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IS THERE A PLACE FOR PHILOSOPHY IN QUINE'S THEORY?*

In the early part of the twentieth century, the logical positivists launched a powerful attack on traditional philosophy, rejecting the very idea of philosophy as a substantive discipline and replacing it with a practical, conventionalist, metatheoretical view of philosophy. The positivist critique was based on a series of dichotomies: the analytic versus the synthetic, the external versus the internal, the apriori versus the empirical, the metatheoretical versus the object-theoretical, the conventional versus the factual. W. V. Quine's attack on the positivists' dichotomies was, by extension (if not by intention), also an attack on their critique of philosophy. In time, however, his own theory took an extreme naturalistic turn which, if anything, deepened the schism between philosophy and knowledge.

I would like to show that many of Quine's early philosophical ideas—the denial of the analytic-synthetic distinction, the theses of the interconnectedness of knowledge, universal revisability, and inseparability of language from theory, his methodological pragmatism and realism—are in fact compatible with a substantive philosophy. Moreover, certain inner tensions in Quine's theory naturally lead to a new model of knowledge in which philosophy plays a substantive role: not as a "first philosophy," or as a "metascience," or as a "chapter in psychology," but as an independent discipline in its

* An earlier, abridged version of this article, entitled "On the Place of Philosophy in Quine's Early Theory," appears in P. Weingartner, G. Schurz, and G. Dorn, eds., *The Role of Pragmatics in Contemporary Philosophy: Papers of the 20th International Wittgenstein Symposium*, Volume II (Kirchberg am Wechsel: Austrian Wittgenstein Society, 1997), pp. 889-95.

own right, alongside, continuous with, and complementary to, science.¹

I. AN INNER CONFLICT

In his 1973 paper, "The Significance of Quine's Indeterminacy Thesis," Michael Dummett² makes the following provocative claim: Quine rejected the analytic-synthetic distinction in "Two Dogmas of Empiricism" (1951) on the ground that no coherent and philosophically significant content has ever been assigned to it. Yet, ironically, the distinction has come to life for the first time in the very account that was meant to replace it: Quine's holistic model of knowledge with its center-periphery structure. Dummett's claim is based on two observations: (1) Quine's center-periphery model provides us with notions in terms of which the analytic-synthetic distinction is well defined. Roughly, analytic statements are immune to experience, synthetic statements are vulnerable to experience (that is, their revision would be mandated by suitable experiences).³ (2) This version of the distinction cannot be rejected as empty, since the claim that there are no synthetic statements and no analytic statements (in the above sense) conflicts with the center-periphery model. Conclusion: Quine's claim that the analytic-synthetic distinction is unfounded (henceforth, the *negative analytic-synthetic thesis* or NAS) conflicts with his claim that our body of knowledge has a center-periphery struc-

¹ For the positivists' view of philosophy, see Rudolf Carnap, *The Logical Structure of the World and Pseudoproblems in Philosophy*, R.A. George, trans. (Berkeley: California UP, 1967), *The Logical Syntax of Language*, A. Smeaton, trans. (London: Kegan Paul, 1937); *Foundations of Logic and Mathematics*, *International Encyclopedia of Unified Science*, Volume I, Number 3 (Chicago: University Press, 1939), "Empiricism, Semantics, and Ontology," in *Meaning and Necessity: A Study in Semantics and Modal Logic* (Chicago: University Press, 1956, second edition), pp. 205-21; A.J. Ayer, *Language, Truth and Logic* (London: Gollancz, 1946, second edition). By 'Quine's early ideas' I mean Quine's views in "Two Dogmas of Empiricism," in *From a Logical Point of View* (Cambridge: Harvard, 1980, second edition), pp. 20-46; "Truth by Convention," in *The Ways of Paradox and Other Essays* (Cambridge: Harvard, 1976, rev. ed.), pp. 77-106; "Carnap and Logical Truth," in *The Philosophy of Rudolf Carnap*, P.A. Schilpp, ed. (La Salle: Open Court, 1963), pp. 385-406; and other articles from the same period. I am not the first to suggest that some of Quine's ideas point in the direction of a substantive philosophy. See, for example, Paul Gochet, *Ascent to Truth: A Critical Examination of Quine's Philosophy* (Munich: Philosophia, 1986), p. 16. See also George D. Romanos's analysis of Quine's conception of philosophy in *Quine and Analytic Philosophy: The Language of Language* (Cambridge: MIT, 1983), pp. 187-95. Romanos's analysis, however, is quite different from mine.

² In *Truth and Other Enigmas* (Cambridge: Harvard, 1978), pp. 375-416.

³ In Dummett's words: "an analytic sentence is one such that no recalcitrant experience would lead us to withdraw our assignment to it of the value true, while a synthetic one is one such that any adequate revision prompted by certain recalcitrant experiences would involve our withdrawing an assignment to it of the value true" (*ibid.*, p. 375).

ture (henceforth, the *center-periphery thesis* or CP⁴). I shall not discuss Dummett's account of the conflict here: for one thing, my point of view is somewhat different from his; for another, I have some difficulty with certain aspects of his argument. Instead, I shall present the conflict in my own way and from my own perspective, namely, as a conflict between two epistemic methodologies: the one associated with NAS, the other with CP.⁵

A methodological conflict. The most basic dichotomy underlying the analytic-synthetic distinction is that of statements grounded in *matters of fact* and statements grounded in something *other than fact*. What this other thing is varies from one philosophical theory to another, but Quine's attack applies equally to older as well as to newer renderings of the distinction. Methodologically, the most important feature of the analytic-synthetic thesis is the *bifurcation of our standards of knowledge*: the standards for the acceptance, justification, revision of synthetic items of knowledge are different from the standards for the acceptance, justification, revision of analytic items. Quine's revolution consists in rejecting this bifurcation: every item of knowledge is subject to both standards—logic may be revised in response to experience, observation statements may be preserved based on pragmatic considerations.

Now, CP breaks this uniform picture of knowledge by positing a structure with two essentially different, if interconnected, zones: an inner zone—*center*—based on one set of standards, and an outer zone—*periphery*—based on another. Elements in the center are manipulated using pragmatic standards, elements in the periphery using evidential (experiential) standards. Elements located in the periphery stand in a privileged relation to reality from which elements located in the center are excluded. Thus, granted that a conflict with experience can be resolved by changes anywhere in the system, there is still an essential difference between changes occurring in the center and changes occurring in the periphery. The ground for changing statements in the periphery is the need to square these statements themselves with experience; the ground for changing statements in the center is the need to square other statements, namely, statements in the periphery, with experience. Truths

⁴ I shall use 'CP' both for the "center-periphery thesis" and for the "center-periphery model."

⁵ In addition to "The Significance of Quine's Indeterminacy Thesis," Dummett also discusses the conflict in *Frege: Philosophy of Language* (New York: Harper, 1973), chapter 17. By offering my own version of the conflict, I do not wish to diminish my debt to Dummett; needless to say, he is not responsible for my version.

located in the center are held solely in virtue of their contribution to the overall working of the system, hence due to pragmatic considerations. Truths located in the periphery are held partly because of their contribution to the system as a whole, but largely, and most importantly, due to their own direct link to experience, that is, based on factual, objective considerations. Take logic, for example. There is no room in Quine's model for a conflict between a logical statement, l , and an external event, e , analogous to, say, the conflict between the peripheral statement, 'It rained in San Diego on Monday, March 1st, 1999', and the event of sunny skies in San Diego on that day. Reality never impinges as directly on logic as it does on experimental science, and logic, therefore, never occupies the periphery. We may change our logic in response to conflicts with experience, but only pragmatically and via a chain of connections starting and ending in the periphery. The bone of contention between NAS and CP is the role of fact and convention in knowledge: while a principled division of knowledge into conventional and factual constituents is denied by NAS, such a division is affirmed by CP. By superimposing a center-periphery structure on the unified domain of knowledge postulated by NAS, Quine has de facto incorporated certain significant elements of the analytic-synthetic dichotomy into his epistemology.

II. OBJECTIONS

Before turning to possible solutions, I would like to consider three likely objections to the reality of the conflict.⁶

A. Objection one. CP cannot be said to reproduce the analytic-synthetic distinction, since this distinction requires an absolute division of statements into two mutually disjoint groups, but the center-periphery model represents our body of knowledge as a continuum. The center-periphery duality is gradual, while the analytic-synthetic dichotomy requires sharp boundaries.

Response. First, I would like to emphasize that on my construal, the center-periphery duality is not said to reproduce the analytic-synthetic distinction in its entirety. At issue is a significant overlap of the two distinctions, not a complete identity (or inclusion).

