

# BOARDING NEURATH'S BOAT

## The Early Development of Quine's Naturalism

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**Abstract** W.V. Quine is arguably the intellectual father of contemporary naturalism, the idea that there is no distinctively philosophical perspective on reality. Yet even though Quine has always been a science-minded philosopher, he did not adopt a fully naturalistic perspective until the early 1950s. In this paper, I reconstruct the genesis of Quine's ideas on the relation between science and philosophy. Scrutinizing his unpublished papers and notebooks, I examine Quine's development in the first decades of his career. After identifying three commitments supporting his naturalism—viz. empiricism, holism, and realism—I piece together the evolution of Quine's position by examining the origins of these commitments one by one, showing how his early views gradually evolved into the mature naturalistic position that would have such an enormous impact on post-war analytic philosophy.

### 1. Introduction

Next to his celebrated rejection of the analytic-synthetic distinction, Quine's most influential contribution to contemporary philosophy is arguably his naturalism, the idea that "it is within

science itself, and not in some prior philosophy that reality is to be identified and described” (1981a, 21). Instead of examining whether our scientific theories are *truly* justified and investigating whether the entities posited by those theories *really* exist (in some distinctively philosophical way), Quine argues that we cannot but start from within our scientific web of beliefs, gradually improving our theories in a piecemeal fashion in the course of our inquiries.

Many excellent papers have been written about the exact interpretation of Quine’s naturalism, its scope, and its far-reaching consequences for philosophy.<sup>1</sup> Still, little attention has been paid to the *genesis* of Quine’s ideas on the subject. Although historians in recent years have contributed significantly to an understanding of the development of Quine’s views on the analytic-synthetic distinction,<sup>2</sup> not much work has been devoted to the steps Quine took in developing his naturalism.<sup>3</sup>

Given that Quine did not endorse a fully naturalistic perspective until the early 1950s, this fact seems particularly surprising. In the early stages of his career, the 1930s and 1940s, Quine still defended views that he would later dismiss as first philosophy. Indeed, Quine himself has also noted that he became “more consciously and explicitly naturalistic” only in the 1950s; that is, “in the ten years between “Two Dogmas” and *Word and Object*” (1991, 398).<sup>4</sup>

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<sup>1</sup> For an outstanding overview, see the papers collected in Føllesdal (2001) or, more recently, Weir (2014) and Hylton (2014).

<sup>2</sup> See, for example, Creath (1990), Mancosu (2005), Isaac (2005, 2011), and Frost-Arnold (2011).

<sup>3</sup> Two notable exceptions are Dreben (1990) and Morris (2015), who deal with the logical origins of Quine’s naturalism. My account in this paper is to a large extent complementary to theirs; where Morris, for example, argues that “much of the basic philosophical outlook that led to [Quine’s] later philosophy is present as early as [his] 1932 dissertation” (2015, 152), I am interested here in the subsequent development of this basic philosophical outlook.

<sup>4</sup> Although Quine adopted a fully naturalistic view in the early 1950s, he did not use the term ‘naturalism’ until his 1968 John Dewey Lectures, later published as “Ontological Relativity”. In the lecture, Quine claims to be “bound to Dewey by the naturalism that dominated his last three decades” (1968, 26). This timeline is confirmed by the fact that Quine’s seminal “Epistemology Naturalized” (1969a) was initially titled “Stimulus and Meaning” (1965) and did not yet contain the term ‘naturalism’, suggesting that Quine had not yet decided to label his philosophy ‘naturalistic’ in 1965. A further clue is that the first version of “Ontological Relativity” (prepared in March 1967 and presented at Chicago and Yale in May 1967) does not yet contain the term ‘naturalism’ either (nor a reference to Dewey). Finally, when Quine, before 1967, speaks about ‘naturalistic arguments’ and ‘naturalists’ (1946a, 112; 1953b, 149), his use of those terms there is distinct from the view with which he would identify the term from the

The question that arises, therefore, is how Quine arrived at the naturalistic position that would have such an enormous impact on post-war analytic philosophy. In this paper, I offer a first attempt to address this question by reconstructing the steps Quine took in developing his perspective. We can get an excellent overview of Quine's evolving views in the 1930s and 1940s from the notes, drafts, and lectures that are stored at Houghton Library.<sup>5</sup> For although Quine's publications in this period were still largely concerned with logic and semantics, the Houghton archives contain a wealth of unpublished material in which Quine explores more broadly philosophical topics. I show that although some features of Quine's naturalism were already present in the early 1930s, the wide-scoped holism that led him to reject the analytic-synthetic distinction in "Two Dogmas" also played a crucial role in his development of the idea that there is no distinct first-philosophical perspective.

This paper is structured as follows. After identifying three interconnected commitments which support his naturalism, viz. empiricism, holism, and realism (section 2), I trace the sources of these commitments to three phases within the first decades of Quine's career. First, I show that Quine has been attracted to a behavioristic version of empiricism from the earliest stages of his philosophical development (section 3). Next, I argue that although some traces of holism were already present during his graduate years, it took him quite some time before he started using this idea in answering the question of how an empiricist can provide a satisfying account of logical and mathematical knowledge (section 5). Finally, I argue that when Quine first combined his empiricism and holism in the late 1940s, he only gradually started to grasp the naturalistic consequences of his position, a process that culminated in the early 1950s, when he first adopted the view that epistemology is a science, not a distinctively philosophical project (sections 6-8).

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late sixties onwards.

<sup>5</sup> See especially the folders titled "Miscellaneous papers" (1925-1931), "Papers in Philosophy" (1930-1931), "Early Jottings on Philosophy of Language" (1937-1944) and "Ontology, Metaphysics, etc." (1944-1951). Most items in the first two folders are student papers, whereas the items in the last two folders are autograph manuscripts, the majority of them related to his planned book on ontology and semantics. For Quine's book plans, see Murphey (2012, 53).

## 2. Quinean naturalism decomposed

In order to reconstruct the development of Quine's naturalism, we first need an account of what his position precisely amounts to.<sup>6</sup> Quine has given many distinct definitions of naturalism. At the most general level, however, all descriptions of his position seem to contain two elements: the principled rejection of transcendental perspectives on reality, and the adoption of a perspective immanent to our scientific conceptual scheme.<sup>7</sup>

(NT) *No Transcendence*: the rejection of any detached science-independent perspective on reality.

(SI) *Scientific Immanence*: the *prima facie* acceptance of our inherited best scientific theories and methods.

Applied to epistemology and metaphysics, NT and SI deliver some of Quine's most characteristic naturalistic theses. Epistemologically, NT entails that we ought to abandon "the Cartesian dream of a foundation for scientific certainty firmer than scientific method itself" (1990, 19) and SI implies that our scientific theories do not require "any justification beyond observation and the hypothetico-deductive method" (1981a, 21). Metaphysically, NT shows that the transcendental question of "what reality is *really* like [...] is self-stultifying" (1992a, 405), whereas SI implies that ontological questions are "on a par with questions of natural science"

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<sup>6</sup> Note that my aim here is to get clear on how *Quine's* naturalism is to be understood. There are many different types of naturalism currently defended. Still, since Quine's ideas have affected contemporary naturalism in a way that can hardly be underestimated, any conclusion about what his naturalism precisely amounts to will arguably be relevant to non-Quinean naturalists as well.

<sup>7</sup> See (1975a, 72): "naturalism [...] sees natural science as an inquiry into reality, fallible and corrigible but not answerable to any supra-scientific tribunal, and not in need of any justification beyond observation and the hypothetico-deductive method; and (1981a, 21), "naturalism: the recognition that it is within science itself, and not in some prior philosophy that reality is to be identified and described". From the 1980s onwards, Quine starts using the terms 'transcendence' and 'immanence' to characterize naturalism. See, for example, (1994b, 230): "the immanent is that which makes sense within naturalism, *in mediis rebus*, and the transcendent is not".

(1951, 211).<sup>8</sup>

Although NT and SI seem to be complementary, they are logically independent. A sceptic, for example, could accept NT and deny SI; she might insist that we are not justified in accepting our best theories about the world from either a philosophical or a scientific perspective. Conversely, many present-day non-naturalists will presumably accept some version of SI, granting that philosophers should at least start out presupposing that our best scientific theories and methods are largely correct, yet deny that there is no distinct philosophical perspective from which those theories and methods might be evaluated.

