The Cambridge Companion to

QUINE

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ROGER F. GIBSON JR.

Willard Van Orman Quine

Willard Van Orman Quine was born in Akron, Ohio, on June 25, 1908. His father, Cloyd Robert Quine, was an Akron businessman with a machine shop background. In 1917, Cloyd Quine founded the Akron Equipment Company, whose business was the manufacture of tire molds. The business flourished, what with Akron being then the rubber tire capital of the world. Willard's mother, Harriet Ellis Van Orman, was a housewife and public school teacher who taught at a local elementary school for ten years. In his autobiography Quine fondly recalls his mother's culinary skills:

> My mother baked bread and rolls in my early years and the smell beckoned. She was also good at pies, cakes, and strawberry shortcake. She made jelly from the fruit of our little quince tree, and she made cherry sunshine by the heat of the sun. (TL 12)

Harriet Quine considered herself to be deeply religious, and in her later life she became a deaconess in the Congregational Church. The religious training of Willard and his only sibling, Robert Cloyd Quine, a year and a half his senior, consisted of their being "sent to Sunday school about half the time, and seldom sent to church" (TL 14). However, the more Willard was exposed to the Word, the more skeptical he became:

> I may have been nine when I began to worry bout the absurdity of heaven and eternal life, and about the jeopardy that I was incurring by those evil doubts. Presently I recognized that the jeopardy was illusory if the doubts were right. My somber conclusion was nonetheless disappointing, but I rested with it. I said nothing of this to my parents, but I did harangue one or another of my little friends, and I vaguely remember a parental repercussion. Such, then,

was the dim beginning of my philosophical concern. Perhaps the same is true of the majority of philosophers. (TL 14)

Young Willard seems to have enjoyed a pleasant middle-class upbringing in Akron, with plenty of playmates and frequent interaction with his extended family living in and around Akron. It was also during these formative years that he developed a lifelong passion for world geography and maps and a seemingly insatiable yearning to travel. (In 1968 he would publish a review of *The Times Atlas of the World* in the *Times* of London.)

Quine earned his diploma from Akron's West High School in January 1926 at the age of seventeen. In the fall of 1926 he entered Ohio's Oberlin College. During his freshman year he learned from a fellow student of the existence of a British philosopher by the name of Bertrand Russell who had a "mathematical philosophy." Quine was intrigued: "Mathematics was a dry subject, and stopped short of most that mattered, but the link to philosophy promised wider possibilities" (TL 51). Thus Quine chose to major in mathematics, with honors reading in mathematical philosophy, that is, in mathematical logic.

Much contentment with my mathematics major came in my Junior year, with my honors reading. Nobody at Oberlin knew modern logic; however, the chairman of the mathematics department, William D. Cairns, made inquiries and got me books. They were Venn's *Symbolic Logic*, Peano's *Formulaire de mathématiques*, Couturat's *Algebra of Logic*, Whitehead's *Introduction to Mathematics*, Keyser's *Mathematical Philosophy*, Russell's *Principles of Mathematics*, and the crowning glory, Whitehead and Russell's *Principia Mathematica*. (TL 59)

Quine graduated summa cum laude from Oberlin in 1930. However, his exposure to Russell, especially to the Russell of "On Denoting" and *Principia Mathematica*, made a lifelong impession on Quine. So did Quine's exposure to John B. Watson's behaviorism, which he studied in a psychology course at Oberlin. Years later Quine wrote the following about Harvard's great behaviorist B. F. Skinner (who was a junior fellow with Quine in Harvard's Society of Fellows from 1933 to 1936):

Fred and I were congenial, sharing an interest in language and behavioristic bias in psychology. It has been wrongly assumed that I imbibed my

behaviorism from Fred; I lately learned from his autobiography that in fact my exposure to John B. Watson antedated his. It was particularly in language theory, rather, that Fred opened doors for me . . . ; he put me onto Bloomfield and Jespersen and gave me a first American edition of John Horne Tooke. (TL 110)

The rest is history, as the saying goes. (See Chapter 7 for more on Quine's behaviorism.)