Second, the claim that the analytic-synthetic distinction does not allow a graduated progression may be true to its letter but is not true

⁶ Of course, there is no limit to the number of objections that can be raised. I have selected three objections which, in addition to their intrinsic merits, provide me with the opportunity to elucidate relevant issues.

of its use, especially at the hands of the logical positivists. Explanation: traditionally, the analytic-synthetic distinction is a distinction between *whole* statements; but for the logical positivists, a more basic distinction exists between *constituents* of statements. This secondary distinction plays an especially important role in Rudolf Carnap's reductionist project in *The Logical Structure of the World* (*op. cit.*). Science, in Carnap's construction, is built out of basic elements of two types: purely experiential elements (in Carnap's construction, "elementary experiences" and the primitive relation of "recollection of similarity"), and purely conventional elements (logico-mathematical operations and the linguistic operation of definition). The construction proceeds in a hierarchy of stages: in stage one, purely conventional operators are applied to purely experiential elements, generating mixed elements of level one; in stage two, conventional operators (and mixed operators, if any, obtained in stage one) are applied to elements of level one, generating mixed elements of level two, and so on. We progress in this way from elementary experiences to pairs of elementary experiences, equivalence classes of elementary experiences (under the relation of recollection of similarity relative to a given agent), and so forth. Somewhere along the way we obtain qualities (quality structures), observable physical objects, theoretical objects, and so on. The result is a continuum of elements and, corresponding to it, a continuum of statements. If we order these statements according to their balance of experiential to conventional constituents (based on some criterion or another), we arrive at a progression of statements stretching from the purely synthetic to the purely analytic. We could, of course, draw a line (mark a region) somewhere along the continuum: statements on one side of the line (inside the designated region) would be "absolutely" analytic, all the rest "absolutely" synthetic; but such a division would still, at bottom, be graduated.

Consider Carnap's analysis of a simple synthetic statement, say, 'All dogs are carnivores'. This statement is doubly mixed: on the one hand, it contains both analytic and synthetic constituents (the analytic operators 'all' and 'if...then', and the synthetic predicates 'dog' and 'carnivore'); on the other hand, its synthetic constituents themselves are decomposed into analytic and synthetic subconstituents. The concept "dog," for example, is constructed by successive applications of analytic operations, first, to purely synthetic elements and, then, to mixed elements, generating a gradual progression of concepts (and, correspondingly, objects) from the purely synthetic to the increasingly analytic. Speaking objectually, this pro-

gression includes:

- (1) Elementary experiences and the relation of recollection of similarity between them (primitive).
- (2) "Dog" sense qualities: for example, the color brown (equivalence classes of elementary experiences under the relation of recollection of similarity).
- (3) "Dog" sense-qualities-at-space-time-locations: for example, brown in the kennel at t (n -tuples whose first four elements are real numbers—representing space-time locations—followed by one or more "dog" sense qualities).
- (4) "Dog" points of the perceptual world (classes of "dog" sense-qualities-at-a-location).
- (5) "Dog" States (classes of dog perceptual points).
- (6) Individual dogs (classes of "dog" states).
- (7) The general object or species *Dog* (the class of all individual dogs).⁷

What, then, is the conflict between Carnap's *graduated progression* and Quine's NAS? The conflict consists of at least three disagreements. (a) According to Carnap, our body of knowledge is ultimately built out of purely experiential and purely conventional elements; according to Quine, no constituent of knowledge is either purely experiential or purely conventional. (b) According to Carnap, each element is divided into constituents whose experiential/conventional status is uniquely determined; according to Quine, no element is uniquely divisible in this way. (c) According to Carnap, the application and satisfaction conditions of some elements are purely conventional while those of others purely factual (experiential); according to Quine, the application and satisfaction conditions of all elements are both factual and conventional.

B. Objection two. The center-periphery methodology differs from the analytic-synthetic methodology with respect to what is arguably the most important principle of Quine's theory: the principle of universal revisability. The analytic-synthetic methodology views analytic statements as immune to revision, synthetic (empirical) statements as linked to a range of experiences whose occurrence would (under appropriate conditions) compel their revision. In contrast, the center-periphery methodology (like the NAS methodology) views no

⁷ See *The Logical Structure of the World*, pp. 247-48. A more detailed account of the constructional stages of physical objects (and their concepts) appears on pp. 175-211.

statement as immune to revision and the revision of no statement as compelled by any (specific) experiences. Given this major gap between the two methodologies, any similarity between them is of minor significance.

Response. The claim that the analytic-synthetic distinction is tied to the traditional revision principle is simply incorrect.⁸ This claim is refuted if not by the classical, Kantian model, then by the positivist model. In this model, analytic statements are based on linguistic conventions, and these are all too easy to replace. Given an infirming experience (or a series of infirming experiences), the positivist model allows a wide array of reactions: (a) no revision; (b) revision of synthetic statements: (i) directly implicated synthetic statements (observational or "protocol" statements), (ii) indirectly implicated synthetic statements (theoretical statements); and (c) revision of analytic statements (logico-linguistic conventions and/or framework principles).

Thus, discussing a case in which a protocol sentence deduced from a physical theory is disconfirmed by experiment, Carnap says:

There are no established rules for the kind of change which must be made. For instance, the P[hysical]-rules can be altered in such a way that those particular primitive sentences are no longer valid; or the protocol-sentence can be taken as being non-valid; or again the L[ogical-linguistic]-rules which have been used in the deduction can also be changed.⁹

Elsewhere, Carnap describes a hypothetical situation in which an empirical discovery would naturally lead to a conventional revision:

If certain events allegedly observed in spiritualistic séances, e.g., a ball moving out of a sealed box, were confirmed beyond any reasonable doubt, it might seem advisable to use [the conventional device of] four spatial coordinates [instead of the customary three].¹⁰

But a conflict with experience, Carnap says, is also compatible with no revision:

[W]hen [a scientific hypothesis] proves to be L-incompatible with certain protocol-sentences, there always exists the possibility of maintaining the hypothesis and renouncing acknowledgement of the

⁸ Quine himself appears to endorse this claim (see "Two Dogmas," p. 43). He is wrong, in my view, unless he has in mind a restricted version of the claim (restricted, for example, to Immanuel Kant's version of the distinction or to the positivist version from a purely internal perspective).

⁹ *The Logical Syntax of Language*, p. 317. (The two sentences are transposed.)

¹⁰ "Empiricism, Semantics, and Ontology," pp. 212-13.

protocol-sentences.¹¹

Finally, Quine's principle of universal revisability is explicitly endorsed by Carnap:

[In "Two Dogmas"] Quine shows...that a scientist, who discovers a conflict between his observations and his theory and who is therefore compelled to make a readjustment somewhere in the total system of science, has much latitude with respect to the place where a change is to be made. In this procedure, no statement is immune to revision, not even the statements of logic and of mathematics.... With...this I am entirely in agreement.¹²

Where Carnap's liberal policy clashes with Quine's is in its strict bifurcation of the standards for revision: purely pragmatic (practical) standards for the revision of logico-mathematical statements; largely factual (theoretical, evidential) standards for the revision of physical statements.¹³

C. Objection three. There is no real conflict between CP and NAS, since the two theses operate on different levels. While CP is a descriptive, *behaviorist* thesis, NAS is a *prescriptive, normative* thesis. CP describes scientists' habitual practices, including their tendency to regard certain statements as conventional, others as factual and still others as occupying intermediate positions between the two extremes; NAS says that scientists' habitual practices are not inviolable principles of rational inquiry. Clearly, there is no conflict between the claim that scientists *normally act* in accordance with the analytic-synthetic distinction and the claim that scientists are not *normatively bound* by this behavior.

Response. This is an important objection whose validity depends on the role assigned to CP in Quine's argument. To identify this role, I propose the following analysis of the general structure of "Two Dogmas of Empiricism." The paper is divided into two parts: sections one to five, and section six, respectively. The first part consists of a series of arguments to the effect that (a) the analytic-synthetic distinction is not well defined, and (b) the analytic-synthetic distinction is connected with a failed epistemology (namely,

¹¹ *The Logical Syntax of Language*, p. 318.

¹² "Replies and Systematic Expositions," in *The Philosophy of Rudolf Carnap*, pp. 859-1013, here p. 921.

¹³ For an especially sharp version of this bifurcation, see Carnap's "Empiricism, Semantics, and Ontology."

reductionism).¹⁴ None of these arguments conclusively demonstrates the unacceptability of the distinction. The first argument (cluster of arguments) merely shows that past attempts to define the distinction have failed, not that any attempt to define it is bound to fail; the second argument shows that a popular epistemology incorporating the distinction suffers serious difficulties, not that any epistemology incorporating it is bound to suffer these difficulties, or that these difficulties are in principle insurmountable. In spite of the inconclusive nature of these arguments, Quine arrives at a radical and uncompromising conclusion: the analytic-synthetic distinction should be altogether and in principle banished from philosophy.

Quine's "jump" from the claim that past attempts to establish the distinction face serious difficulties to the claim that the distinction is (in principle) an untenable dogma is obviously not a step in deductive reasoning. Rather, it is a methodological change of direction, similar to other methodological shifts in the history of philosophy: for example, Immanuel Kant's so-called "Copernican" revolution. We could, indeed, use roughly the same reasoning as Kant's (or the same skeleton of reasoning) to close the gap in Quine's argument:

Hitherto it has been assumed that all our knowledge must be reducible to ultimate elements of two kinds—analytic and synthetic. But all our attempts to provide a solid foundation for knowledge based on this division have ended in failure. We must therefore make trial whether we may not have more success in the task of epistemology, if we suppose that knowledge is not divisible in this way.¹⁵

Quine's rejection of the analytic-synthetic dichotomy, like Kant's rejection of the traditional world-observer dichotomy, is a promissory note, to be made good by a new model of knowledge which demonstrates the virtues of the new methodology. The construction of such a model is undertaken in the second part (section six) of "Two Dogmas," where Quine draws an outline of a new epistemic model, CP, whose task is to vindicate NAS. Quine is quite clear about the intended role of CP. Immediately following the introduc-

¹⁴ For exposition and critical discussion of these arguments, see Gochet; H.P. Grice and P.F. Strawson, "In Defence of a Dogma," *The Philosophical Review*, LXV (1956): 141-58; Roger F. Gibson, *The Philosophy of W.V. Quine: An Expository Essay* (Tampa: South Florida UP, 1982); Paul A. Boghossian, "Analyticity Reconsidered," *Noûs*, xxx (1996): 360-91.