NT and SI therefore provide us with a first indication of what Quine's naturalism amounts to. If we are to reconstruct the way in which Quine developed his position, however, we need something more. For NT and SI are not just philosophical dogmas unsupported by any further arguments; if they were, Quine would be vulnerable to the objection that his naturalism itself is a transcendental extra-scientific thesis.<sup>9</sup> In the remainder of this section, I identify three commitments which support Quine's naturalism as specified above; empiricism, holism, and realism. These commitments, as will become clear, are themselves empirical and revisable theses. As a result, these commitments should not be viewed as fundamental principles but as mutually supporting theses, which, as we shall see, are themselves reinforced by Quine's naturalism. In the sections 3-8, then, I reconstruct the development of Quine's naturalism by tracing these commitments back to their origins in his work, showing how they have gradually evolved over time in an interconnected way, eventually resulting in Quine mature and fully naturalistic position.

*Empiricism:* The first commitment supporting Quine's naturalism as defined by NT and SI is pretty straightforward. If anything, Quine's position is backed up by the empiricist thesis that all our information about the world ultimately comes from sense experience. Indeed, in "Five Milestones of Empiricism" (1975a), Quine presents naturalism as a distinct stage in the

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<sup>8</sup> See also Verhaegh (forthcoming).

<sup>9</sup> For the objection that naturalism is self-refuting because it is itself not supported by our best theories, see Almeder (1998, 64) and Macarthur (2008, 10).

development of empiricist philosophy. At several points in the past two centuries, Quine argues, empiricism has taken a turn for the better; and the (for now) final milestone of empiricism is naturalism.<sup>10</sup>

Empiricism bears on Quine's naturalism in two distinct ways. First, it supports NT because it rules out many purported extra-scientific sources of knowledge. Traditionally, many philosophers aimed to ground our scientific theories in an indubitable *a priori* foundation. According to Quine, however, the empiricist can dismiss these attempts as illegitimate; there is no reason to believe that the rationalist's self-evident propositions are actually true.<sup>11</sup> Empiricism thus supports NT because it simply dismisses any distinctively philosophical question about the *a priori* foundations of science. Secondly, empiricism supports SI in providing us with an explanation of *why* we should accept our best scientific theories of the world. If one agrees with Quine that science is our best attempt to systematically account for our sensory input, then a commitment to empiricism implies that one should at least start out one's inquiries presupposing that our best scientific theories and methods are largely correct.

Empiricism, however, is not just a philosophical dogma; it is itself supported by our best scientific theories: "it is a finding of natural science itself, however fallible, that our information about the world comes only through impacts on our sensory receptors" (1990, 19). Empiricism, for Quine, is simply our best scientific theory about our sources of knowledge, as is exemplified by the fact that he believes it to be at least possible that scientists would one day find out that

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<sup>10</sup> Again, this is not to say that empiricism is a necessary condition for naturalism. Quine's three commitments are themselves empirical and revisable theses. To say that any change in these commitments would amount to giving up on naturalism would be unnecessarily essentialistic. Rather, the three commitments might be better viewed as theses which contribute to the plausibility of naturalism as defined by NT and SI above. I thank Gary Ebbs and two anonymous referees for stressing this point.

<sup>11</sup> See, for example, Quine's "Lectures on David Hume's Philosophy (1946a, 54-9). After reconstructing Descartes' account of self-evidence in mathematics and philosophy, Quine asks: "Why should the self-evidence of mathematical axioms be a guarantee of their *truth*, rather than merely a compulsion to belief—possibly mistaken belief—on our part? And similarly for any other self-evident truth." According to Quine, especially the paradoxes show that seemingly self-evident axioms can turn out to be false. See Quine (1941b). I thank an anonymous referee for this suggestion.

there are other sources of knowledge as well.<sup>12</sup> Of course, the justificatory structure here is somewhat circular: the respect for science that is embodied in Quine's naturalism is supported by empiricism, whereas empiricism itself is finding of science. It is characteristic of Quine's naturalism that he has no problems with such circularity; since there is no extra-scientific perspective, we cannot but presuppose science in justifying our *prima facie* acceptance of science.<sup>13</sup>

*Holism:* In "Five Milestones of Empiricism", Quine does not only present his naturalism as a distinct stage in the history of empiricism, he also gives us a glimpse of what he believes to be the main commitments supporting his position. After defining the position in the way mentioned above, he distinguishes 'two sources' of naturalism, the first of which is his evidential holism:

Naturalism has two sources, both negative. One of them is despair of being able to define theoretical terms generally in terms of phenomena, even by contextual definition. A holistic or system-centered attitude should suffice to induce this despair. (1975a, 72)

Evidential holism is the thesis that typical theoretical sentences have no distinctive empirical content of their own; only clusters of theory are inclusive enough to imply observable consequences. Whenever we are confronted with an observation contradicting our best scientific theories, "we are free to choose what statements to revise and what ones to hold fast" in restoring consistency between theory and evidence (1975b, 230). Like empiricism, holism is a thesis that is itself supported by empirical findings; Quine believes it to be an empirical fact about scientific practice that scientists have many options to restore a theory's consistency with observation in

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<sup>12</sup> "There is no telepathy, clairvoyance, revelation, or extrasensory perception. This is a scientific finding, open, as usual, to reconsideration in the light of new evidence" (1986b, 328).

<sup>13</sup> According to Hylton, this way of reasoning is even the most characteristic feature of Quine's naturalism: "How do we know that the methods and techniques of natural science are our best source of knowledge about the world? Quine's predecessors within the analytic tradition [...] might at this point start [...] invoking philosophical ideas [...] Quine, by contrast, insists that the naturalistic claim [...] too must be based on natural science. (If this is circular, he simply accepts the circularity.) This is the revolutionary step—naturalism self-applied, as it were" (2014, 150).

the light of adverse experience.<sup>14</sup>

So why does Quine believe that evidential holism supports naturalism? What he seems to have in mind in the above passage is the following: once we realize, on the basis of holistic considerations, that we cannot translate our theoretical terms in epistemologically more basic sensory concepts, we ought to acknowledge that the Cartesian dream of providing an absolute science-independent foundation for our scientific beliefs ought to be given up. In other words, if Quine's ideas about the holistic relation between theory and evidence are correct, the classical empiricist project of "deducing science from sense data" (1969b, 84) simply cannot be carried out.

Actually, Quine's argument is stronger than this. In an earlier paper, I have shown that Quine does not only believe that we ought to 'despair of being able to define theoretical terms generally in terms of phenomena', he also argues that this project is flawed from the beginning since the sense data the classical empiricists appealed to do not constitute a truly science-independent foundation to start with (Verhaegh 2014). Quine, that is, argued that "[s]ense data are posits too" (1955, 252), such that our ideas about sense experience themselves depend on prior scientific theorizing. As a result, even if it *were* possible to translate our theoretical concepts in terms of sense data, such a reduction would not constitute a truly science-*independent* foundation for science:

Various epistemologists, from Descartes to Carnap, [...] sought a foundation for natural science in [...] the flux of raw sense data. It was as if we might first fashion a self-sufficient and infallible lore of sense data, innocent of reference to physical things, and then build a theory of the external world somehow on that finished foundation. The naturalistic epistemologist dismisses this dream of a prior sense-datum language. (1995, 462)

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<sup>14</sup> Actually, Gibson (1988, 32-42) identifies three arguments for holism in Quine's work: one based on scientific practice, one based on language learning, and one based on the problems traditional philosophers encountered in seeking an acceptable theory of empirical confirmation for individual statements. Note that at least the first two arguments are empirical.

The classical empiricists' talk about a 'self-sufficient and infallible lore of sense data', in other words, fails to be truly science-independent because our ideas about our most basic sensory concepts are themselves partially guided by theoretical considerations.