In part because Whitehead was a faculty member of Harvard's philosophy department, Quine applied for admission to Harvard's graduate program in philosophy, beginning in the fall of 1930. His application was successful, so in the late summer of 1930 Quine and his soon-to-be wife, Naomi Clayton, hitchhiked from Ohio to Boston.

Our last ride was on a fish truck, from which we dropped into Scollay Square. I took a room in Allston Street, between the statehouse and the courthouse, and Naomi stayed with a cousin in Brookline. My scholarship would have been voided by marriage, but I applied to the department chairman, James Houghton Woods, and got a waiver. We were married in Marblehead by a justice of the peace. (TL 75)

Now a married couple, the Quines

moved into a furnished room and kitchen in Mrs. Sheehan's house at 13 Howland Street, Cambridge, close to Somerville. Learning that we we were from Ohio, she told us that she had a brother in Idaho and that the lady across the street was from "Motano." It's a small world. (TL 75)

In a somewhat Herculean effort, largely induced by the hard economic times of the Great Depression, Quine managed to complete his Ph.D. in just two years. His dissertation, *The Logic of Sequences: A Generalization of Principia Mathematica*, was (nominally) directed by Whitehead. Some fifty years later Quine reminisced, "Long sleepless and with a week's beard, I took the dissertation to Whitehead's in the evening of April 1, 1932, with three hours to spare" (TL 86). Quine was but twenty-three when awarded his two-year Ph.D.

For the next four years Quine enjoyed fellowships. First was a Sheldon Traveling Fellowship (1932–33), followed by three consecutive years as a junior fellow in Harvard's brand-new Society of Fellows. During his Sheldon year Quine visited Vienna, where he attended Moritz Schlick's lectures given at the University of Vienna

and also went to the weekly meetings of the Vienna Circle. At those meetings Quine met Kurt Gödel, Friedrich Waismann, and A. J. Ayer, among other notables of the Vienna Circle. Rudolf Carnap had moved from Vienna to Prague, but he and Quine first met when Carnap visited Vienna in late 1932 (possibly December): "Carnap contracted a fever on arriving in Vienna. I met him in the hospital and we settled on March 1 for the move to Prague" (TL 95). Quine also visited Warsaw, where he met Stanislaw Leśniewski, Jan Łukasiewicz, and Alfred Tarski, among other prominent logicians. In a letter Quine sent from Vienna to his parents in Akron, he wrote,

I have written a note to the great Wittgenstein. He now teaches in Cambridge, England, but . . . probably spends his vacations here in Vienna. I want an audience with the prophet. It remains to be seen whether he . . . will act on my request (for he doesn't know how nice I am). (TL 88), (italics in original)

Unfortunately for posterity: "Of course he did not answer. . . . I have never seen Wittgenstein" (TL 88).

Nevertheless, his Sheldon year proved to be a watershed for Quine, especially the weeks he spent in Prague with Carnap. In late January 1933, Quine and Naomi joined up with Carnap and his wife Ina in Prague. Quine warmly recalled,

We were overwhelmed by the kindness of the Carnaps. He had written me twice with information and sent a map. I attended his lecture the day after our arrival, and he invited us to their house. Meanwhile his Viennese wife Ina, hearing from him of our lodging problem, tramped the streets with us for three hours, talking in broken Czechish with the landladies. (TL 97)

The Quines and the Carnaps saw a lot of each other over the next two months, February and March 1933:

I eagerly attended Carnap's lectures. He was expounding his *Logische Syntax der Sprache*, which Ina was typing. Carnap lent me the typescript sheaf by sheaf. Days when he was not lecturing, Naomi and I would go to their flat. . . . He and I would discuss his work. . . . But it was made clear that after supper there could be only small talk, no "science," or Carnap would have a sleepless night. He was a big man, mild and genial, with a stern regimen. No alcohol, no tobacco, no coffee. (TL 98)

During his stay in Prague, Quine was an impressionable young man of 23; Carnap was 41. Quine describes Carnap's lasting influence

on him as follows:

> Carnap was my greatest teacher. I got to him in Prague . . . just a few months after I had finished my formal studies and received my Ph.D. I was very much his disciple for six years. In later years his views went on evolving and so did mine, divergent ways. But even where we disagreed he was still setting the theme; the line of my thought was largely determined by problems that I felt his position presented. (HRC 41)

The Quines departed Prague in April 1933. Three years later, the Carnaps emigrated to the United States.