¹⁵ An adaptation of a passage in *Critique of Pure Reason* (1787, second edition): "Hitherto it has been assumed that all our knowledge must conform to objects. But all attempts to extend our knowledge of objects by establishing something in regard to them *a priori*, by means of concepts, have, on this assumption, ended in failure. We must therefore make trial whether we may not have more success in the tasks of metaphysics, if we suppose that objects must conform to our knowledge" (Bxvi)—Norman Kemp Smith, trans. (London: Macmillan, 1929).

tion of the model, he announces its direct implicational relation to NAS:

If this view [the view of knowledge represented by CP] is right,...it becomes folly to seek a boundary between synthetic statements...and analytic statements....¹⁶

Furthermore, tenets central to NAS follow from the model:

...it is misleading to speak of the empirical content of an individual statement.... Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system.... Conversely, by the same token, no statement is immune to revision... (*ibid.*).¹⁷

It is evident that Quine regards CP as a *realization* of NAS. The model is designed to justify NAS by example, not by counterexample. CP and NAS are not two independent theses, the one descriptive, the other normative, the one capturing one aspect of our system of knowledge, the other, another. Rather, the two theses are designed to complement one another: CP by providing an attractive picture of knowledge in accordance with NAS, NAS by motivating and articulating the normative principles underlying CP. Since NAS is a normative thesis, CP is assigned the role of a normative model exemplifying its principles.¹⁸

If this analysis is correct, the third objection is dissolved: CP is a normative thesis and its conflict with NAS is a genuine conflict, threatening the integrity of Quine's project. In the next section, I shall consider, and reject, two eliminative solutions to this conflict. In the last two sections, I shall present a third, constructive solution, with substantial ramifications for philosophy.

III. TWO SOLUTIONS

I shall begin with two eliminative solutions: (A) *withdraw NAS*, (B) *withdraw CP*.

¹⁶ "Two Dogmas of Empiricism," p. 43.

¹⁷ The revisability principle, as we have seen above, is not unique to NAS, but it still constitutes an important component of NAS.

¹⁸ One may try to argue for a descriptive reading of CP based on the third paragraph of section 6: "For vividness I have been speaking..." (*op. cit.*, pp. 43-44). But even if it is natural to read a few sentences in this paragraph as suggesting a descriptive model, my argument is not affected. What I have attempted to do is *not* to show that no sentence in "Two Dogmas" is compatible with a descriptive model. Rather, I have attempted to show that (i) a descriptive model of knowledge would be extraneous to Quine's main argument in "Two Dogmas," (ii) the main argument of "Two Dogmas" calls for a normative model, and (iii) there is strong textual evidence to support a normative construal of the model. In contrast, interpreting CP as a descriptive model would raise difficult questions with respect to the interpretation of Quine's overall argument, the contribution of CP to this argument, and the role of the indicated passage in an otherwise normative section, sandwiched between two clearly normative passages. My tendency is to view the third paragraph as a digression, possibly foreshadowing Quine's later epistemology.

A. *First solution: withdraw NAS.* This solution is recommended by Dummett. Quine's main achievement in "Two Dogmas of Empiricism," according to Dummett, is a new verificationist model of language (knowledge) which, by being moderately holistic ('organic', in Dummett's terminology), avoids the pitfalls of earlier models. Since NAS threatens to undermine this model, Dummett recommends the elimination of NAS. He finds support for his proposal in Quine's own "change of heart" in *Word and Object*¹⁹ and later writings, where, according to Dummett, Quine has "quietly dropped" NAS.²⁰

Disputation. I shall offer three reasons—exegetical, historical, and substantive—for rejecting this solution. The second reason I shall merely allude to, the other two I shall discuss in more detail.

(1) *Exegesis. (a) Early writings.* It is clear that prior to *Word and Object*, Quine's espousal of NAS was full hearted and uncompromising. Note the sharp tone and disparaging expressions in the following citations from "Two Dogmas": "for all its a priori reasonableness, a boundary between analytic and synthetic statements simply has not been drawn. That there is such a distinction to be drawn at all is an unempirical dogma of empiricists, a metaphysical article of faith"; "it is nonsense, and the root of much nonsense, to speak of a linguistic component and a factual component in the truth of any individual statement"; "If this view is right,...it becomes folly to seek a boundary between synthetic statements...and analytic statements" (*op. cit.*, pp. 37, 42, 43). In other articles from the same period, Quine's message is just as strong: "My misgivings over the notion of analyticity are... misgivings in principle"; "analyticity...is a pseudo-concept which philosophy would be better off without."²¹ In contrast, Quine's advocacy of the center-periphery duality is somewhat qualified: the idea of a distance from a center and a periphery is merely a "metaphor," brought in for the sake of "vividness" and not to be taken quite literally.²² There is no doubt that faced with a decision between the two theses, Quine of "Two Dogmas" would have chosen NAS.

(b) *Later writings.* In spite of endorsing a few watered-down versions of the analytic-synthetic distinction in some of his later writings,

¹⁹ Cambridge: MIT, 1960.

²⁰ See Dummett, "The Significance of Quine's Indeterminacy Thesis," pp. 377-78.

²¹ "Mr. Strawson on Logical Theory" and "Three Grades of Modal Involvement" in *The Ways of Paradox and Other Essays*, pp. 137-57 and pp. 158-76, here p. 139 and p. 171, respectively.

²² See "Two Dogmas," p. 43.

Quine has never wavered in his rejection of the full-blooded distinction. Characterizing his own version in *Word and Object* (stimulus analytic versus stimulus synthetic) as a "behavioristic ersatz" and a "vegetarian imitation" (*op. cit.*, pp. 66, 67), Quine declares that the full-scale distinction "only encourages confused impressions of how language relates to the world" (*op. cit.*, p. 67). Then, commenting on the customary grouping of "synthetic truth," "fact," "objectivity," and "accessibility to observation," he says: "So here that same analytic-synthetic dichotomy intrudes which we have found so dubious" (*op. cit.*, p. 247). And as usual, Quine is highly critical of Carnap's uses of the distinction: "Carnap has long held that the questions of philosophy, when real at all, are questions of language.... But why should this be true of the philosophical questions and not of theoretical questions generally? Such a distinction of status is of a piece with the notion of analyticity..., and as little to be trusted" (*op. cit.*, p. 271). Quine's impatience with "analyticity" is once again revealed in *Philosophy of Logic*²³: "it is time to rein in our verbalism. What are we trying to get at when we call a sentence analytic, or true purely by virtue of the language" (*ibid.*, p. 96)? In *The Roots of Reference*,²⁴ Quine continues to emphasize the difference between his own version of the distinction and Carnap's: "we have here no such radical cleavage between analytic and synthetic sentences as was called for by Carnap and other epistemologists" (*ibid.*, p. 80). And as late as *Pursuit of Truth*,²⁵ Quine says: "The importance of analyticity for epistemology lapses, be it noted, in the light of holism" (*ibid.*, pp. 55-56). There is no question that Quine's commitment to NAS has persisted through the years.

(2) *Historical perspective.* Historically, the analytic-synthetic distinction is tied to a long chain of philosophical dichotomies: the apriori versus the aposteriori, the necessary versus the contingent, reason versus experience, reality versus appearance, objectivity versus subjectivity, knowledge versus opinion, and so on. It is hard to exaggerate the role of these dichotomies in initiating philosophical movements: rationalism, skepticism, idealism, empiricism, pragmatism, and positivism have all been driven by some or all of these dichotomies. In repudiating the analytic-synthetic distinction, NAS calls into question this entire line of philosophical distinctions.

²³ Englewood Cliffs: Prentice Hall, 1970.

²⁴ La Salle: Open Court, 1973.

²⁵ Cambridge: Harvard, 1990.

From a historical perspective, therefore, NAS is a revolutionary thesis, challenging some of the most fundamental assumptions of philosophy and offering an altogether new approach to basic philosophical problems. In contrast, CP treads on well-known grounds, being a variant of the logical positivist account of knowledge and an offspring of classical empiricism. From the point of view of their critical as well as their innovative potential, NAS is unquestionably of far greater philosophical interest than CP.

(3) *Strength of thesis.* I shall present an outline of three epistemic arguments in support of NAS.