As a result, the first half of our characterization of Quine's naturalism—NT above—is supported by his holism; Quine rejects a detached extra-scientific perspective on reality because his holistic picture of inquiry leads him to the conclusion that such a perspective simply cannot be had. Next to his rejection of an *a priori* science-independent perspective on the basis of his empiricism, therefore, Quine also dismisses the possibility of an *a posteriori* science-independent perspective; sense data are simply not science-independent; our ideas about them themselves depend on scientific theory.

*Realism:* Let us turn to the second source of naturalism Quine identifies in "Five Milestones of Empiricism":

The other negative source of naturalism is unregenerate realism, the robust state of mind of the natural scientist who has never felt any qualms beyond the negotiable uncertainties internal to science. (1975a, 72).

Why does Quine cite realism as a source of naturalism? It is my contention that the answer can be found in "The Pragmatists' Place in Empiricism", the paper on which "Five Milestones of Empiricism" is based. In this paper, Quine compares his naturalism with the instrumentalist pragmatism of James, Schiller, and Dewey. According to Quine, these pragmatists "viewed science as a conceptual shorthand for organizing observations" (1981b, 33), such that we cannot ascribe reality to our scientific posits and theories. Now, given his ideas about underdetermination, the view that there exist alternative theories that would equally fit our observational evidence, Quine seems *prima facie* committed to something like instrumentalism as well. After all, his underdetermination thesis seems to imply that "the systematic structure of scientific theory [...] is invented rather than discovered, because it is not uniquely determined by the data". Quine, however, believes that he is not committed to such a view, precisely because of his commitment to realism.

For naturalistic philosophers such as I [...] physical objects are real, right down to the most hypothetical of particles, though this recognition of them is subject, like all science to correction. I can hold this ontological line of naive and unregenerate realism, and at the same time I can hail man as largely the author rather than discoverer of truth. I can hold both lines because scientific truth about physical objects is still the *truth*, for all man's authorship [...] We are always talking within our going system when we attribute truth; we cannot talk otherwise. (1981b, 33-4)

Realism, in other words, is an important feature of Quine's naturalism; without it his position would lapse into instrumentalism. After all, instrumentalism is a variant of empiricism too, a variant moreover which is compatible with some weak varieties of holism.

A question that remains to be answered is how Quine justifies his realism. We have seen that both empiricism and holism, the first two sources of naturalism, are theses which are themselves supported by science. Have we here finally found an independent philosophical presupposition in Quine's naturalism? I believe not. Quine justifies his realism by appealing to semantic considerations. As the last sentence of the above quote shows, Quine believes that we cannot but think about our scientific theories as true; 'we are always talking within our going system when we attribute truth; we cannot talk otherwise'. This claim should be taken quite literally: according to Quine, key philosophical concepts are useless when they are divorced from their everyday scientific applications. When the instrumentalist pragmatist accepts science but regards it "as literally false on ontological points" (1981b, 35), she presupposes a science-independent notion of 'truth'. Similarly, when the traditional metaphysician asks us about the true nature of reality, she presupposes that we can separate the term 'reality' from its ordinary scientific use. According to Quine, however, this cannot be done because these very notions are elements of the conceptual scheme they are supposed to transcend:

We cannot significantly question the reality of the external world, or deny that there is evidence of external objects in the testimony of our senses; for, to do so is simply to dissociate the terms 'reality' and 'evidence' from the very applications which originally did most to invest those terms with whatever intelligibility they may have for us. (1954, 229)

According to Quine, asking whether the objects posited by science are *real* from a science-independent perspective is “like asking how long the Nile really is, apart from parochial matters of miles or meters” (1992a, 405). Just like our notion of ‘length’ is useless apart from related notions like ‘mile’ and ‘meter’ and some standard of measurement, our notions of ‘truth’ and ‘reality’ are useless when one purports to transcend our conceptual scheme and scientific standards.<sup>15</sup>

The third source of Quine’s naturalism, his realism, therefore, is supported by semantic considerations; we cannot ask about the ‘reality’ and ‘truth’ of our scientific posits and theories in a distinctively philosophical way without stripping those concepts of their use.<sup>16</sup> Quine’s realism therefore contributes significantly to the justification of both NT and SI. For it provides us with both an additional reason as to why there is no detached science-independent perspective and an extra argument for why we are bound to accept our best scientific theories and methods.

### 3. Early empiricism and bold behaviorism

Now we have examined what commitments support Quine’s naturalism as defined by NT and SI—viz. empiricism, holism, and realism—we can reconstruct the way in which he developed his position. In the remainder of this paper, I piece together the gradual evolution of Quine’s naturalism by examining the origins of his commitments one by one.

Let me start with Quine’s empiricism, the first source of naturalism distinguished above.

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<sup>15</sup> See also Verhaegh (2015, ch. 3; forthcoming). Quine explicitly makes the connection between naturalism, instrumentalism and the anti-transcendentalist argument in a response to Hookway: “Hookway finds “Two Dogmas” instrumentalist. I think this is fair, and that it applies to my later work as well. But realism peeps through at the checkpoints, and takes over altogether when we adopt a sternly naturalistic stance and recognize ‘real’ as itself a term within our scientific theory” (1994b, 233).

<sup>16</sup> I take it that this is the reason why Quine describes realism as a *negative* source of naturalism. Just as holism is a negative source because it entails that we cannot “define theoretical terms generally in terms of phenomena” (1975a, 72), realism is a negative source because it implies that we cannot question the reality of the external world intelligibly in a distinctively philosophical way. I thank an anonymous referee for this suggestion.

Determining the roots of Quine's empiricism is not a complicated affair. From the very beginning of his career, Quine has been a determined empiricist; nowhere does he question its plausibility or even take seriously alternative positions.<sup>17</sup> In fact, on the few occasions where he looks back on his intellectual development, Quine suggests that he was even committed to a strictly *behaviorist* variant of empiricism from the very start. Reflecting on his dismissal of intensional notions in Whitehead and Russell's *Principia Mathematica* during his final year at Oberlin College, for instance, Quine notes:

The distrust of mentalistic semantics that found expression in "Two Dogmas" is thus detectable as far back as my senior year in college. Even earlier I had taken kindly to John B. Watson's *Psychology from the Standpoint of a Behaviorist*, which Raymond Stetson had assigned to us in his psychology class. Nor do I recall that it shocked any preconceptions. It chimed in with my predilections.<sup>18</sup> (1991, 390)

Exemplary of Quine's early empiricist commitment are his ideas about the relation between empiricism and pragmatism. *Prima facie*, pragmatist philosophers have played an important role in Quine's early development: William James' *Pragmatism* was one of the first philosophical books he read (1986a, 6), one of his teachers during his graduate studies at Harvard was C. I. Lewis, and the young Quine reviewed three volumes of Peirce's collected papers in the early 1930s. Still, Quine has never really understood what it means to be a pragmatist except if one classifies it as part of a global empiricist movement:

It is hard to say what constitutes pragmatism. If one considers it a branch of the empiricist tradition

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<sup>17</sup> For a discussion of the way in which Quine's student papers already advertize a distinctively empiricist picture of inquiry, see Isaac (2005) and Sinclair (2012).

<sup>18</sup> See also Quine's (1985, 59) and (1986a, 7). Although Quine mentions Watson as an influence, his behaviorism should not be conflated with the philosophy of science that dominated mid-twentieth-century psychology. In the words of Quine's critic Jerrold Katz: "The behaviorism [Quine] has in mind [...] is not the dreaded reductive doctrine of days gone by, but merely a way of putting the study of language on a par with other sciences by requiring the linguist's theoretical constructions to be justified on the basis of objective evidence in the form of overt behavior of speakers [...] Quine's behaviorism is thus a behaviorism one can live with" (1990, 179-80). See also Hylton (2007, §4.4) and Føllesdal (2011).

then yes, it is very important to me [...] But I don't think that the influence on me was distinctively American; it was rather one of international empiricism.<sup>19</sup> (1994a, 60-1)

Further evidence for Quine's early commitment to a strictly behaviorist variant of empiricism is his approach to analyticity in the 1930s and 1940s. Although Quine gave up on the analytic-synthetic distinction only in the late 1940s, as we shall see in section 5, he was already seeking a behavioristically acceptable notion of analyticity in the early stages of his career. Even in his 1934 "Lectures on Carnap", for instance—lectures he would later describe as "abjectly sequacious" (1991, 391)—Quine proposes that we render

only such sentences analytic as we shall be most reluctant to revise when the demand arises for revision in one quarter or another. These include all the truths of logic and mathematics; we plan to stick to these in any case, and to make any revisions elsewhere. (1934, 63)

Where analyticity has always served an epistemic function for Carnap (at least in Quine's eyes)—explaining why our logical and mathematical statements are justified—Quine here interprets the concept in strictly psychological terms; we call the truths of logic and mathematics analytic because it is a psychological fact that we will not give them up in the light of adverse experience.<sup>20</sup> In other words, even though Quine here still believes that a distinction between the analytic and the synthetic can be drawn, he already interprets the distinction behavioristically as one between sentences which are and sentences which are not candidates for revision when confronted with recalcitrant experience.