Carnap died in 1970. At a memorial meeting held in Boston in October 1970, under the auspices of the Philosophy of Science Association, Quine presented "Homage to Rudolf Carnap," in which he wrote,

> Carnap is a towering figure. I see him as the dominant figure in philosophy from the 1930s onward, as Russell had been in the decades before. Russell's well-earned glory went on mounting afterward, as the evidence of his historical importance continued to pile up; but the leader of the continuing developments was Carnap. Some philosophers would assign this role rather to Wittgenstein; but many see the scene as I do. (HRC 40)

Upon Quine's return to the United States, he began the first of his three years as a junior fellow. In November 1934, Quine gave three largely sympathetic lectures at Harvard on Carnap, in effect introducing Carnap to an American audience. (See Chapter 9 for an examination of the extent to which Quine was influenced by logical positivism.)

In 1936, at the conclusion of his three years as a junior fellow, Quine was appointed to the Harvard philosophy faculty. In 1942 he joined the Navy, rising to the rank of lieutenant commander before the war's end in 1945. Quine resumed his teaching duties at Harvard in 1946. In 1947 he and Naomi divorced. The following year he was made a senior fellow in the Society of Fellows, the same year he married Marjorie Boynton. Quine had two daughters with Naomi and a son and a daughter with Marjorie.

Quine continued to teach at Harvard until 1978, when he reached the mandatory retirement age of seventy. However, he continued to give lectures around the world, and to publish, until 1998, when he was ninety. He died on Christmas Day, 2000 at the age of 92.

During his stellar sixty-five-year-long career he published twenty-some books and scores of articles, and he lectured in six languages on six continents. He made major contributions to a large number of fields within philosophy, including epistemology, metaphysics, metaethics, logic, set theory, philosophy of logic, philosophy of language, philosophy of science, and philosophy of mind. In recognition of his many contributions, Quine was awarded eighteen honorary degrees and numerous other honors, prizes, and medals. Without doubt, Quine was one of the most gifted and influential analytic philosophers of the twentieth century and belongs squarely in the ranks of Carnap, Russell, and Wittgenstein. (See the website maintained by Quine's son Dr. Douglas Quine: http://www.wvquine.org.)

In spite of the diversity of Quine's contributions to philosophy, they form a systematic unity. Quine once remarked that the bulk of his philosophy consists of corollaries to his commitments to *naturalism* and *extensionalism*. In a word, Quine was a systematic philosopher.

As a naturalist, Quine accepts the following two claims: First, there is no successful first philosophy – that is, no experiential or a priori ground outside of science upon which science can be justified or rationally reconstructed. Second, it is up to science to tell us what there is and how we know what there is – that is, science is the measure of what there is (ontology) and of how we come to know what there is (epistemology). Furthermore, according to Quine, the currently best science advocates a physicalist ontology and an empiricist epistemology. So Quine the naturalist is also Quine the physicalist and Quine the empiricist.