(a) *A sound methodological principle.* One of the consequences of the analytic-synthetic dichotomy is a rigid methodology of confirmation and infirmation: synthetic truth is a matter of fact and is therefore confirmed or infirmed by whatever counts as factual evidence with respect to it; analytic truth is a matter of something other than fact, hence there is no such thing as factual evidence for (or against) it. Synthetic statements are justified by appeal to the world; analytic statements by appeal to *X*, where *X* is language, method, convention, thought, mind, and so on. *Synthetic truths are vulnerable to experience, analytic truths are immune to experience.* This methodological principle has never been adequately established. Indeed, one of the lessons that history has taught us is that no statement is immune to experience, and many revisions blur the line between the factual and the pragmatic: "Revision even of the logical law of excluded middle has been proposed as a means of simplifying quantum mechanics; and what difference is there in principle between such a shift and the shift whereby Kepler superseded Ptolemy, or Einstein Newton, or Darwin Aristotle?"²⁶

Hilary Putnam's²⁷ analyses of three episodes in the history of science—the replacement of Newton's definition of kinetic energy by Einstein's, the passage from Euclidean to non-Euclidean physical geometry, and the development of a nonstandard logic for quantum mechanics—further support Quine's claim. Putnam concentrates on the factual element in the revision of "analytic" items. The revision of definitions, logical laws, and mathematical theories, according to Putnam, does not have to be conducted on a separate level of

²⁶ "Two Dogmas of Empiricism," p. 43.

²⁷ "The Analytic and the Synthetic," in *Mind, Language and Reality: Philosophical Papers*, Volume 2 (New York: Cambridge, 1975), pp. 33-69, and "The Logic of Quantum Mechanics" in *Mathematics, Matter and Method: Philosophical Papers*, Volume 1 (New York: Cambridge, 1979, second edition), pp. 174-97.

inquiry (presumably, the level of metatheory) or guided by a special set of norms (presumably, purely pragmatic norms). Rather, in the course of scientific change, a definition may come to be treated as an identity statement (a law of nature),²⁸ an abstract geometry as a physical theory (a theory of the geometrical features of physical space), and a logic as a method of reasoning for a particular formal structure (a structure of objects possessing certain formal characteristics). In this way, the laws of logic are, in principle, vulnerable to the world: if the formal behavior of objects conflicts (in some “deep” way) with a particular logic, then this logic is challenged by the behavior of those objects.²⁹

Using the metaphor of a battle between *nature* and *humanity* to represent the pursuit of knowledge,³⁰ we can describe the methodological rationale for NAS as follows: the analytic-synthetic dichotomy creates a false line of defense against nature. Nature, the analytic-synthetic dichotomy induces us to believe, is in principle incapable of threatening the analytic zone of our knowledge. But nature might (and some say, does) find ways to encroach upon this zone. The analytic-synthetic policy of complacency in the analytic zone, careful measures for establishing the correctness of our theories in the synthetic zone, is therefore unwarranted. We do not know in advance where nature will choose to strike next, and by restricting our defenses to the synthetic front of knowledge, are we not creating an epistemic Maginot line? As a matter of prudent strategy,

²⁸ Putnam uses Albert Einstein’s definition of kinetic energy to exemplify the similarity between definitions and laws. The definition of kinetic energy, according to Putnam, is motivated by the same kind of considerations and has the same kind of role in Einstein’s theory as such bona fide laws as ‘Moving clocks slow down’ and ‘Nothing exceeds the speed of light’—“The Analytic and the Synthetic,” pp. 42-46. The treatment of definitions as identity statements is also familiar from logical semantics: If T and T' are theories formulated within the framework of standard logic, and T differs from T' only in having ‘ $a =_{df} f(b)$ ’ where T' has ‘ $a = f(b)$ ’ (or in having ‘ $Ax =_{df} Bx$ ’ where T' has ‘ $(\forall x)(Ax \equiv Bx)$ ’), then T and T' have exactly the same models, exactly the same logical consequences, and so on, that is, T and T' are model-theoretically indistinguishable.

²⁹ This way of looking at logic is common among quantum logicians. The rules of classical logic, these logicians argue, are “obeyed” by systems of objects embeddable in a Boolean structure, but systems exhibiting other formal structures, for example, the structure of a nondistributive complemented lattice, require a different logic. See Putnam, “The Logic of Quantum Mechanics”; David Finkelstein, “Matter, Space and Logic,” in Robert S. Cohen and Marx W. Wartofsky, eds., *Boston Studies in the Philosophy of Science*, Volume 5 (Boston: Reidel, 1969), pp. 199-215; and R.I.G. Hughes, *The Structure and Interpretation of Quantum Mechanics* (Cambridge: Harvard, 1989), chapter 7. This way of looking at logic may also underlie Alfred Tarski’s statement that “certain...experiences of a very fundamental nature may make us inclined to change just some axioms of logic”—Morton White, “A Philosophical Letter of Alfred Tarski,” this JOURNAL, LXXXIV, 1 (January 1987): 28-32, here pp. 31-32.

³⁰ The metaphor is taken from Jaakko Hintikka; see, for example, his “Language-Games for Quantifiers,” in *Logic, Language-Games and Information: Kantian Themes in the Philosophy of Logic* (New York: Oxford, 1973), pp. 53-82.

it is incumbent upon us to maximize the maneuverability of our cognitive resources, and just this is accomplished by NAS.

One possible objection to this line of reasoning can be formulated as follows: granting the unpredictability of nature, it is still not clear how nature can surprise us when it comes to our own concepts. If the concept of *A* includes the concept of *B*, what can nature do about it? How can nature falsify our judgment that every *A* is a *B*? This challenge can be expressed both in Kantian and in positivist terms: in Kantian terms, the claim is that some truths are grounded exclusively in meaning; the positivist claim is that some statements are true by postulation. Quine's response to the positivist challenge appears in "Carnap and Logical Truth" (1954) where he argues that viewing any statement as true by postulation is committing a genetic fallacy.

(b) *The genetic fallacy argument.* The genetic fallacy is, traditionally, a fallacy of relevance: the genesis of a statement *Z* has nothing to do with the rationality of upholding *Z*. Quine's genetic fallacy argument proceeds as follow. Suppose a statement *Z* made it into our corpus of knowledge on grounds of analyticity. What is the significance of this? It shows that at a particular moment in the history of our corpus, *Z* was accepted based on postulation. But this has nothing to do with the reasons for maintaining (or readmitting) *Z* at a later stage in the development of our corpus. Analyticity and syntheticity are no more than genealogical properties of statements—significant *historically*, but not *normatively*. Normatively, our task is to develop a correct theory of the world. Eventually, our postulates must earn their place in our theories not just in virtue of being convenient but also in virtue of being true.³¹

A similar argument by J.G. Maaß³² was presented in 1790 against Kant's version of the analyticity claim. Whether a given statement satisfies Kant's conditions on analyticity varies, according to Maaß, from speaker to speaker and from one occasion of speech to another:

³¹ The requirement of establishing the truth of postulates is commonplace, according to Quine: any theoretical hypothesis is, at the time it is made, no more than a conventional postulate (being justified by nothing more than "the elegance or convenience...[it] brings to the containing body of laws and data"), and therefore the process whereby we test it for agreement with experience is just the process whereby a conventional postulate is tested for truth—"Carnap and Logical Truth," p. 396. The need to prove the truth of postulates arises also in mathematics, where postulates are often thought of as *obviously* (rather than conventionally) true. Thus, Georg Cantor, for example, held the well-ordering principle to be a self-evident postulate, only later to require a rigorous proof of this principle. See Gregory H. Moore, *Zermelo's Axiom of Choice: Its Origins, Development, and Influence* (New York: Springer, 1982), sections 1.5 and 1.6.

³² Maaß's article, "On the Highest Principle of Synthetic Judgments in Relation to the Theory of Mathematical Certainty," appeared in the second volume of the anti-Kantian journal *Philosophisches Magazin*; see Henry E. Allison, *The Kant-Eberhard Controversy* (Baltimore: Johns Hopkins, 1973), pp. 41-45.

some speakers arrive at 'A is B' by being taught that the concept of B is included in the concept of A, others, by observation; some speakers *extend* their knowledge by adding 'A is B' to their corpus, others (or the same speakers on other occasions) do not. Kant (through a review by J.G. Schulze³³) rejected Maaß's criticism on the ground that relations between concepts are fixed: we can change the reference of our words, but not the reference of our concepts. Quine, however, denies the "fixity" of concepts, and his own account provides a new theoretical basis for Maaß's criticism.

(c) *The nonfixity of concepts.* The traditional analytic-synthetic distinction involves the assumption that our concepts are fixed: there is a fixed fact of the matter concerning the content (meaning, reference, composition) of our concepts, hence there are immutable relations between them; theories change, concepts are permanent. Against this view, Quine introduces his principle of the nonfixity of concepts. This principle is closely related to his thesis of the inseparability of language from theory, according to which the meaning of terms is inextricably tied with theories in which they occur: the meaning of 'atom' with theories of matter, the meaning of 'light' with optical theories, and so on.³⁴ It follows from this thesis that change in theory involves change in the content of our concepts, that is, the content of our concepts is not fixed.

Quine's thesis of the nonfixity of concepts is deepened and expanded by Putnam in "The Analytic and the Synthetic." Putnam establishes the nonfixity of concepts on two grounds: (i) a Wittgensteinian analysis of certain scientific concepts as (in effect) "family resemblance" concepts, and (ii) the observation that sometimes scientific concepts emerge from a radical change in theory

³³ Review of the second volume of the *Philosophisches Magazin*; see Allison, pp. 174-75.