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<sup>19</sup> See also Quine's (1992b, 213). Moreover, it should be noted that in his John Dewey Lectures, Quine praises Dewey not for his pragmatism, but for his insight that one should study knowledge, mind, and meaning "in the same *empirical* spirit that animates natural science" (1968, 26, my emphasis). See also Koskinen and Pihlström (2006, §1) and Godfrey-Smith (2014).

<sup>20</sup> See also, for example, Creath (1987, 485-6) and Hylton (2001). I follow Creath in describing Quine's characterization as 'psychological' because, technically, Quine does not mention behaviorism in his lectures. Still this is what underlies Quine's characterization. In "Truth by Convention", a paper that largely resembles his first lecture on Carnap, Quine writes that the apparent contrast between a priori and a posteriori truths (and thus the analytic and the synthetic) retains reality "*behavioristically* [...] as a contrast between more and less firmly accepted sentences" (1936, 102, my emphasis).

#### 4. Quine's naturalism in the early 1940s

So Quine was a committed empiricist from the very start. Does this imply that he had also adopted a broadly naturalistic perspective? Before we move on and examine the development of his holism and realism, this section explores Quine's early ideas about the relation between science and philosophy. I show that his views were already strikingly naturalistic, albeit in a somewhat embryonic form. Some crucial elements, I argue, were still lacking—elements which, as we shall see, came to full development in the late 1940s and early 1950s.

For our present purposes, one of the most interesting manuscripts stored at Houghton Library is a series of notes from 1944 in which Quine reflects on the relation between the philosopher's and the scientist's tasks in ontology. In the notes, fragments of which would later be used in both "On What There Is" and *Word and Object*, Quine argues for the position that the question "what is there?" is "broad enough to allow both philosopher[s] and scientist[s] to move about in it without treading on each other's toes" (1944b, my transcription). He writes:

The philosopher's task differs from that of the natural scientist or mathematician no less conspicuously than the tasks of these latter two differ from each other. The natural scientist and the mathematician both operate within an antecedently accepted conceptual scheme but their methods differ [...] The philosopher, finally, unlike these others, focuses his scrutiny on the conceptual scheme itself. Here is the task of making things explicit that had been tacit, and precise that had been vague; of uncovering and resolving the paradoxes, smoothing out the kinks, lopping off the vestigial growths, clearing the ontological slums. (November 5, 1944b, my transcription)

Given the strong resemblance to his later ideas,<sup>21</sup> Quine's perspective on the philosopher's task here is already well developed. The same conclusion can be drawn with respect to Quine's ideas

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<sup>21</sup> Cf. (1960, §56): "What distinguishes between the ontological philosopher's concern and all this is only breadth of categories [...] it is scrutiny of this uncritical acceptance of the realm of physical objects itself, 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".

about the philosophers' vantage point:

It is understandable, then, that the philosopher should seek points outside the world that imprisons natural scientist[s] and mathematician[s]. He would make himself independent of the conceptual scheme which it is his task to study and revise. "Give me  $\pi\upsilon\upsilon\ \sigma\tau\omega$ " Archimedes said, "and I will move the world". However there is no such cosmic exile. The philosopher cannot study and revise the fundamental conceptual scheme of science and common sense, without having meanwhile some conceptual scheme, whether the same or another no less in need of philosophical scrutiny, in which to work.<sup>22</sup> The philosopher is in the position rather, as Neurath says, "of a mariner who must rebuild his ship on the open sea". (November 5, 1944b, my transcription)

Again, the similarity with his later position is remarkable; like the fully naturalistic Quine, the early Quine is entirely committed to offering a completely science-immanent perspective.<sup>23</sup>

A question that naturally arises in the light of these strong similarities, however, is why Quine has never expressed these naturalistic inclinations in his publications, i.e. why it takes him almost a decade before he is willing to publicly commit himself to a truly science-immanent philosophy? I think the answer to this question can be found in a different set of notes and drafts. They reveal that, although Quine *wants* to commit himself to a fully naturalistic position, he *cannot* do this because he has not yet succeeded in combining his naturalized conception of ontology with a plausibly naturalized conception of epistemology. To see this, consider the

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<sup>22</sup> Again, cf. (1960, §56): "The philosopher's task differs from the 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, whether the same or another no less in need of philosophical scrutiny, in which to work". Also interesting in this respect, is a note from November 28, 1941 in which Quine writes that he, in his "tentative ontology", is "[s]tarting at the middle" (my transcription). This anticipates the first section of *Word and Object*, where Quine claims that however we "[a]nalyze theory-building [...] we all must start in the middle" (1960, §1).

<sup>23</sup> At best, one can detect a difference in emphasis. Where the fully naturalistic Quine is prone to focus on the continuity between science and philosophy, Quine in these early notes is more inclined to emphasize their distinctness. For although they are both working immanently, the scientist and the philosopher do not yet seem to be concerned with the same project. Rather, as we have seen, Quine believes that the ontological question is 'broad enough to allow both philosopher[s] and scientist[s] to move about in it without treading on each other's toes'.

following three fragments:

Here is a straightforward view, likely to be held by a physicist unspoiled by philosophy. The physicist—even he—is not likely to say his atoms are more *real* than the tables, chairs, etc. [...] If physicists do not make the atoms more real than macroscopic objects, some physicists—tainted with philosophy—do make them less so [...] But the macroscopic objects are rather arbitrary as a basic reality, for certainly these are inferred from a yet more immediate zone in much the way that atoms were inferred from the macroscopic objects [...] In latter event we seem to have swung to complete contradiction of the point of view initially considered. Things are made up now not of atoms but of perceptions. Seemingly two rival theories of things, the atomic theory and the sensory theory. Materialism vs. empiricism. Realism vs. idealism. (January 30, 1943b, my transcription)

Purpose of the book is to [...] dissociate ontology from epistemology so completely as to render it immune to the idealist (subjectivist) arguments. (March 19, 1944d, my transcription)

There is a sense in which physics might be said to be concerned with explaining the nature of reality. And who contests this? Primarily the Idealist [...] The Idealist would take the perceptions etc. rather as the basic reality, and derive things as constructions, logical constructs (Russell). The study of how to make these constructions is Epistemology. And things are composed not of atoms but of perceptions, sense qualia etc. (October 4, 1944c, my transcription)

Quine in these fragments is worried about the objections of phenomenalist epistemology—objections which lead to the conclusion that his scientific ontology is somehow unreal after all. Where the fully naturalistic Quine replaces epistemological talk about sense data with its scientific analogue—the stimulation of sensory receptors—Quine at this point does not yet have this solution at his disposal.<sup>24</sup> Quine’s problem, in other words, is that even though he has

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<sup>24</sup> To be sure, Quine does try to find ways to dismiss phenomenalism. In different fragments, Quine proposes different solutions to the phenomenologists’ objections. One of the most interesting solutions from a contemporary perspective is the following (March 27, 1944): “Ontology & epistemology: how they are distinct & how they are mutually inclusive. Ontology is realistic, epistemology idealistic; but no contradiction” (1944a, my transcription). This mutual inclusivity may remind us of Quine’s later idea that epistemology and ontology are reciprocally contained (1969a, 83), although this fragment is of course far too sketchy to attribute such a complex idea to Quine here. In one passage, Quine comes remarkably close to his later solution: “Epistemology as a segment of a

succeeded in naturalizing metaphysics, showing how the philosopher does not require a transcendental perspective in ontology, he has not yet found a way to naturalize epistemology, i.e. to get rid of the phenomenologists' transcendental perspective.<sup>25</sup> It is because of this reason, I assume, that Quine in "On What There Is" settles for a pluralistic solution:

the question what ontology to adopt still stands open, and the obvious counsel is tolerance and an experimental spirit. Let us by all means see how much of the physicalistic conceptual scheme can be reduced to a phenomenological one; still physics also naturally demands pursuing, irreducible *in toto* though it be [...] From among the various conceptual schemes best suited to these various pursuits, one—the phenomenological—claims epistemological priority [...] This point of view is one among various, corresponding to one among various interests and purposes. (1948, 19)

In what follows I shall argue that one of the crucial steps Quine had to take in integrating these different conceptual schemes into one single science-immanent perspective was to develop a thoroughly holistic conception of inquiry.