To say that Quine is a *physicalist* can be interpreted in at least three ways, depending on the context. When the context is philosophy of language, the term 'physicalism' signals his rejection of mentalistic semantics; when the context is philosophy of mind, the term signals his rejection of mind-body dualism; when the context is general ontology, the term signals his acceptance of the doctrine that "nothing happens in the world, not the flutter of an eyelid, not the flicker of a thought, without some redistribution of microphysical states" (GWW 98). However, Quine's ontological physicalism includes more than microphysical states (i.e., physical objects); it also includes the abstract objects of mathematics, such as numbers or sets. Quine is obligated to admit these abstract objects into his

physicalist ontology because science would be impossible without them. Accordingly, Quine represses his nominalistic predilections and somewhat grudgingly embraces a bifurcated ontology (physical objects and sets). Bifurcated, yes, but singularly extensional, for all its objects are suitable to be values of the bound variables of some formalized version of the best scientific theory we can muster at the time. Let's unpack the previous sentence; what is extensionalism?

> A context is *extensional* if its truth value cannot be changed by supplanting a component sentence by another of the same truth value, nor by supplanting a component predicate by another with all the same denota, nor by supplanting a singular term by another with the same designatum. Succinctly, the three requirements are substitutivity of *covalence*, of *coextensiveness*, and of *identity, salva veritate*. A context is *intensional* if it is not extensional. (FSS 90)

So, for example, the context of 'Cicero' in 'Cicero was a Roman' is extensional since a codesignatum of 'Cicero', say 'Tully', can be substituted in the context to produce a sentence ('Tully was a Roman') having the same truth value as 'Cicero was a Roman'. However, the context of 'Cicero' in 'Tom believes Cicero was a Roman' is intensional since a codesignatum of 'Cicero', say 'Tully', can be substituted in the context to produce a sentence ('Tom believes Tully was a Roman') having a different truth value from 'Tom believes Cicero was a Roman'. (For example, it may be true that Tom believes Cicero was a Roman but false that Tom believes Tully was a Roman, for Tom may not know that Cicero and Tully are one and the same person.) Now we may characterize Quine's extensionalism as the doctrine that extensionality is necessary, though not sufficient, for a full understanding of a theory (see FSS 91–2). (See Chapter 8 for an account of the evolution of Quine's argument against quantified modal logic.)

An extensional language par excellance is elementary logic (i.e., first-order predicate logic with relations and identity) augmented by the epsilon of set theory. (See Chapter 10 for more on Quine's philosophy of logic.) Quine maintains that, given such a language, one can determine the ontological commitments of a theory by translating the theory into the canonical idiom and noting the range of its bound variables: *To be is to be the value of a bound variable*. By this criterion, if a scientific theory quantifies over both physical objects

and sets, then the theory is committed to physical objects and sets. Notice that the criterion does not determine what exists, it determines merely what a theory says exists; the criterion is trivial. Moreover, for an entity to be the value of a bound variable, it must have identity criteria: *No entity without identity*. For example, physical objects are identical if and only if they occupy the same region(s) of space-time, while sets are identical if and only if they have the same members. So, to say that Quine's ontological physicalism countenances a bifurcated but extensional ontology is to say that when the best scientific theory we have is translated into the canonical idiom, we find it irreducibly quantifying over both concrete and abstract objects, namely, physical objects and sets. (See Chapter 5 for further discussion of first-order logic, reference, and ontological commitment.)

Returning to the discussion of Quine's naturalism, we should note that as an *empiricist* Quine accepts the following two cardinal tenets of empiricism: "Whatever evidence there *is* for science *is* sensory evidence . . . [and] all inculcation of meanings of words must rest ultimately on sensory evidence" (EN 75). Consistent with his naturalism, Quine cites science as the source of these two tenets of empiricism:

> Science itself teaches that there is no clairvoyance, that the only information that can reach our sensory surfaces from external objects must be limited to two-dimensional optical projections and various impacts of air waves on the eardrums and some gaseous reactions in the nasal passages and a few kindred odds and ends. (RR 2)

As we have just seen, Quine's acceptance of a physicalist ontology and an empiricist epistemology is based on scientific findings. Not that the naturalistic philosopher must slavishly defer to the scientist in these matters, nor must the naturalistic philosopher become a scientist. The home domains of the scientist and of the philosopher are distinct but overlapping. In *Word and Object* Quine put the point as follows:

> Given physical objects in general, the natural scientist is the man to decide about wombats and unicorns. Given classes, or whatever other broad realm of objects the mathematician needs, it is for the mathematician to say whether in particular there are even prime numbers or any cubic numbers that are sums of pairs of cubic numbers. On the other hand it is scrutiny of this uncritical acceptance of the realm of physical objects, or of classes, etc.,

that devolves upon ontology. Here is the task of making explicit what had been tacit, and precise what had been vague, of exposing and resolving paradoxes, smoothing kinks, lopping off vestigial growths, clearing ontological slums.