³⁴ Even in literature our use of terms is affected by theory. Thus, in "A View from Elm Street," Umberto Eco points out that: "The bible obliges its readers to interpret a whale as a big fish; contemporary novels presuppose that whales are to be interpreted as mammals. When Melville seeks to play a *double jeu* and to tell of a whale that must be considered at the same time as both a fish and a mammal, he spends an entire chapter making his readers eager to overlap two different encyclopedias"—Paulo Leonardi and Marco Santambrogio, eds., *On Quine: New Essays* (New York: Cambridge, 1995), pp. 22-36, here p. 24.

changed in content but unchanged in identity. Explanation: Putnam observes that some scientific concepts are interwoven in our theories in such a way that their content is determined by the cluster of laws associated with those theories. (The concept of energy, for example, is embedded in a cluster containing the law of conservation of energy, laws concerning chemical, gravitational, and nuclear energy, laws relating energy to mass and momentum, and so on.) A change in some of these laws results in a change in the content of those concepts, but since those concepts are connected with a host of other laws (which presumably do not all change at once), their identity is preserved across time. Whether and in what way a given law cluster concept will change its content is an open question, according to Putnam: nothing in the concept itself can protect it against change. He restricts his analysis to certain "privileged" concepts of physical science: "energy," "light," "straight line," and so on. But (as Putnam is well aware) there is nothing in his analysis to exclude other concepts from exhibiting the same behavior. Indeed, it follows from the genetic fallacy argument that even concepts originally introduced by convention can become interwoven in our theories in the way Putnam describes. (He claims that at every stage in the development of science some concepts must play the role of "fixed points." This claim granted, it does not follow that the same concepts must play this role at every stage, that is, that there are inherently "fixed" concepts.) The view that all concepts are, in principle, sensitive to change in theory is tantamount to Quine's thesis of the inseparability of language from theory. It follows from this claim that no statement is guaranteed to be true by the "fixed" meaning of its terms, that is, no statement is analytic in the traditional sense.

This completes my outline of a defense of NAS: exegetically, Quine is strongly committed to NAS; historically, NAS is a revolutionary thesis of much philosophical interest; and substantively, NAS is supported by three epistemic principles: (i) the principle of maximizing the maneuverability of our cognitive resources, (ii) the principle of the normative insignificance of the genesis of our theories, and (iii), the principle of the nonfixity of concepts.

B. Second solution: withdraw CP. The motivation for this solution is straightforward: If NAS is worth preserving and CP is incompatible with NAS, why not eliminate CP?

Disputation. We cannot eliminate CP *tout court*, since some positive model of knowledge is needed to validate NAS. Furthermore, CP, in its present form, makes two indispensable contributions to Quine's

theory: (1) it gives structure to his holism, (2) it provides a link between knowledge and reality in his epistemology.

(1) *Structuring holism.* Without something like the center-periphery duality, Quine's system of knowledge is a formless body of haphazardly interrelated statements. Such an amorphous holism is obviously unacceptable. First, it lacks explanatory power: to give an explanatory account of knowledge is to impose a meaningful structure on its elements. Second, it renders our body of knowledge utterly unmanageable: a structureless object can be grasped either in its entirety, hence in one act of cognition, or not at all; but our system of knowledge is obviously too large, too complex, and too open ended to be grasped in one act. Conclusion: a viable holism must impose a manageable structure on our body of knowledge; that is, a viable holism is not just a structured holism; it is a structured holism with a manageable structure.³⁵

CP introduces both structure and simplicity into Quine's holism. It postulates a relatively simple structure of knowledge: a field or a sphere with two distinguished zones. The one zone—*center*—is the center of interconnectedness, the other zone—*periphery*—marks the outer reaches of the system. From the center, our body of knowledge stretches outward toward the periphery, moving gradually from the universal to the particular, from the general to the specific, from the abstract to the concrete, from the conventional to the factual, until reaching its outer boundaries. The periphery is linked to the center by a network of cognitive routes (routes of deductive and statistical inference; routes of abstraction and generalization; routes of application and instantiation; routes of revision, explanation, justification; and the like), and it is through this network of roads that information, evidence, and other epistemic commodities move across the system.

(2) *Anchoring knowledge in reality.* By itself, Quine's holistic conception of knowledge with its principles of interconnectedness, universal revisability, NAS, pragmatism, and so on is compatible with a coherentist or even an idealistic epistemology. Any system of statements will satisfy these principles, provided certain conditions having to do with the internal structure of the system are satisfied. The transformation of Quine's holistic theory of knowledge into a theory

³⁵ Dummett's criticism of NAS in *Frege: Philosophy of Language* is based on the (mistaken) assumption that NAS itself implies a structureless holism. Some of Jerry Fodor and Ernest Lepore's criticisms in *Holism: A Shopper's Guide* (Cambridge: Blackwell, 1992) are also directed at a structureless holism.

of knowledge of reality is accomplished by CP. CP delineates the inner structure of our system of knowledge in relation to reality. It anchors our corpus of knowledge in reality, on the one hand, and in language (the mental), on the other. Our corpus is linked to reality through the periphery, and the impact of reality permeates the corpus due to interconnections between its elements. These interconnections are regulated in the center, where the influence of language, method, mind, pragmatic norms, and so on is most strongly felt. Changes may take place anywhere in the sphere, but all changes must square with reality (directly or indirectly) through the periphery. Even a theory as highly removed from experience as Einstein's general relativity theory must square with experience through the periphery, that is, via crucial experiment. If we call the requirement that our system of knowledge be anchored in reality *realism* (or *minimal realism*), then a theory of knowledge based on NAS requires something like CP to render it (minimally) realistic.

In making these contributions to Quine's epistemology, however, CP assumes the form of an ultratraditional model: one fixed center—the site of logic, mathematics, and philosophy—surrounded by scientific theories whose supporting evidence (in the form of experiential reports) is transported from the periphery. We may liken this structure to a traditional industrial economy: one metropolis—the locus of capital, services, means of communication—surrounded by industrial sites whose raw materials are transported from quarries and mines across the country. The system as a whole is interconnected, but the norms governing its center and periphery are radically different: the norms governing statements in the center have to do with the quality of “general services,” those governing statements in the periphery—with the quality of “raw materials” (the embeddedness of the system in reality). It is this rigid division of the cognitive norms that is irreconcilable with NAS.

IV. THIRD SOLUTION: FROM AN ABSOLUTIST-STATIC MODEL TO A CONTEXTUAL-DYNAMIC MODEL

Our analysis suggests that NAS is an innovative thesis of much philosophical interest, while CP makes an important contribution to demonstrating its epistemic viability. Neither thesis should be eliminated, yet the two stand in a fundamental tension. A natural way of resolving the problem is by reconfiguring CP, that is, identifying those elements of CP which are responsible for the conflict and replacing them by other elements in agreement with NAS.

My solution is based on the following observation: there is no conflict between the idea, systematized by CP, that the two main sources

of knowledge are language and the world, and the idea, central to NAS, that the division between them within a given statement is neither fixed nor lasting. Rather, the root of the conflict is the assumption, implicit in CP, that each statement, and, by extension, each theory, is located within a fixed region of the sphere—within a fixed distance from its center and boundary—and this distance is determined by the ratio of conventional to experiential factors in its truth and justification. The presumption of a fixed location involves the requirement that a fixed range of experiences and a fixed range of conventions be associated with each statement, but exactly this is contested by NAS. It is thus not the existence of two distinct sources of knowledge, metaphorically referred to as “center” and “periphery,” that is the source of the conflict; rather, it is the postulation of fixed factual conditions and fixed conventional conditions for the truth and justification of each statement that is responsible for it. The fixity requirement has two dimensions: (i) at any given point in the duration of our corpus each statement occupies a fixed (unique, absolute) position within the sphere, and (ii) while in the course of history a statement may change its exact location (for example, as a result of a re-axiomatization of a theory to which it belongs), its general area as well as its rough distance from the center and the periphery remain the same. This is true especially of observation statements, which always occupy the periphery, and of logico-mathematical statements, which are always in the center.

My solution to the inner conflict in Quine’s theory lies in replacing this traditional, static, and absolutist model by a new, dynamic, and contextual model. There are still two zones, corresponding to the two basic constituents of human knowledge, but no fixed distribution of statements and theories within the model. As a theory of the formal laws governing structures of objects—for example, the laws relating identity to cardinality—logic is in the periphery; as a theory of the logical laws governing statements and sets of statements, logic is in the center. As a theory saying that a structure of all identical objects is a structure of one object, logic is about the world; as a theory saying that the statement ‘All objects are identical’³⁶ implies the statement ‘There is exactly one object’, logic is about language. As a theory of the formal structure of “real” objects (configurations of objects), logic is anchored in reality; as a theory of

³⁶ Or, rather: ‘All objects are identical to some object’.

the formal structure of our thought of objects, logic is embedded in the mental. A similar duality exists in other disciplines. Take zoology, for example: as a theory of the hierarchy of life, it is in the periphery; as a system of concepts of life (as a hierarchy of zoological concepts), it is in the center.