## 5. Narrow and wide holism

So let us look at the development of Quine's holism. Reading Quine's work on the nature of scientific inquiry from the 1930s, one might get the impression that he was already committed to holism in the early stages of his career. In his graduate school paper "Concepts and Working

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psychological study. Problem of priority. Answer in child psychology?" (November 1941, my transcription).

<sup>25</sup> For a different account of Quine's ideas in the early 1940s see Murphey (2012, 54-5), who seems to argue that Quine *himself* was a phenomenologist at this point. I think it is clear from the above passages, however, that Quine wants to get rid of the phenomenologists' objections, even if he does not see a satisfying way to do so. See also the following fragment, where Quine after introducing the phenomenologist's perspective says: "Bear with me, dissenting reader; I am going to end up in agreement with *you*. But first let us see how this thing runs" (1943b, my transcription); and: "we aren't throwing out philosophy with epistemology, leaving ourselves with nothing but physics. There remains ontological problem of essentially philosophical character, though *not* epistemological" (1944c, my transcription). Murphey's reading of Quine here might be caused by his being unaware of the above passages in which Quine expresses his commitment to a science-immanent perspective.

Hypotheses”, for instance, Quine advances a view that seems pretty close to the holistic picture sketched in the last section of “Two Dogmas”:

If a recalcitrant item of experience, belonging to the field in question, should subsequently arise, modification somewhere in the system must take place, for it has been noted that a satisfactory conceptual system must accommodate every experience falling within the field. Thus it is that only the working hypothesis can stand which has endured without the emergence of any anomaly in the whole mass of experience since its inauguration. [...] one has a certain latitude as to where he may make his readjustments in the event of an experience recalcitrant to his system; and correspondingly there is some subjective option as to whether a chosen concept or a working hypothesis is to be branded as the point of ‘error’ in the antecedent system.<sup>26</sup> (1931)

Still, it would be a mistake to ascribe to the early Quine the radical holism he advanced in the 1950s, the crucial difference being that he did not yet apply his holism to logic and mathematics.<sup>27</sup> Quine’s holism was still of a narrow scope, applying only to the empirical sciences. Quine had better hopes of explaining the supposedly a priori character of logical and mathematical knowledge, like Carnap, in terms of analyticity.<sup>28</sup> In “Truth by Convention”, for instance, Quine still embraces an analyticity-based account of logical and mathematical knowledge:

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<sup>26</sup> See also Isaac (2005, 212-20) and Sinclair (2012, 342). Quine’s way of thinking here can, to some extent, be traced back even to 1927, when he wrote that “[m]an uses as an outline for his knowledge the natural relationship of all things, so far as he has been able to determine that relationship in the incompleteness of his data. This web—to change the metaphor—which he has thus succeeded in partially spinning, he reinforces with synthetic thread of his own manufacture: to wit, the conventional classifications and man-made systems of compilation which form so large a part of human knowledge. These two kinds of relationship—the natural and the artificial—work together in such a way that often they are not to be distinguished one from the other.” (1927).

<sup>27</sup> See also Hylton (2001, 269-70).

<sup>28</sup> Indeed, Carnap himself also combined his analyticity-based explanation of mathematical knowledge with a narrow-scoped holism concerning the physical domain: “it is, in general, im-possible to test even a single hypothetical sentence [...] *the test applies, at bottom, not to a single hypothesis but to the whole system of physics as a system of hypotheses*” (Carnap 1934, 318).

There are statements which we choose to surrender last, if at all, in the course of revamping our sciences in the face of new discoveries; and among these there are some which *we will not surrender at all*, so basic are they to our whole conceptual scheme. Among the latter are to be counted the so-called truths of logic and mathematics [...] Now since these statements are destined to be maintained *independently of our observations of the world*, we may as well make use here of our technique of conventional truth assignment and thereby forestall awkward metaphysical questions as to our a priori insight into necessary truths. (1936, 102, my emphasis)

Although Quine here, as a committed empiricist, clearly does not want to invoke a metaphysical explanation of our supposedly a priori knowledge of logical and mathematical truths, he neither expands his holism to logic and mathematics so as to claim that our knowledge of those truths is ultimately a posteriori; he still believes that our logical and mathematical truths are ‘maintained independently of our observations of the world’.<sup>29</sup>

So the question that naturally arises is when Quine *did* come to accept a wide-scoped holism that applies to logic and mathematics. There has been considerable debate about this question in the literature. Richard Creath (1990, 31) argues that “[i]t was not until 1947, and then in private correspondence, that Quine came fully and finally to reject Carnap’s doctrine that there are

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<sup>29</sup> This is not to say, of course, that Quine had not yet taken the possibility of an a posteriori explanation of logical truth into consideration. Carnap’s notes of his discussion with Quine about *The Logical Syntax of Language* in Prague 1933, first discovered by Tennant (1994), reveal that Quine had already questioned Carnap’s strict distinction between the analytic and the synthetic:

He says after some reading of my “Syntax” MS:

1. *Is there a difference in principle between logical axioms and empirical sentences?* He thinks not. Perhaps I seek a distinction just for its utility, but it seems he is right: gradual difference: they are the sentences we want to hold fast (translation by Quine, 1991, 391).

In any case, even if Quine had already considered the possibility of gradualizing the analytic-synthetic distinction in the 1930s, he did not fully reject explanations in terms of analyticity until the late 1940s, as we shall see. The reason is probably that Quine had not yet fully worked out how an empiricist could account for logical and mathematical truths without a strict analytic-synthetic distinction. Indeed, looking back on this period, Quine has remarked that he had “no suggestion of a bright replacement” when he first criticized Carnap’s analyticity-based account in “Truth by Convention” (1991, 393). I thank an anonymous referee for drawing my attention to this last passage.

analytic truths”, whereas Paolo Mancosu (2005, 331) points to a letter Quine wrote to J. H. Woodger in 1942, in which he argues that Carnap’s “professedly fundamental cleavage between the analytic and the synthetic is an empty phrase”. Greg Frost-Arnold (2011, §5) defends an intermediate position. He argues that although Quine gave up on Carnap’s *semantic* version of the analytic-synthetic distinction from the early 1940s onwards, he “was not yet willing to commit himself to the radical view of ‘Two Dogmas’ until shortly before writing that piece”.<sup>30</sup>

Whatever the exact timeline of his adoption of a wide-scoped holism, however, two series of events seem to have been particularly important for Quine’s evolving ideas on the matter. First, in the academic year of 1940-1941, Quine regularly met up with Carnap and Tarski to discuss, among others, Carnap’s forthcoming *Introduction to Semantics* (1942).<sup>31</sup> As Mancosu points out in his (2005, §2), Tarski at the time defended a view that comes close to Quine’s wide-scoped holism in “Two Dogmas”. Already in 1930, a note in Carnap’s diary shows, Tarski held that “between tautological and empirical statements there is only a mere gradual and subjective distinction” (Haller, 1992). Even more revealing evidence that Tarski already defended something close to wide-scoped holism years before Quine came to accept the view, is a letter Tarski sent to Morton White in 1944:

we reject certain hypotheses or scientific theories if we notice either their inner inconsistency, or their disagreement with experience, or rather with individual statements obtained as results of

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<sup>30</sup> Isaac (2005, 2011) defends still another hypothesis. According to him, Quine’s motives for not publicly attacking the analytic-synthetic distinction until the early 1950s were largely political: “Up to the late 1940s, [Quine] had been content to mute his disquiet for the sake of presenting a united front on logical empiricism to the American academy” (2011, 274). Given Quine’s public discontent with Carnap’s semantic turn as well as any notion of analyticity that could not be explicated in terms of behavioral dispositions, however, I do not think that these political reasons can explain his refusal to reject the analytic-synthetic distinction in the early 1940s. Furthermore, also in private Quine was still actively seeking a behavioristically acceptable definition of synonymy at the time, as is exemplified by “Foundations of a Linguistic Theory of Meaning” (1943a), an unpublished manuscript from August 1943. In this paper, Quine attempts to formulate an empirically satisfying definition of synonymy, but fails to find one that lives up to his behavioristic standards. See Murphey (2012, 51-3). See also Quine’s letter from August 14, 1943 to Church: “I would hope eventually for an empirical definition or criterion of synonymy as applied to natural languages”. I thank Thomas Ricketts for this suggestion.