The philosopher's task differs from others', then, in detail; but in no such drastic way as those suppose who imagine for the philosopher a vantage point outside the conceptual scheme that he takes in charge. There is no such cosmic exile. He cannot study and revise the fundamental conceptual scheme of science and common sense without having some conceptual scheme, the same or another no less in need of philosophical scrutiny, in which to work. (WO 275–6)

Thus, Quine's naturalistic philosopher operates in a conceptual space between the uncritical acceptance of objects by the scientist (in the broadest sense), on the one hand, and the feigned cosmic exile of the philosopher, on the other.

Finally, we must note that Quine is a *fallibilist*. He recognizes that science changes over time and that someday science could conceivably withdraw its support for physicalism and/or empiricism. Thus Quine's commitments to physicalism and empiricism are firm but tentative.

As previously mentioned, Quine repudiates first philosophy, that is, traditional epistemology. However, he does not repudiate epistemology altogether. There remains what he calls *naturalized epistemology*: the scientific study of man's acquisition of science.

A far cry, this, from old epistemology. Yet it is no gratuitous change of subject matter, but an enlightened persistence rather in the original epistemological problem. It is enlightened in recognizing that the skeptical challenge springs from science itself, and that in coping with it we are free to use scientific knowledge. The old epistemologist failed to recognize the strength of his position. (RR 3)

Some philosophers have claimed that Quine's naturalized epistemology is not epistemology at all, for epistemology is normative whereas so-called naturalized epistemology (the scientific study of man's acquisition of science) drops the normative in favor of the descriptive. However, as Quine explains,

The normative is naturalized, not dropped. The crowning normative principle of naturalized epistemology is nothing less than empiricism itself; for empiricism is both a rule of scientific method and a scientific discovery. It

is natural science that tells us that our information about the world comes only through impacts on our sensory surfaces. And it is conspicuously normative, counselling us to mistrust soothsayers and telepathists.

For normative content of a more technical kind we may look to mathematical statistics. These norms, again, are at the level of science itself. Normative epistemology, under naturalism, is simply the technology of science, the technology of predicting sensory stimulation. It is scientific method. (CL 229)

It is clear from these remarks that Quine regards naturalized epistemology to be normative as well as descriptive. However, it is also clear that Quine regards naturalized epistemology to be a far cry from old epistemology, that is, a far cry from the tradition connecting Descartes' rationalism with Carnap's empiricism. Indeed, in so far as epistemology is taken to be a quest for a theory of knowledge, Quine's naturalized epistemology would not count as epistemology. Quine explains:

I think that for scientific or philosophical purposes the best we can do is give up the notion of knowledge as a bad job and make do rather with its separate ingredients. We can still speak of a belief as true, and of one belief as firmer or more certain, to the believer's mind, than another. There is also the element of justification. . . . These reflections perhaps belong in their rudimentary way to the branch of philosophy known as epistemology, the theory of knowledge. Rejection of the very concept of knowledge is oddly ironic. (Q 109)

Epistemology or not, it is important in understanding Quine to appreciate that he takes naturalism very seriously. Thus consider the following three versions of the same theme of naturalism: (1) For Quine, science and epistemology contain one another, though in different senses of 'contain'. There being no first philosophy, science contains epistemology in the sense that engaging in epistemology presupposes an accepted scientific framework as background; epistemology contains science insofar as science is constrained by the findings of epistemology. (2) Quine endorses Otto Neurath's likening "science to a boat which, if we are to rebuild it, we must rebuild plank by plank, while staying afloat in it. The philosopher and the scientist are in the same boat" (WO 3). (3) Concerning the positing of objects, Quine writes,