Normatively, the project of knowledge consists of two tasks: the task of constructing a serviceable set of conceptual tools, and the task of constructing a correct and informative theory of the world. Accordingly, our system of knowledge is measured by standards of two types: substantive standards—truth, confirmation, prediction, explanation; and pragmatic standards—economy, convenience, utility. In constructing a system of knowledge, we move back and forth between the center and the periphery: we set out to improve the overall usefulness of our conceptual apparatus, and we set out to verify the correctness of our theories. Each theory in our corpus must square off with some facet of reality: logic with the formal behavior of objects, physics with their physical behavior. Given a conflict with reality, we are given great latitude in devising a solution. We may resolve the conflict by making changes in our physical theory of the world, keeping logic “fixed” in the background; or we may resolve it by changing our theory of the formal structure of the world, keeping the physical laws “fixed” in the background. We may resolve the conflict by placing physics in the “front” (periphery), logic in the “rear” (center); or we may resolve it by placing logic in the front, physics in the center. By holding our notion of physical object fixed, we constrain the variability of our logic; by holding the laws of logic fixed, we restrict the variability of our physics. Ontology plays a similar role, as do other branches of philosophy. Philosophy, on this picture, is not above (or below) the sciences; rather, philosophy—through its theories of logic, object, truth, rationality, and the like—faces the court of knowledge both in the center (on the level of concepts and method) and in the periphery (on the level of fact), just like other sciences. And like other sciences, philosophy has its own identity, methods of inquiry, and relative autonomy. (Philosophy is not reducible to empirical psychology.)

While Quine's narrow naturalism is rejected by our model, many of his early theses are integrated into it: NAS, the interconnectedness of knowledge, the universal revisability of beliefs, the inseparability of language from theory, (minimal) realism, scientific empiricism, antifoundationalism, and certain important features of the center-periphery duality. In particular, the new model continues to make the two main contributions of the original CP: (i) structuring the interconnections

between statements (and between theories), and (ii) linking our system of knowledge to reality. Unlike the old model, however, the new model is dynamic and contextual: at each stage in the development of our corpus, each science lies closer to the periphery in some contexts, closer to the center in others, and in the course of history, sometimes one constellation of theories, sometimes another, occupies a more prominent place in the periphery.

Methodologically, the new model is both (highly) pragmatist and (moderately) metaphysical: *pragmatist* in the idea that given a conflict, we have great latitude in maneuvering our cognitive resources; *metaphysical* in the idea that some conflicts with reality are best met by placing logic, philosophy, and mathematics in the periphery. Such a combination of metaphysics and pragmatism is, according to Quine, characteristic of NAS: "One effect of abandoning [the traditional dogmas] is...a blurring of the supposed boundary between...metaphysics and natural science. Another effect is a shift toward pragmatism."³⁷

V. THE NEW CP: AN OUTLINE AND CRITICAL REMARKS

To clarify the structure, scope, and ramifications of the new CP, both as a critical interpretation of Quine's theory and as a model standing on its own, I shall offer a concise outline of the model. The outline will center on the two dimensions along which concepts, statements, and theories shift their position within the model: the *time dimension* and the *context dimension*. It is quite clear that the addition of these dimensions to the old CP does not detract from its ability to represent the Quinean themes of interconnectedness, universal revisability, inseparability of language from theory, pragmatism, and so on. The outline will focus, therefore, on the movement of statements and theories along the two dimensions, the sense in which logic and philosophy lie (in certain respects and at certain times) in the periphery, the normative principles (associated with NAS) underlying the model, and some of the model's ramifications for outstanding philosophical problems. In drawing the outline, I am aiming at clarity and, to a certain extent, systematicity, but not at a comprehensive or exhaustive account. While the outline expands the exegetical basis of my solution by drawing upon Quinean ideas not considered in earlier sections, it is important to remember that the model is intended as a *critical* interpretation (and development) of Quine's theory, and as such it diverges from Quine on certain significant points.

³⁷ "Two Dogmas of Empiricism," p. 20.

The center-periphery metaphor is interpreted as a "family" of dualities: "fact versus convention," "objects versus concepts," "front versus rear of knowledge," and so forth.

Two dimensions of change: the most distinctive characteristic of the new CP (compared with the old one) is the "movement" of cognitive elements along two axes: *time* and *context*. Diachronically, the new model is dynamic, that is, as our body of knowledge develops, the deployment of concepts, statements, and theories within it changes in response to changing circumstances. Synchronically, the new model is contextual, that is, at each stage in the development of our system each statement, concept, and theory falls within a multiplicity of contexts, and viewed from the varied perspectives of these contexts, its position within the system changes. In the extreme case, statements (concepts, theories) shift their position from the center to the periphery and from the periphery to the center.

A. Contextual change. We can distinguish two (complementary) ingredients of contextual change: (1) *multiplicity of perspectives*, (2) *multiplicity of factors*.

(1) *Multiplicity of perspectives.* Change in perspective may lead to change in orientation: viewed from one perspective, a concept, statement, or theory is world oriented, viewed from another, language or mind oriented; viewed from one perspective, a given subject matter is factual, viewed from another, mental or conceptual. I shall consider two sources of such change in perspective: (a) *the two-sidedness of language*, (b) *the plurality of human interests*.

(a) *The two faces of language; semantic ascent and objectual descent.* One source of the multiplicity of perspectives is the two-sidedness of language. It is an old observation (made by medieval philosophers) that sentences in general can be read both in the linguistic mode and in the factual mode. Take, for example, the sentence 'Whales are mammals'. Read in the linguistic mode, this sentence says that 'whale' is subsumed under 'mammal'; read in the factual mode, it says that whales possess the characteristic properties of mammals. Read in one mode this sentence is language oriented, read in the other, world oriented. One important vehicle of such change in orientation is the truth predicate. The truth predicate enables us to speak about the world by speaking about language, and to speak (in certain ways) about language by speaking about the world. Instead of saying that snow is white, we can say that 'Snow is white' is true, and instead of saying that 'Snow is white' is true, we can say that snow is white. Quine introduced the term *semantic ascent* for one di-

rection of this shift; I shall use *objectual descent* for the other direction.

(i) *Truth is both language and world oriented.* The dual principle of semantic ascent—objectual descent is encapsulated in the truth schema. But the truth schema itself, according to Alfred Tarski and Quine, allows both a linguistic and a factual reading. Read in the linguistic mode, the truth schema is a disquotational schema; read in the factual mode, a correspondence schema. Under one reading, truth has to do with an intralinguistic relation; under the other, with a relation between language and the world. While the two readings yield the same *T* sentences, their explanation of truth is radically different. The disquotational account of truth is linguistic, the correspondence account, metaphysical; the disquotational notion of truth is language oriented, the metaphysical notion, both language and world oriented.

(ii) *Objectual descent: logic is world oriented.* The principle of objectual descent provides one explanation of logic's presence in the periphery. It follows from this principle that the logical laws, despite their appearance (for example, in the case of sentential logic) as laws governing the behavior of language, reflect certain regularities in the behavior of the world. In Quine's words: "Logical theory, despite its heavy dependence on talk of language, is...world-oriented rather than language-oriented; and the truth predicate makes it so.... [T]he truth predicate is...doing an active job of separating logic from language."³⁸ And elsewhere he says: "Consider...the logical truth 'Everything is self-identical', or ' $(x)(x=x)$ '. We can say that it depends for its truth on traits of the language (specifically on the usage of '='), and not on traits of its subject matter; but we can also say, alternatively, that it depends on...[a] trait, viz., self-identity, of its subject matter, viz., everything."³⁹ On the second interpretation, the law of self-identity is world oriented.

(iii) *The epistemic priority of the factual: the immanence of knowledge.* While statements and theories within the model are both fact and language oriented, epistemically their factual orientation takes priority over their linguistic orientation. The epistemic primacy of the factual is tantamount to Quine's thesis of the *immanence of knowledge*. This thesis says that we know the world through our theories—that is, from a standpoint internal to our theories—but speaking from

³⁸ *Philosophy of Logic*, p. 97.

³⁹ "Carnap and Logical Truth," p. 390.

within a theory is speaking factually. We use words (in our theories) to speak about objects, and in so doing we give priority to their factual reading. (We can view this as the principle of "use over mention"). The epistemic priority of the factual over the linguistic means that all knowledge is, in a certain basic sense, fact or periphery oriented. This principle is reflected in Quine's claims that logic is "world-oriented rather than language-oriented," and that mathematics and ontology are about "what there is."

(iv) *Philosophy is fact oriented.* The immanence of knowledge means that all sciences are fact oriented. We can explain the way this principle applies to philosophy (even beyond logic and ontology) by contrasting the factuality of philosophy with its alleged conventionality. Consider Kant's epistemology once again. The motivation for his "Copernican revolution" is, as we saw in section II, largely pragmatic: all attempts to establish knowledge based on the traditional conception of the relationship between the knower and the world have failed; let us see whether by turning this relationship around we shall not be able to arrive at a better theory. But the theory constructed based on this move makes *factual* claims about its subject matter, namely, human knowledge. Speaking in terms of aims of theory, we can say that Kant's theory aims not just at an expedient account of human knowledge, but also (and indeed primarily) at a correct account. Kant's goal is to identify the real conditions for the possibility of knowledge (not some convenient pseudo conditions), to give a correct analysis of the basic structure of our cognition (not a convenient fiction about its structure), and to provide a valid proof of the possibility of human knowledge (not the semblance of a valid proof, that is, a chain of statements that can conveniently be imagined to be a valid proof). Kant aims at a correct theory of the structure and possibility of human knowledge, and in this sense his theory, and philosophy more generally, is oriented toward the periphery. This is perhaps the deepest sense in which philosophy lies in the periphery. Philosophy seeks to obtain an understanding of knowledge, truth, morality, valid inference, and so on as they in fact are: their true factors, true structure, true possibility, true difficulties—all as they truly or factually are, not as we may conveniently wish, or imagine, or postulate them to be.