<sup>31</sup> Carnap’s notes of these discussions are published and examined in Frost-Arnold (2013).

certain experiences. No such experience can logically compel us to reject the theory: too many additional hypotheses [...] are always involved. [...] Axioms of logic are of so general a nature that they are rarely affected by such experiences in special domains. However, I don't see here any difference 'of principle'; I can imagine that certain new experiences of a very fundamental nature may make us inclined to change just some axioms of logic. And certain new developments in quantum mechanics seem clearly to indicate this possibility. (White and Tarski, 1987, 31)

Looking back on his 1940-41 discussions with Tarski and Carnap, Quine recalls how he and Tarski argued "persistently with Carnap over his appeal to analyticity" in the opening pages of *Introduction to Semantics* (1991, 392). Given the evidence available, I would suggest that it is reasonable to conclude that Quine must have learned about Tarski's wide-scoped holism somewhere in this period as well.<sup>32</sup>

Next to Tarski's influence, a second series of events seems to have contributed significantly to Quine's adoption of a wide-scoped holism, viz. his triangular correspondence with Morton White and Nelson Goodman in 1947. In a series of letters, Quine, White, and Goodman discussed, among other things, the prospects of Quine's search for a behavioristically acceptable definition of analyticity, a definition Quine still thought was needed in order to account for logical and mathematical knowledge. In May 1947, White asked Quine to comment on a manuscript that he would later publish as "On the Church-Frege Solution of the Paradox of Analysis" (1948). Briefly put, the paradox runs as follows. Consider the following two statements:

- (1) The attribute of being a brother is identical with the attribute of being a male sibling.
- (2) The attribute of being a brother is identical with the attribute of being a brother.

Intuitively, (1) is informative whereas (2) is not. Yet, if (1) is true, then both statements say the same thing.

Quine, who had already corresponded with White on the paradox in 1945, suggests that the paradox might be solved using C. I. Lewis and Carnap's distinction between intensional and

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<sup>32</sup> See also Frost-Arnold (2011, 301): "It seems unlikely that Tarski never voiced these views about logic in Quine's presence during their year together at Harvard".

structural synonymy. The problem with this solution, however, is that Quine did not know of any behavioristically acceptable definition of intensional synonymy. Still, Quine's letter shows that he had not yet given up hope of finding such a definition:

It's bad that we have no criterion of intensional synonymy; still, this frankly and visibly defective basis of discussion offers far more hope of clarity and progress, far less danger of mediaeval futility, than does the appeal to attributes, propositions, and meanings. (Goodman, Quine, and White 1947, 339-40)

In response to both White and Quine, however, Goodman defended a much more stringent position than Quine, arguing that "the lack of any behavioristic criterion (or even the dimmest suggestion as to how one might be set up) is a sign that we are not at all clear as to what it is that we have to define". According to Goodman, the whole project of seeking acceptable definitions of analyticity and synonymy was to be rejected: "when Van uses a term and hopes for a behavioristic criterion he can't vaguely outline, he is employing a meaningless mark or noise on the ground that he needs it [...] and hopes that a meaning will be found for it" (ibid., 343).

Quine, obviously not very happy to be placed in the intensionalist camp by Goodman ("I have always been all for extension, with the world against me"), responded by backing Goodman's position. Quine now granted that he also "doesn't know how to apply 'analytic', much less define it" (ibid., 353-4). Goodman then, in his final letter, urges Quine to give up on the project of defining analyticity and to accept that the analytic-synthetic distinction simply cannot be drawn:

If Van agrees that he not only doesn't know how to define "analytic" but doesn't know how to apply it either, what is it that he is hoping to find a behavioristic definition for? [...] he is looking for a behavioristic definition for which the test of adequacy will presumably be in accordance with a usage which he doesn't have before him. (ibid., 356-7)

Of course, it is a matter of speculation how instrumental Goodman's pressure was.<sup>33</sup> Still, the

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<sup>33</sup> Especially Creath (1990, 35) and Isaac (2011, 275) emphasize the importance of the triangular correspondence to Quine's rejection of the analytic-synthetic distinction.

fact is that Quine did adopt a wide-scoped holism shortly after Goodman's final letter.<sup>34</sup>

## 6. Unregenerate realism

Let me briefly recap the main conclusions of our discussion thus far. Quine's naturalism as defined by NT and SI is supported by three mutually reinforcing commitments: empiricism, holism, and realism. I have shown that Quine defended a strictly behavioristic version of empiricism and a narrow-scoped holism from the very beginning of his career. These commitments led him to seek a behavioristically acceptable definition of analyticity, such that we might explain our logical and mathematical knowledge in an empirically satisfying way. Somewhere in the late 1940s Quine, probably influenced by Tarski and Goodman, found a solution in extending his holism to logic and mathematics, thereby dissolving the need for a behavioristic explication of analyticity.

The resulting wide-scoped holism Quine defends in "Two Dogmas" did not only constitute a break with Carnapian logical empiricism, it also represents a major step in Quine's growing dissatisfaction with first-philosophical perspectives and hence in the development of his naturalism. For even though an analyticity-based account of logical and mathematical knowledge is in line with the empiricist thesis that all our knowledge about the world is ultimately based on sense experience, such an account still aims to justify this logical and mathematical knowledge

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<sup>34</sup> In "Animadversions on the Notion of Meaning", given as a talk at a colloquium at the University of Pennsylvania in 1949 (where Goodman was based at the time), Quine presents many of his arguments from "Two Dogmas" against standard definitions of analyticity and proposes something very close to his now famous alternative:

Another view, not distinguishing the [linguistic and factual] components: we have our sense experience, and our own system of beliefs [...] But it is underdetermined by experience. System as a whole must conform to experience along periphery; but disconformities can be repaired each by any of many changes of the system. We choose by two canons: 1) maximum elegance of whole system, 2) maximum conservatism. By 2), the more central principles resist change the more. These might be called the *more analytic*: matter of degree. (1949, 155)

from an extra-scientific perspective.<sup>35</sup> Where Quine in his “Lectures on Carnap” was still defending the claim that an analyticity-based approach “has the importance of enabling us to pursue foundations of mathematics and the logic of science without encountering extra-logical questions as to the source of the validity of our a priori judgments” (1934, 66), the later Quine would reject any attempt to provide our logical and mathematical knowledge with an extra-scientific foundation.

Still, as I have argued in section 2, the holistic empiricism defended in “Two Dogmas” does not yet constitute a completely naturalistic perspective; without his unregenerate realism, Quine’s position was still compatible with the instrumentalist pragmatism of James, Schiller, and Dewey. Indeed, Quine’s remarks about physical objects being “comparable, epistemologically, to the gods of Homer” in “Two Dogmas” (1951, 44) are often interpreted as deeply instrumentalist. The problem, as we have seen in section 4, is that Quine had not yet found a way to naturalize epistemology. Even though Quine recognized that we are committed to both physical and abstract objects via his criterion of ontological commitment, he had not yet found a way to get rid of the transcendental, distinctively epistemological point of view relative to which our physical and mathematical objects are myths.