To call a posit a posit is not to patronize it. A posit can be unavoidable except at the cost of other no less artificial expedients. Everything to which

we concede existence is a posit from the standpoint of a description of the theory-building process, and simultaneously real from the standpoint of the theory that is being built. Nor let us look down on the standpoint of the theory as make-believe; for we can never do better than occupy the standpoint of some theory, the best we can muster at the time. (WO 22)

Thus for Quine neither epistemologizing, nor revising one's conceptual scheme, nor speculating on the positing of bodies takes place on a vacuum. There is always some background theory that is accepted (even if only temporarily) at face value. In sum, as Quine states,

[My] position is a naturalistic one; I see philosophy not as an *a priori* propaedeutic or groundwork for science, but as continuous with science. I see philosophy and science in the same boat – a boat which, to revert to Neurath's figure as I so often do, we can rebuild only at sea while saying float in it. There is no external vantage point, no first philosophy. (NK 126–7)

Robert Fogelin, in Chapter 1, explains key aspects of Quine's naturalized epistemology. Along the way, Fogelin draws some interesting parallels between David Hume and Quine. Surprisingly, Fogelin claims that some of Quine's views on language, meaning, and reference are decidedly not naturalistic. Fogelin concludes (laments?) that Quine is not as thoroughgoing a naturalist as he professes to be.

I have alluded to Quine's remark that the bulk of his philosophy consists of corollaries to his naturalism and extensionalism. And now that we have some appreciation of those commitments, we can now inquire into some of those corollaries.

ANALYTICITY

Beginning with their discussions in Prague in 1933 and episodically during the 1940s and 1950s, Quine and Carnap expressed their disagreement over the question of the intelligibility of the so-called analytic-synthetic distinction. Analytic statements (so called) are those deemed true (or false) *solely* in virtue of their meanings (e.g., 'All triangles have three sides'). Synthetic statements (so called) are those deemed true (or false) in virtue of their meanings *and* how the world is (e.g., 'There have been black dogs'). Carnap accepted this distinction; Quine rejected it.

In his most famous article, "Two Dogmas of Empiricism" (1951), Quine attempts to show that the analytic-synthetic distinction is a dogma of empiricism, a metaphysical article of faith. More

particularly, consistent with his commitment to extensionalism, Quine rejected analyticity because it relies on an unempirical notion of meaning (e.g., true solely in virtue of meanings).

But why did Carnap and Quine regard the question of analyticity to be so philosophically important? One answer is that as empiricists they regarded all knowledge of the world to be a posteriori, and contingent yet logic and mathematics appear to be a priori and necessary. How can empiricists account for this appearance? Three general approaches to the problem come to mind.

First, there is the approach taken by John Stuart Mill, who argues that the truths of logic and mathematics have empirical content and are therefore not necessary. They are, in fact, empirical generalizations based on induction. As such, they are contingent; their apparent necessity is nothing more than the product of habituation. Mill's approach is truly heroic but highly implausible.

Second, there is the approach taken by Carnap, who argues that the truths of logic and mathematics lack empirical content and are necessary. However, according to Carnap such statements pose no threat to empiricism since their lack of content and their necessity follow directly from their analyticity: The statements of logic and mathematics are true (or false) solely in virtue of their meanings. In a word, they are tautologies. Quine conjectures that

> Carnap's tenacity to analyticity was due largely to his philosophy of mathematics. One problem for him was the lack of empirical content: how could an empiricist accept mathematics as meaningful. Another problem was the *necessity* of mathematical truth. Analyticity was his answer to both. (TDR 269)

Third, there is the approach taken by Quine: "I answer both [problems] with my moderate holism. Take the first problem: lack of content. Insofar as mathematics gets applied in natural sciences, I see it as sharing empirical content" (TDR 269).

