sentences is the 'strong', 'full or holophrastic' thesis of indeterminacy of translation. He says that this strong thesis 'draws too broadly on a language to admit of factual illustration', though artificial similes are possible (Quine 1992: 50ff.). The many cases in Quine 1969 (rabbits, the color green, etc.) are cases of trivial term-by-term inscrutability. Unfortunately, the strong thesis dies when the sheer idleness of the trivial thesis leads us back to determinate word meanings as the building blocks of whole sentences. And it is ironic that Quine denounces ordinary meanings, for which there are plenty of examples of both synonymy and nonsynonymy, for lacking identity conditions. Here Quine accepts an empirical content which can be mutually compensated across whole sentences, for which there is no identity condition at all! One does not even know what an example would be like, or what the artificial simile Quine cites in Edwin Levy (Quine 1992: 51) is supposed to be similar to.

Quine is straining at a gnat while swallowing a camel. For this strong thesis is just another cognitively meaningless systematic inversion hypothesis at bottom. How quickly Quine's verificationism disappears when he comes to assert his own unverifiable theses of indeterminacy and inscrutability! And even if he now

rejects verificationism, his theses remain idle, including naturalism, immanentism, and philosophy-as-science. For what evidence could be relevant to assessing their factual truth? More accurately, we are driven again to accept reference in our home language.

Quine says in *Pursuit of truth* that 'the home language can be translated into itself by permutations that depart materially from the mere identity transformation. But if we choose as our manual of translation the identity transformation, thus taking the home language at face value, the relativity is resolved. Reference is then explicated in disquotational paradigms analogous to Tarski's truth paradigms; thus "rabbit" denotes rabbits, whatever they are, and "Boston" designates Boston' (Quine 1992: 52). But evidently the 'mere identity transformation' does not remove the 'whatever they are' from "'rabbit" denotes rabbits, whatever they are.' If that deprecation remains, then the relativity is not re-solved at all. And if we can magically assume the mere identity transformation as a determinate proxy function, then why can we not also assume everything else as determinate? Quine should either admit it is relative too or admit that term-by-term inscrutability is not trivial.

Quine's rejection of word meanings, hence of composite sentence meanings allowing a picture-fact correspondence theory of truth, leads him to Tarski's theory of truth as disquotation: "'Snow is white" is true if and only if snow is white' (Quine 1992: 80). The rejection is mainly due to referential inscrutability, which fleshes out Quine's attack on meanings as having poor identity conditions, that is, as violating 'no entity without identity'. Quine also accuses facts, as what true sentences describe, of being 'a put-up job' (Quine 1992: 80). It shows the honesty of the man that Quine takes great pains to show the difficulties he takes Tarski's theory to have. I myself attribute Grelling's and the Cretan paradoxes not to Tarski's theory in particular, or even to the notions of truth and satisfaction in general, but to the familiar alternative, local cases of emptily circular self-definition. That disposes of the infinite series of truth-levels (Quine 1992: 81–88), which is itself a put-up job, eliminating multitudes of innocent sentences along with the paradoxical ones.⁶

Peter Davson-Galle's recent appeal to levels of disquotational truth to escape F.C. White's argument that relativism is self-refuting presupposes not only that truth-levels are themselves determinate, but it also presupposes as a determinate fact that every truth has some truth-level.⁷ Quine can similarly use his disquotational theory of truth to rescue his theses of indeterminacy, inscrutability, and underdetermination from my criticism that they are self-refuting. Quine says, 'I keep to the correspondence theory of truth, but only holophrastically: it resolves out into Tarski's disquotational version of truth rather than a correspondence of words to objects' (Quine 1990: 229). Indeed, he even says, 'No sentence is true but reality makes it so. The sentence "Snow is white" is true, as Tarski has taught us, if and only if real snow is really white' (Quine 1970: 10). Note that this immanent standard of truth is what Tarski's construction gives us' (Quine 1987: 316). The reconciliation of the truth's immanence with its requirement of real snow which is really white is just that the truth of immanent truths must be taken seriously.⁸

Tarski openly states that disquotation is a determinate proxy function, and implies that it is a version of the mere identity transformation (Tarski 1956: 161). Its determinateness is an essential presupposition of the disquotational theory of truth. Similarly for that function's presupposition in turn of determinate arguments and values; Tarski carefully ensures their determinacy (Tarski 1956: 156 n.1). Hartry Field argues that disquotational

truth presupposes a notion of primitive reference (Field 1972: 372–373). Field's companion argument that disquotational truth also presupposes a notion of primitive truth seems duplicated by Hilary Putnam's argument nineteen years later that disquotational truth presupposes truth as correspondence (Field 1972: 372–373; Putnam 1991: 3–4). George D. Romanos claims that Field misinterprets Tarski (Romanos 1983: 165–169). But Field is arguing about what Tarski's work presupposes, not about what Tarski meant. Again, if we allow disquotation as a determinate proxy function, why not allow others as determinate? And if reference is presupposed, then how can it be so inscrutable?