The final stage in the development of Quine’s naturalism, therefore, was to find a consistent way to reject the idea that we can picture the ‘epistemological point of view’ as a transcendental perspective which potentially undermines our realism about physical and mathematical objects. In the final two sections, I show that we can distinguish two phases in this process. First, in the late 1940s, Quine abandoned his attempts to develop a nominalistically acceptable account of mathematics, accepting that our commitments to physical and mathematical objects are epistemically on a par. Second, around 1952 Quine started defending the view that even our phenomenalist posits, presupposed in most traditional epistemological perspectives, are not in any sense more basic than our mathematical and physical posits, thereby removing the final

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<sup>35</sup> See also, Ebbs (2011, 218n27): the problem with an analyticity-based account of logical and mathematical knowledge is that a definition of analyticity in a certain language system “is designed to explicate a conception of justification for accepting statements that is independent of the statement’s explanatory contribution to a scientific theory—a conception of justification that [the naturalistic] Quine associates with first philosophy”.

reason not to adopt a full-blooded naturalism.

## 7. From nominalism to realism

Let me start by considering Quine's evolving views on the ontological status of abstract objects. In the 1930s and 1940s, Quine was actively seeking a nominalistically acceptable account of mathematics. In his intellectual autobiography, Quine confirms that he already "felt a nominalist's discontent with classes" when he was visiting Vienna and Prague in the early 1930s (1986a, 14). This uneasiness with abstract objects resulted in a series of lectures and papers which ultimately culminated in "Steps toward a Constructive Nominalism", a paper he wrote with Goodman (1947).<sup>36</sup>

For our present purposes, it is particularly interesting to examine Quine's *reasons* for seeking a nominalist interpretation of mathematics. Reviewing his lectures and papers, it becomes clear that these reasons were at least partly philosophical. In his 1946 lecture on nominalism, for example, Quine distinguishes between a 'mental' and a 'physical' version of nominalism, the former allowing only mental and the latter allowing only physical particulars, and sketches the motives behind these views:

In the mental case [the nominalist's] motive may be an extreme sensationalism: what we are presented with are sensory events, and it is unphilosophical to assume entities beyond them, *in particular universals*. In the physical case, his mentality is likely to be that of Lord Kelvin, who insisted that he did not understand a process until it was reduced to terms of impact of bodies like billiard balls [...] Modern physics may seem to have cut the ground from under this physical type of nominalist, in abandoning even Kelvin's billiard balls [...] [b]ut the nominalist is capable of surviving this [...] [T]he nominalist reserves the right to refurbish this conceptual scheme [...] and to produce a substitute conceptual scheme which, while still theoretically adequate to the physicist's purposes, will not countenance any entities beyond those whose existence it is within

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<sup>36</sup> For a detailed historical account of Quine's ideas about nominalism, see Decock (2002c, ch. 2), Mancosu (2008), and Parsons (2011).

the *physicist's* professional competence to assert. (1946b, 17-8)

Clearly, Quine here has not yet fully rejected first philosophy. Even though our best scientific theories quantify over abstract objects, there are philosophical reasons for either dismissing entities beyond our primary sense experiences or for refurbishing the physicist's conceptual scheme in nominalistically acceptable terms. This first-philosophical attitude is expressed even clearer a few paragraphs earlier, where Quine responds to the objection that classical mathematics indispensably quantifies over abstract objects:

Now surely classical mathematics is part of science; and I have said that universals have to be admitted as values of its variables; so it follows that the thesis of nominalism is false. What has the nominalist to say to this? He need not give up yet; not *if he loves his nominalism more than his mathematics*. He can make his adjustment by repudiating as *philosophically unsound* those parts of science which resist his tenets; and his position remains strong so long as he can persuade us that these rejected parts of science are neither intrinsically desirable as ends nor necessary as means to other parts which *are* intrinsically desirable. (ibid., 17, my emphasis)

When Quine later specifies that the 'intrinsically desirable end' of science is effective prediction, it becomes clear that his position here is still compatible with the first-philosophical instrumentalist's view that theoretical posits beyond those needed for effective prediction are merely useful fictions.<sup>37</sup>

Even though Quine actively sought a nominalist interpretation of classical mathematics, he was never satisfied with the results of his endeavors.<sup>38</sup> No doubt, this growing pessimism about

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<sup>37</sup> See also Burgess (2008, 63): "the 1946 lecture gives no real reason that I can see why a nominalist should not be satisfied with instrumentalism". Burgess also notes that Quine's arguments in the lecture are still first-philosophical: "we find Quine light-years away from the principle professed later [...] that epistemology should be 'naturalized', with the philosopher becoming a citizen of the scientific community. Quine's epistemology at this stage is thoroughly 'alienated', with the philosopher remaining a foreigner, passing judgment from the outside on [the] soundness of its work" (ibid., 61).

<sup>38</sup> In his autobiography, Quine explains how he and Goodman failed to give a complete nominalist account of proof theory, which assumes "strings of [s]igns without limit of length, whereas our program could countenance them only insofar as physically realized" (1985, 198).

the possibility of fulfilling the project played an important role in Quine's rejection of nominalism in the years after the publication of "Steps toward a Constructive Nominalism".<sup>39</sup> A 1948 letter to J. H. Woodger, however, indicates that holism also played an important role in Quine's rejection of nominalism:

I suppose the question what ontology to accept is in principle similar to the question what system of physics or biology to accept: it turns finally on the relative elegance and simplicity with which the theory serves to group and correlate our sense data [...] Now the positing of abstract entities (as values of variables) is the same kind of thing. As an adjunct to natural science, classical mathematics is probably unnecessary; still it is simpler and more convenient than any fragmentary substitute that could be given meaning in nominalistic terms. Hence the motive—and a good one—for positing abstract entities (which classical mathematics) needs [...] These very relativistic and tolerant remarks differ in tone from passages in my paper with Goodman and even in my last letter, I expect. My ontological attitude seems to be evolving rather rapidly at the moment.<sup>40</sup>

Quine's reflections here indicate that his acceptance of a wide-scoped holism provided him with an argument for allowing abstract objects. If we evaluate our logical and mathematical theories solely in terms of their contribution to our best scientific theories, dismissing any extra-scientific justification in terms of analyticity, then there is no reason not to treat physical and mathematical objects on a par. After all, both play a similar role in 'grouping and correlating our sense data'. While the early Quine was a realist about physical objects but did not yet want to fully commit himself to the abstract objects of mathematics for philosophical reasons, his acceptance of a wide-scoped holism in the late 1940s seems to have removed his reasons not to extend his realism to abstract entities. Indeed, from his 1948 "On What There Is" onwards, Quine treats physical and mathematical objects as epistemically on a par.<sup>41</sup>

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<sup>39</sup> When exactly Quine completely dispensed with nominalism turns out to be quite difficult to determine. See Decock (2002c, §2.3).

<sup>40</sup> See also Mancosu (2008, 43).

<sup>41</sup> See also Quine's (1953a, 173-4) and (1985, 198).

## 8. From phenomenalism to realism

Although Quine by the late 1940s adopted a realist position about both physical and mathematical objects, his realism was still in some sense qualified. While Quine endorsed the view that “our acceptance of an ontology is [...] similar in principle to our acceptance of a scientific theory”, he still had not been able to decisively dismiss the distinctively epistemological point of view from which “the ontologies of physical objects and mathematical objects are myths” (1948, 16-19). If we work from within a phenomenalistic conceptual scheme and only allow sense data, Quine argued, then we cannot maintain our realism about physical and abstract entities. Quine, in other words, had not yet incorporated epistemology into his wide-scooped holism, such that his realism about physical and mathematical objects would become truly ‘unregenerate’. What he needed was an alternative epistemology in which the justification of science does not ultimately depend on its relation to a phenomenalistic conceptual scheme.

The first glimmerings of such an alternative appear in Quine’s “Lectures on David Hume’s Philosophy”.<sup>42</sup> In these lectures, Quine presents Hume as claiming that in epistemology it is “[v]ain to seek a rational foundation” and that “[u]ltimately we can only describe psychological behavior, not justify it” (1946a, 134). Hume’s philosophy inspires Quine to distinguish between two epistemological projects, one that reflects the traditional phenomenalist view that we ought to justify science in terms of sense data and one that comes remarkably close to the naturalistic position he was to adopt in the 1950s (here still called ‘pragmatism’):

Constructive empiricism: explain all meaningful scientific discourse by contextual definition on the basis finally of reference to direct experience.