Critical note: the factuality of philosophy means not that philosophy is less pragmatic than other sciences, but rather that the norms of truth (accuracy, absence of error, and so on) are as central to philosophy as they are to other sciences.

(b) *Multiplicity of interests.* Another important source of the multiplicity of perspectives is the multiplicity of interests. The multiplicity of interests leads to the development of multiple theories of the same subject matter. Take the subject of correct reasoning, for example. By studying correct reasoning from a purely theoretical standpoint, we arrive at a “pure” logic; while by studying it from a point of view encompassing both the practical and the theoretical, we arrive at a (general) theory of rationality. Differences in perspective may lead to radical differences in our conception of a given subject matter: by thinking of the logical laws as laws of the interaction of physical properties (properties of physical states), quantum logicians have come to view them as empirical; by thinking of these laws as governing the manipulation of symbols, the formalists came to view them as conventional. Different perspectives may either agree or disagree with one another: the intuitionistic viewpoint on logic competes with the classical viewpoint, whereas the modal viewpoint leads to its extension. Different theories of the same subject matter are located in different areas of the field: a psychological theory of reasoning lies closer to the periphery (in the traditional sense of site of experiment and observation), a “pure” logical theory closer to the center.

Critical note: not every point of view on every subject matter is validated by the model. That is, the model does not represent a methodology of “anything goes.” On the contrary: it is a central principle of the new model (closely related to its representation of NAS) that every theory is subject both to the norms of truth (accuracy, avoidance of error, justification, explanation) and to the norms of efficiency (simplicity, unity, generality, fruitfulness, and so on). And this means that the standards for the acceptance of a given viewpoint as a basis for a new theory are higher in the new model than in either the traditional or the positivist models. We can express this by saying that each theory is subject not just to the norms of utility but also to the norms of truth, and not just to the norms of truth but also to the norms of utility. As a result, most points of view on a given subject matter are rejected by the model (or rather by a world theory concordant with it) either as conducive to error or as inexpedient, unfruitful, and so on. Nevertheless, the principle of a multiplicity of viewpoints is affirmed by the model.

(2) *Multiplicity of factors.* The contextual mobility and malleability of subject matters, statements, and theories within the model is not, primarily, a subjective matter, having to do with our personal choices, whims, and proclivities, but (to a large extent) an objective

principle, having to do with the multifariousness of the world and the plurality of factors constraining the knower.

(a) *Multiplicity of factors constraining the knower; knowledge is not a mirror representation of reality.* The view that knowledge is largely shaped by factors having to do with the knower is characteristic of many epistemologies. Kant, and, in a different way, contemporary psychologists, linguists, and cognitive scientists, view mental structures as playing a crucial role in determining our theory of the world. The logical positivists emphasize the importance of pragmatic factors in shaping our knowledge. Following Thomas Kuhn, many philosophers, historians, and sociologists of science see scientific knowledge as largely determined by social, psychological, political, and environmental factors. The new model accepts the general principle underlying these epistemologies. It follows from this principle that knowledge is not a simple picture of reality (words are not mere labels of objects; sentences and theories are not mirror images of "facts"), but numerous factors residing in the knower intervene between our world theory and the world.

Critical note: the existence of factors residing in the knower does not conflict with the applicability of the norms of truth. A street map is not a mirror image of a city, but relative to certain well-defined goals and standards, it is either a correct or an incorrect image of it. Likewise knowledge, in the present model, is not a *mirror* representation of reality, but it is (or is required to be) a *correct* representation of it. This inner duality is inherent in NAS: our statements and theories, according to NAS, are both conventional and factual; both governed by the norms of "simplicity, familiarity, scope, and fecundity,"⁴⁰ and subject to the norms of truth and evidence. This duality extends to ontology: the objects of our theories, according to Quine, are both "posits" and "what there is"; as "posits" their knowledge conforms to the norms of utility, as "what there is," to the norms of truth. The model explains this two-sidedness of knowledge by its double origin in the world and the mind. The interaction of "worldly" and "human" factors is not treated as a mystery by the model, but as something for theories within it (epistemology, psychology, biology, sociology, and so on) to account for.

(b) *Multiplicity of factors concerning the world; the factuality of mathematics, logic, and ontology.* The model admits not only multiple factors re-

⁴⁰ See "Posits and Reality," in *The Ways of Paradox and Other Essays*, pp. 246-54, here p. 247.

siding in the knower, but also multiple factors residing in the world. The multiplicity of worldly factors is related to the diversity of the world. Different factors—connected with different parts, features, and aspects of the world—contribute to our knowledge, and the plurality of these factors partly explains the plurality and diversity of our theories. It is commonplace to say that physics investigates a different “region” of reality from biology; but in the new model this view extends to logic, mathematics, and philosophy. Scientists, from Copernicus to Einstein, regarded physical reality as exhibiting not only material features but also formal (mathematical) structure. The factuality and distinctiveness of mathematics are predicated, in part, on the reality and distinctiveness of such structures. The view that logic is grounded in special features of reality is suggested by Quine when he says: “admittedly [logical truth] depends upon none of those features of the world that are reflected in the lexical distinctions; but may it not depend on other features of the world, features that our language reflects in its grammatical constructions rather than its lexicon?”⁴¹ Ontology, according to Quine, is also concerned with certain features of reality, namely, properties of objects of an especially broad nature: “The question what there is is a shared concern of philosophy and most other non-fiction genres.... What distinguishes between the ontological philosopher’s concern and [the zoologist’s, physicist’s and mathematician’s concerns] is... breadth of categories.”⁴²

Critical note: in considering the claim that logic and mathematics are (in certain respects) located in the periphery, it is important to note: (i) this claim does not imply that logic and mathematics are empirical; (ii) this claim is not tantamount to Platonism. In fact, neither extreme empiricism (the view that a priori, all knowledge is restricted, or reducible, to empirical knowledge) nor Platonism (the belief in a “third realm”) is compatible with the model.⁴³

(c) *Multiplicity of factors underlying institutions; reconciling holism and compositionality.* The principle of multiplicity of factors applies not just to the knower and the world but also to the institutions of knowledge. Take the institution of language, for example. The model

⁴¹ *Philosophy of Logic*, p. 95.

⁴² *Word and Object*, p. 275.

⁴³ Quine himself emphasizes that empiricism is not “hard wired” into his model (see “Two Dogmas,” p. 44). His espousal of scientific empiricism is motivated by pragmatic considerations, but these considerations do not apply to mathematics. This explains why, for Quine, mathematics is nonempirical, albeit continuous with empirical science.

permits us to affirm both the holistic nature of language (the fact that the meaning of any term may, in certain respects and under certain conditions, be affected by that of any other term) and its compositionality (the fact that the meaning of complex terms depends, in some systematic way, on the meaning and mode of composition of simpler terms).⁴⁴ The two are allowed to co-exist as two independent factors whose complex pattern of interaction is a matter for linguistics, psychology, sociology, the philosophy of language, and other theories within the model to investigate. By combining holism with discrete constituents, the model is "organic" in Dummett's sense.

(d) *Observation: multiplicity of factors as richness of structure; enhanced explanatory power.* The multiplicity of factors characteristic of the new model amounts to richness of structure. The model portrays the process of knowledge as an intricate process, involving numerous factors and constituents, dynamically interacting with each other. By allowing rich structures, the model's ability to deal with complexity and diversity is enhanced. In particular, the model is capable of reconciling elements which, in a simpler model, would appear to conflict with each other—for example, holism and compositionality, as discussed above. Indeed, the difference between the old model and the new one can be explained by richness (poverty) of structure. By taking into account a relatively small number of factors, the old model delineates a very simple structure of knowledge: a static and rigid structure with a "fixed" center and a "fixed" periphery, simulating the analytic-synthetic division. By adding two new dimensions (two new clusters of factors) to the old model, the new model adds movement and complexity to its structure, relativizing its center-periphery duality to context and time and reconciling it with NAS.

B. Change in Time. I shall note three types of diachronic change, corresponding to three aspects of the center-periphery duality: (1) *factual orientation versus conceptual orientation*, (2) *"front" versus "rear" of knowledge*, (3) *variant versus invariant ("fixed") constituents of knowledge*.