Quine contrasts the reality of the physical world beyond any competing empirically equivalent physics with the nonexistence of meanings beyond rival manuals of translation. But his illumination of the 'one and the same world' beyond physical theories is a Black Box private language argument: 'I think of the disparate ways of getting at the diameter of an impenetrable sphere: we may pinion the sphere in calipers or we may girdle it with a tape measure and divide by pi, but there is no getting inside' (Quine 1992: 101). But like Wittgenstein's beetle in a box analogy, Quine's diameter analogy is equally apt for muons and meanings. Therefore Quine's contrast vanishes. Granted, Quine's private language argument, in establishing physicalism, upholds the physical world as existing even while it banishes private, mental meanings. But even then Russell shows how one can draw a Subtle Black Box around one's own physical body (as opposed to around somebody else's body while seeking that other person's mental contents). Assuming with Russell the empirical equivalence of all theories of events crossing the boundary of my own body, that is, of the events I sense, physical solipsism ('Only my body exists') may be a sectarian truth for all I know (or at least an ecumenical truth). That cuts the physical world down to size (Russell 1954: 27–28).

Quine suggests, citing quantum mechanics, that someday the best world theories may dispense with outmoded concepts such as existence or existential quantification. Yet Quine would still admit the reality of the physical world beyond our 'human apparatus' (Quine 1992: 34–36, 101). I ease the tension by suggesting that it is our understanding of the domain of quantification that grows subtle in physics. That existence and identity may become outmoded concepts someday follows easily from philosophy-as-science and 'no immunity from revision'. But then we saw that philosophy-as-science is itself not very scientific. And in light of that fact, perhaps 'no immunity from revision' should be revised.

Notes

1. I see Quine's thesis that to be is to be the value of a variable as a rubber stamp of no entity without identity, in Quine's own actual practice of ontology. If sufficient identity conditions are there, Quine treats everything else as just falling in place.
2. Quine's weak form of verificationism equates meaningfulness with the scientific relation of whole theories, as opposed to individual sentences, to experience (Quine 1981: 38). This was already implicit in 'Two Dogmas of Empiricism'. It does not affect holism-plus-verificationism's entailment of indeterminacy of translation for sentences. For that entailment depends only on mutual compensation in each sentence's alternative translations. Quine's point that a whole theory may be written as a long sentence (Quine 1987: 427) does not make the modification pointless. For only some long sentences will express whole theories.
3. Hugley and Sayward 1990 argue that Quine's mathematical Platonism contradicts any genuine thesis of ontological relativity.
4. Alston 1987: 54–55 overlooks this famous point when he criticizes Quine for using a 'double standard' of argument when Quine 'reductively' criticizes synonymy in 'Two Dogmas.'
5. The Sanskrit 'nirvana' is so close to English that it translates literally as 'no wind', that is, absence of change. But the experience is so transcendent, according to many mystics, that it goes beyond any intellectual divisions of the world into objects. Thus translating 'nirvana' as a term of divided reference ('the supreme state of awareness') might be misleading. Even Quine's contrast between observation terms and theoretical terms seems to vanish in consciousness-without-an-object, or introverted experience of withdrawal from the senses. Nor do we seem able to treat such an object-purged awareness as falling under the relative sort of observability Quine allows the scientific community thanks to degree of shared theory (Quine 1990a: 2). That only something so exotic might transcend the intellectualized notion of stimulus meanings might be a tribute to Quine. But if *extravertive* mystical experience of the *objectual* world is comparable to seeing through the dust on a mirror, then my nonexotic critique of Quine applies. It is not that Quine should not 'remain unwavering in locating stimulations at the neural input' (Quine 1990a: 3). It is not just that neural inputs are subject to multiple interpretation. The problem is that one cannot even tell which *neural input* occurs when (observation of) nirvana occurs, unless one can already tell when nirvana occurs (compare Bharati 1976: 57, 79). There ought to be no doubt that mysticism is an empirical phenomenon which ought to be empirically investigated. W.T. Stace wrote a book which seems to establish that (Stace 1960).
6. Accusations of put-up jobs seem lame coming from one who makes all things unit classes of themselves. Much like the Russellian facts he detests, Quine's things as unit classes of themselves 'contribute nothing beyond their specious support of a ... theory' (Quine 1992: 80).
7. White 1989: 84–92; Davson-Galle 1991: 176. Davson-Galle is well aware that his — or White's — thesis (1) is 'undifferentiated as to proposition type'. My point is that surely Protagoras would have deemed his relativism to apply to truth-levels too, had the question been put to him. Genuine relativism is incompatible with determinate truth-levels. Here Quine is saved simply because he admits such levels, not to mention a logically (if not ontologically) determinate disquotation function. They are best glossed as part of Quine's robust realism by analogy to his mathematical Platonism of classes. Naturalism, immanentism, and philosophy-as-science are all systematically ambiguous across truth-levels, as are the theses of translational indeterminacy, referential opacity, and naturalistic verificationism. But thanks to the fact that such truth-levels are determinate, and even presuppose a notion of reference à la Field, Quine's victory seems Pyrrhic.
8. 'Disquotation as such is neutral to objective reference' (Quine 1976: 318; see Tarski 1956: 155–156). Yet the satisfaction of the propositional function 'x is white' by snow 'has to do with objective reference' (Quine 1976a: 318). Disquotational truth requires only some satisfaction of some propositional function; another alternative is white's satisfaction of 'Snow is x'. Thus the snow must be real, but need not be 'the' value that satisfies 'the' propositional function. (Quine: Real snow — whatever that is!) Since Quine argues that disquotational theory of truth is better than correspondence or coherence theory, it follows, on Quine's theory of reason as always empirical, that Quine does not consider these different theories of truth empirically equivalent. But then it is always a question just how cavalier any Quinean

assumption of empirical equivalence — or, in this case, non-equivalence — really is.

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