However, it should be noted that Quine eventually came to share Carnap's view that mathematics lacks content:

> [Roger] Gibson has found, to my chagrin but gratitude, a disagreement between my consecutive little books *Pursuit of Truth* [1990] and *From Stimulus to Science* [1995] regarding empirical content of mathematics. I rest with the later position, namely, that mathematics lacks empirical content. The point is that no set of mathematical truths implies any synthetic observation categoricals. (RGQ 685)

What now of the second problem, the apparent necessity of mathematics?

This again is nicely cleared up by moderate holism, without the help of analyticity. For let us recall that when a cluster of sentences with critical semantic mass is refuted by an experiment, the crisis can be resolved by revoking one *or* another sentence of the cluster. We hope to choose in such a way as to optimize future progress. If one of the sentences is purely mathematical, we will not choose to revoke it; such a move would reverberate excessively through the rest of science. We are restrained by a maxim of minimum mutilation. It is simply in this, I hold, that the necessity of mathematics lies: our determination to make revisions elsewhere instead. I make no deeper sense of necessity anywhere. Metaphysical necessity has no place in my naturalistic view of things, and analyticity hasn't much. (TDR 269–70)

In *Roots of Reference* (1974), Quine made a positive effort to see just what empirical sense, if any, could be made of analyticity in terms of language learning:

Carnap maintained, and Frege before him, that the laws of logic held by virtue purely of language: by virtue of the meanings of the logical words. In a word, they are analytic. I have protested more than once that no empirical meaning has been given to the notion of meaning, nor consequently, to this linguistic theory of logic. But now in the terms of the learning process can we perhaps find some sense for the doctrine? (RR 78)

Quine goes on to explain that a standing sentence (i.e., a sentence that does not require the presentation of a nonverbal stimulus each time the sentence is queried for assent or dissent, such as 'The *Times* has arrived') is analytic "if *everybody* learns that it is true by learning its words" (RR 79). For example, if everybody in the speech community learns 'bachelor' by discovering that those speakers from whom they are learning their language are disposed to assent to it in just those circumstances where they would assent to 'unmarried man', then, in virtue of that discovery, everybody in the speech community has learned the truth of the standing sentence 'A bachelor is an unmarried man'. Such a sentence approximates analyticity.

Even so, we have here no such radical cleavage between analytic and synthetic sentences as was called for by Carnap and other epistemologists. In learning our language each of us learns to count certain sentences, outright, as true; there are sentences whose truth is learned in that way by many of us, and there are sentences whose truth is learned in that way by few or none of us. The former sentences are more *nearly* analytic than the latter. The

analytic sentences are the ones learned in that way by all of us; and these extreme cases do not differ notably from their neighbors, nor can we always say which ones they are. (RR 80)

In Chapter 2, Richard Creath explains and critiques the Carnap-Quine debate over analyticity. In fashioning a defense of Carnap's position, Creath makes novel use of Quine's attempt to explicate analyticity in terms of language learning, explained earlier. Ultimately, Creath declares the debate a draw, and in a true Carnapian spirit of toleration he urges that much is to be learned by pursuing both Carnap's and Quine's approaches to analyticity. (See Chapter 5 for a discussion of Carnap's principle of toleration.)

HOLISM

As we have seen, one of the dogmas that Quine repudiates in "Two Dogmas of Empiricism" is analyticity; the other dogma is reductionism, that is, the view that each sentence of a scientific theory admits, individually, of confirmation or infirmation. Quine's holistic "countersuggestion . . . is that our statements about the external world face the tribunal of sense experience not individually but only as a corporate body" (TDEb 41). But, more precisely, what is holism? "It is holism that has rightly been called the Duhem thesis and also, rather generously, the Duhem-Quine thesis. It says that scientific statements are not separately vulnerable to adverse observations, because it is only jointly as a theory that they imply their observable consequences" (EES 313).