(1) *Change from factual to conceptual orientation (and vice versa).* (a) *Developmental change.* At each stage in its development, each (viable) science has both factual and conceptual interests, but at different periods in its development different interests may play a more, or less, dominant role. How to classify each period in the history of a given

⁴⁴ My use of 'compositionality' here is broader than usual. It covers any semantics which analyzes complex structures by a finite algorithm based on their parts, including, in addition to Tarskian semantics, Leon Henkin's functional semantics for partially-ordered quantifications, Hintikka's game-theoretic semantics for IF languages, and others.

science is a matter for the historian and philosopher of science to determine, but during periods of major conceptual advances the science moves closer to the center, during periods of intensified factual investigations (either in the sense of experiment and observation, or in the sense of theoretical development) it veers toward the periphery. Logic and mathematics, too, alternate between the factual and the conceptual: the introduction of the modern quantifiers by Gottlob Frege, for example, is naturally viewed as a conceptual contribution, while Kurt Gödel's discovery of the incompleteness of arithmetic is, in an important sense, a factual contribution. All scientific revolutions, according to Kuhn, involve major changes in conception and methodology (both practical methodology and theoretical methodology); such changes are represented in the model as occurring (largely or partly) in the center.

(b) *Change in grounds and significance.* The same statement or theory can be accepted based on one ground during one period, based on another during another (the genetic fallacy argument); similarly, its significance may vary in the course of time. For example, it is quite natural to view non-Euclidean geometry as moving from a phase (in the nineteenth century) in which its significance was primarily conceptual (independence of the parallel postulate and generalization of Euclidean geometry to Riemannian geometry) to a phase (in the twentieth century) in which its role and significance are largely factual (a theory of the curvature of physical space).

(2) *Movement from "rear" to "front" of knowledge (and vice versa).* (a) *Movement of whole disciplines.* In the battle against nature sometimes one discipline, sometimes another, occupies the front. It is common to think of the natural and social sciences as occupying this position: physics in 1687 and 1905, biology in 1859, psychology in 1900, and so on. Traditionally, logic and philosophy are regarded as permanently located in the center, "setting the stage" for the battle against nature rather than taking an active part in it. The NAS methodology represented by the model challenges this tradition. Speaking of logic's role in contemporary physics, David Finkelstein says: "[Logic is a] dynamic ingredient in the physical theory, *an actor rather than part of the stage.*"⁴⁵ In the new model, logic plays both the role of an actor and that of managing the stage. As an actor, the challenges taken up

⁴⁵ "Matter, Space and Logic," p. 199.

by logic are of a general and fundamental nature: the challenge of valid inference (transmission of truth from sentences to sentences), the challenge of bivalent and nonbivalent phenomena, and the like. Philosophy, too, is assigned a double role. One of the challenges posed by nature to philosophy is the skeptical challenge, which questions humanity's ability to break out of its "mental cage" and attain "true" knowledge of the world. Philosophy took up the skeptical challenge in René Descartes's *Discourse on Method* and *Meditations*, Kant's *Critique of Pure Reason*, and elsewhere. Quine's 1968 manifesto, "Epistemology Naturalized,"⁴⁶ calls for fighting the skeptical battle on the psychological rather than the philosophical front. Critics of Quine's naturalism claim the challenge cannot be adequately met by psychology. The new model takes no apriori stand in this controversy. The choice of strategy is an open question, to be decided based both on the nature of the challenge and on the availability of resources. The balance of these factors may vary from era to era, and with it the choice of strategy may vary.

(b) *Movement of special issues.* Not only whole disciplines but also single questions can shift their position from the rear to the front. Take the *Entscheidungsproblem*, for example. As posed by David Hilbert in 1900, this problem concerned the existence of a finite procedure for determining the solvability of Diophantine equations. But though a problem of considerable interest for mathematics, it was far from being one of the central issues facing our system of knowledge at the turn of the century. In the 1930s and 1940s, however, the *Entscheidungsproblem* became the focus of a serious challenge (or group of challenges) to our system. This challenge—subsumed under the headings of completeness, decidability, computability, recursiveness, and so on—concerns the scope and limits of a broad class of procedures and functions of special importance for knowledge. With the work of Gödel, Alonzo Church, Alan Turing, Emil Post, John von Neumann and others, the *Entscheidungsproblem* moved to the front of knowledge, leading to some remarkable gains in the battle against nature, as well as to some remarkable losses.

(3) *Change from being a "variant" to being an "invariant" ("fixed") constituent of knowledge (and vice versa).* The idea of the center and the periphery as representing the "fixed" and "varying" constituents of knowledge is a traditional idea: our language, logic, and mathemat-

⁴⁶ *Ontological Relativity and Other Essays* (New York: Columbia, 1969), pp. 69-90.

ics are fixed, experiential knowledge is variable and changing. The new model relativizes this duality both to context and to time. The underlying principle is Otto Neurath's: we build our system from within, by shifting our foothold from one area within it to another. Placing our foothold in area *A*—that is, holding the concepts, laws, and theories of area *A* fixed—we rebuild area *B*; shifting our foothold to area *B* (or to an area intersecting with *B*), we change area *C*; and so on.⁴⁷ The area we hold fixed at time interval *t* is the center at *t*, the area we change at *t*, the periphery at *t*. This Archimedean principle is both dynamic and contextual: we can use *A* as a lever for changing *B* both at a particular time and in a particular context. Among the many ramifications of this principle are:

(i) *Explanation of continuity through change.* One of the main challenges facing any epistemology is the explanation of continuity through change. The problem is especially difficult for theories permitting radical change, like Quine's theory with its universal revisability and inseparability theses, and Kuhn's theory of scientific revolutions as paradigm shifts. In the current literature, the problem is variably referred to as the "incommensurability" problem, the "meaning variance" problem, the "change of theory is change of subject" problem, and the like. The new model is well equipped for handling this problem. Think of the "fixed" area of our system at *t*—the center at *t*—as containing those elements which are stable at *t*. The center is what "glues" the system together, the periphery is the locus of change and revision. During periods of "normal" development, logic, methodology, and general scientific principles are held fixed in the center; during periods of radical change, it is conceivable that some combination of simple observation statements, everyday concepts, common-sense maxims, and logical and theoretical elements (not undergoing change) constitute the center. The exact dynamics of variance and invariance is a research project for various disciplines within the model, but the model itself offers a flexible framework for the explanation of stability through change.⁴⁸

⁴⁷ While the question of circularity arises in this situation, the applicable circularity criterion will have to take into account the nonfoundational nature of the model.

⁴⁸ A similar approach to the stability problem is suggested by Mary Hesse in "Duhem, Quine and a New Empiricism," in Sandra G. Harding, *Can Theories Be Refuted? Essays on the Duhem-Quine Thesis* (Boston: Reidel, 1976), pp. 184-204, and by Gochet, chapter 1, section 6.

(ii) *Foundations without foundationalism*.⁴⁹ By allowing all sciences to occupy the same “structural” positions within the “sphere” (that is, center, periphery, and intermediate positions at varying distances from the two), the model subjects all sciences to the same (highly general) norms. Among these are the norms of *critical evaluation* and *substantive justification*. If we regard these norms as the *foundation norms*, then every science within the model—including sciences that in traditional models are placed at the bottom of the foundational pyramid—requires a foundation. Neurath’s principle allows the model to provide such a foundation. Each science stands in a multitude of normative, conceptual, practical, and theoretical relationships to other sciences, and by selecting an appropriate standpoint among these sciences, we can use their resources to provide it with a foundation. While an a priori, universal foundation—that is, a foundation guaranteed in advance for all contexts and all times—is at variance with the model, its norms of unity, generality, and economy favor broad foundations over narrow foundations.

(iii) *A standpoint for philosophy* (“*immanent transcendence*”). The view that philosophy requires an external standpoint has led philosophers like Ludwig Wittgenstein and Richard Rorty to deny the possibility of a substantive philosophy. A substantive theory of knowledge, for example, requires a viewpoint encompassing our world theory in its entirety, but such a viewpoint is not available to humanity. The new model allows us to reconcile the immanence of knowledge with the transcendence of philosophy. It suggests the possibility of a very broad standpoint: an area of knowledge from which we can view all other areas, both in their relation to each other and in their relation to the world (as seen from the chosen area). The chosen area may offer an indirect view of some of its own regions, as does arithmetic with respect to its own syntax and certain mathematical and scientific theories with regard to their own ontology.⁵⁰ Thus, although an absolute transcendent viewpoint is ruled out by the model, a relative transcendent viewpoint—a point of view transcending all but a makeshift center—is compatible with it. Such a point of view is, indeed, characteristic of the model itself. The model offers a critical outlook on our system of knowledge from a standpoint within it, namely, that of a late twentieth-century view of

⁴⁹ This phrase is taken from the title of Stewart Shapiro’s *Foundations without Foundationalism: A Case for Second-order Logic* (New York: Oxford, 1991).

⁵⁰ See Quine, “Ontological Relativity,” in *Ontological Relativity and Other Essays*, pp. 26-68.

Quine's early theses and the conflict arising from an attempt to represent them by a static, absolutist model.

This concludes my outline of the new CP. The model resolves the inner conflict in Quine's theory by upholding the principle of a center-periphery structure while denying the assumption of a "fixed" distribution of statements and theories within this structure. Every statement and theory lies in multiple areas of the structure, and as such it is not restricted to the norms of any one area. In particular, philosophy is subject both to the norms of simplicity, utility, convenience, and economy (the norms associated with the center), and to the norms of truth, evidence, justification, explanation (the norms associated with the periphery and intermediate sections). As a result, philosophy is both conventional and substantive: both a practical discipline in the positivist tradition, and a factual, theoretical discipline in the image of metaphysics and science.

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