Pragmatism: abandon such a project as impossible, and say that our discourse is merely variously conditioned by experience without being reducible to empirical terms. Abandon, therefore, empirical criticism of concepts; instead, judge any form of discourse in terms of its *utility*—this utility being measured within empirical science by ordinary empirical methods. (ibid., 135)

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<sup>42</sup> See also Pakaluk (1989).

When Quine later came to endorse the view that his holism blocks constructive empiricism because it entails that a typical theoretical sentence has no distinctive empirical content of its own, it might have led him to reconsider the pragmatist option. Indeed, there is some evidence for this. For just before he published “Two Dogmas”, Quine seems to adopt something like this pragmatist option in “Identity, Ostension, and Hypostasis” (1950). Perhaps it is not a coincidence that this is also the paper in which he for the first time publicly uses Neurath’s boat metaphor, the analogy he already used in his early notes and would later often use to illustrate his naturalism:

we must not leap to the fatalistic conclusion that we are stuck with the conceptual scheme that we grew up in. We can change it bit by bit, plank by plank, though meanwhile there is nothing to carry us along but the evolving conceptual scheme itself. The philosopher’s task was well compared by Neurath to that of a mariner who must rebuild his ship on the open sea [...] Our standard for appraising basic changes of conceptual scheme must be, not a realistic standard of correspondence to reality, but a pragmatic standard.<sup>43</sup> (1950, 78-9)

By 1950, therefore, Quine had adopted something like Hume’s pragmatic naturalist epistemology; he endorsed the view that we cannot validate science by translating its concepts into the epistemologically more basic terms of sense data. Still, even in “Two Dogmas” Quine talked about “sense data” in describing the evidential boundaries of his newly developed ‘empiricism without the dogmas’ (1951, 44), suggesting that he still had not conclusively dispensed with the instrumentalism that is compatible with such a phenomenalist epistemology.<sup>44</sup> The very last stage in the development of Quine’s naturalism, therefore, consists

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<sup>43</sup> The fact that Quine often uses Neurath’s metaphor to illustrate his naturalism, might suggest that Neurath’s writings have played an important role in Quine’s development. Quine himself, however, claims there was no such influence. In a letter from April 18, 1986 to Koppelberg on the latter’s (1990) book on the close relation between his and Neurath’s philosophy, for example, Quine writes: “my reading of my predecessors has been very sporadic and inadequate. I was aware superficially of my affinity with Neurath, as you know, and I am glad now to see the degree to it and the detail. I was not appreciably influenced by him at the time; I had to grow into the point of view on my own, away from Carnap.” (my transcription).

<sup>44</sup> See also, Murphey (2012, 88-9, 92-3). Murphey especially points to Quine’s adoption of a physicalistic definition

in his adoption of the view that sense data are not epistemologically prior after all. This breakthrough finds its origin in “On Mental Entities”, a paper Quine presented in 1952. In this paper, Quine sets out to answer the question of “whether we should affirm or deny that there are such things as [...] immediate, subjective experiences” (1952a, 221). Against the phenomenalist picture, Quine here argues that such sense data are posits too:

the notion of pure sense datum is a pretty tenuous abstraction, a good deal more conjectural than the notion of an external object [...] Epistemologists have wanted to posit a realm of sense data, situated somehow just me-ward of the physical stimulus, for fear of circularity: to view the physical stimulation rather than the sense datum as the end point of scientific evidence would be to make physical science rest for its evidence on physical science. But if with Neurath we accept this circularity, simply recognizing that the science of science is a science, then we dispose of the epistemological motive for assuming a realm of sense data.<sup>45</sup> (ibid., 225-6)

Quine here for the first time adopts a thoroughly naturalistic point of view. Epistemology is not a distinctively philosophical project responsible for validating our scientific theories and for blocking an unregenerate realism about physical and mathematical objects. Rather, Quine now endorses the view that epistemology is itself a science, and therefore cannot be conducted from some transcendental science-independent perspective. Quine, in other words, had adopted the view that the idea that “any evidence for science has its end points in the senses [...] is an insight which comes after physics, physiology, and psychology, not before” (1952a, 225).

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of observation sentences as his motivation for dispensing with phenomenism. Quine first introduces the notion of ‘observation sentence’ in *Word and Object*.

<sup>45</sup> See also “The Place of a Theory of Evidence”, a lecture from October 7, 1952: “We would do well to recognize that in seeking to isolate sense data we are not plumbing the depths of reality; we are engaged rather in empirical psychology, associating physical stimuli with human responses. From the laws of this science the sense data as intermediary hypothetical entities may, however, be deleted; they will not be missed.” The seeds of Quine’s rejection of sense data as epistemologically neutral building blocks can already be found in his graduate paper “Concepts and Working Hypotheses” (Quine 1931): “My immediate experience, rather than consisting of raw material to be interpreted, is already seething with interpretation [...] no analysis of a given experience can yield any other experience which is, in any full sense, the ‘bare datum’ of the former experience; any such analysis is, rather, merely a further interpretation”. I thank an anonymous referee for drawing my attention to this passage.

As I have argued in section 2, the crucial argument underlying Quine's realism is the idea we cannot ask about the 'reality' and 'truth' of our scientific posits and theories in a distinctively philosophical way without stripping those concepts of their intelligibility. Our notions of 'reality' and 'truth' themselves depend on our scientific conceptual scheme. Not surprisingly, this argument also first appears in "On Mental Entities". Phenomenalist epistemologists, Quine argues, regard the realm of sense data as somehow more "real" than the external objects that are posited in order to organize our experiences. Quine now believes, however, that "it is a mistake to seek an immediately evident reality, somehow more immediately evident than the realm of external objects":

Everything, of course, is real; but there are sheep and there are no unicorns [...] there are odd numbers and there are no even primes other than 2. Such is the ordinary usage of the word 'real' [...] Failing some aberrant definition which is certainly not before us, this is the only usage we have to go on.<sup>46</sup> (1952a, 225)

Quine, in other words, fully embraced a naturalistic point of view; he adopted a perspective immanent to our scientific conceptual scheme and principally rejected any transcendental perspective on reality. His wide-scoped holism now not only included logic and mathematics, but also our ideas about the sensory basis of science. Combined with his argument for an unregenerate realism, Quine had definitively boarded Neurath's boat.

## **9. Conclusion**

In this paper, I have given a preliminary account of how Quine arrived at his naturalism. I have argued that Quinean naturalism is supported by three substantive commitments—empiricism, holism, and realism—and have pieced together the evolution of his position by examining the origins of these commitments in his work. Building on Quine's unpublished notes and early

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<sup>46</sup> See also Quine's (1954, 233): "the terms 'reality' and 'evidence' owe their intelligibility to their applications in archaic common sense".

writings as well as on the existing literature on his early views, I have argued that although Quine has from the early beginnings defended a behavioristic version of empiricism and a narrow-scoped holism, it was not until the late 1940s that he, probably influenced by Tarski and Goodman, realized that he could broaden his holism to include logic and mathematics.

Once Quine had adopted this wide-scoped holism, he gradually started grasping the radically naturalistic consequences of his position. First, Quine came to reject attempts to find an analyticity-based account of our logical and mathematical knowledge, defending the view that there is no need to justify this knowledge outside its contribution to our overall scientific theories. Secondly, Quine abandoned his attempts to seek a nominalistically acceptable interpretation of mathematics, a project that was at least partially guided by first-philosophical motives. Instead, he came to defend the view that on a rigorously holistic picture of inquiry there is *no reason not* to treat physical and mathematical objects as epistemically on a par. Thirdly, from 1952 onwards, Quine adopted the view that a similar move could be made with respect to epistemology; there is no distinct epistemological point of view which deals with objects (sense data) that are in any sense more ‘real’ than the objects posited in the sciences. Rather, Quine adopted the view that sense data are theoretical posits, that there is no meaningful extra-scientific notion of ‘reality’, and that the very empiricism he had defended from the beginning of his career, itself could only be plausibly defended from within the framework of science.<sup>47</sup>

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