The holism espoused by Quine in "Two Dogmas" is extreme because he intended the expression 'corporate body' therein to include all of science. However, nearly a decade later in *Word and Object* (1960) and in some of his subsequent writings he moderated his holism. He acknowledged that it is more accurate to think of significant stretches of science, rather than the whole of science, as having observable consequences:

[W]e can appreciate . . . how unrealistic it would be to extend a Duhemian holism to the whole of science, taking all of science as the unit that is responsible to observation. Science is neither discontinuous nor monolithic. It is variously jointed, and loose at the joints in various degrees. In the face of a recalcitrant observation we are free to choose what statements to revise and

what ones to hold fast, and these alternatives will disrupt various stretches of scientific theory in various ways, varying in severity. Little is gained by saying that the unit is in principle the whole of science, however defensible this claim may be in a legalistic way. (EES 314–5)

Thus, moderate holism is an important part of Quine's philosophy of science. (See Chapter 3 for a discussion of Quine's holism.)

UNDERDETERMINATION

It is obvious that scientific theory (what Quine calls physical theory) deductively implies various statements descriptive of observable circumstances, and it is equally obvious that those same statements do not deductively imply the theory. In Quine's terminology, any theory manifesting such empirical slack is said to be underdetermined by experience. Quine articulates three main varieties of underdetermination. First, theories are underdetermined by past observation because some future observation might conflict with them. Second, theories are underdetermined by both past and future observations because some conflicting observation may go unnoticed. Third, theories are underdetermined by all possible observations because the observational criteria of theoretical terms are so flexible and fragmentary. It is this third variety of underdetermination that Quine and his commentators have focused on, for it suggests the philosophically intriguing prospect of there being alternative theories that are empirically equivalent and yet logically incompatible with one another. Such is Quine's thesis of underdetermination of physical theory, which in Chapter 4 Lars Bergström seeks to elucidate and to criticize. Bergström skillfully teases apart the various strands constitutive of the thesis of underdetermination: theory, theory formulation, empirical content, empirical equivalence, observation sentence, logical incompatibility, and so on. Along the way, he argues that acceptance of the underdetermination thesis leads to skepticism and relativism.

RADICAL TRANSLATION

Are there such entities as propositions? A necessary condition for something to be an entity is that it must possess identity conditions;

for Quine there can be no entity without identity. If propositions are entities, then they must possess identity conditions that determine when we have a single proposition and when we have different propositions or the same proposition. How might we tell, for example, whether the utterance of 'Carnap taught Quine' expresses a single proposition and whether the utterance of 'Carnap taught Quine' and the utterance of 'Quine was taught by Carnap' express different propositions or the same proposition? One not very informative answer to the former question is that a proposition is a single proposition just in case it does not contain another proposition as a constituent. An equally unsatisfactory answer to the latter question is that a proposition is what utterances of a declarative sentence and its translations have in common. And what they have in common is sentence meanings – objectively valid translation relations. On this approach, one might say that if the utterance of 'Carnap taught Quine' and the utterance of 'Quine was taught by Carnap' are translations of one another, they are so because the two express the same meaning (or proposition). However, Quine's position is just the reverse: if utterances of the two sentences in question are said to express the same meaning (or proposition), they do so because they are translations of one another. For Quine, translation (synonymy) is where the philosophical action is, meanings (or propositions) are by the by. In his famous thought experiment of radical translation, he is out to show that whatever propositions might be, they are not sentence meanings.

Radical translation is an idealized context in which a field linguist sets about translating a hitherto unknown language that has no historical or cultural connections with any known language. Nor does the linguist have recourse to bilinguals. Presumably, then, the total empirical data available to the linguist consist of the observable behavior of native speakers amid publicly observable circumstances. Moreover, none of the empirical data is hidden from the linguist. Even so, the linguist's completed manual for translating the foreign language (Jungle) into the linguist's home language (English) is underdetermined by all of the possible empirical data. In particular, the translation of the foreign language's terms and the meanings of its theoretical sentences are underdetermined.

So much is relatively uncontroversial, but Quine concludes from this thought experiment that the translation of theoretical sentences