

Quine on the norms of naturalized epistemology

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My goal here is to interpret what Quine says in the Kant lectures about the norms of epistemology and the doctrinal and conceptual tasks of epistemology—the tasks, respectively, of constructing good theories and of clarifying meanings—in light of what he says about these topics in several of his earlier and later works. I shall argue that despite one puzzling passage in the Kant lectures that misleadingly suggests otherwise, the norms of Quine’s epistemology are exclusively doctrinal, not conceptual.

1. A first look at the question whether Quine’s epistemology is normative

In “Epistemology Naturalized,” Quine rejects traditional approaches to epistemology, and proposes that we replace them with psychological studies of the relationship between our theory, understood as the body of sentences we are disposed to accept, and our evidence, conceived as impacts at our sensory surfaces. On this proposal, Quine writes,

Epistemology, or something like it, ...falls into place as a chapter of psychology and hence of natural science. It studies a natural phenomenon, viz. a physical human subject. This human subject is accorded a certain experimentally controlled input—certain patterns of irradiation in assorted frequencies, for instance—and in the fullness of time the subject delivers as output a description of the three dimensional external world and its history. The relation between the meager input and the torrential output is a relation that always prompted epistemology; namely, in order to see how evidence is related to theory, and in what ways one’s theory of nature transcends any available evidence. (Quine 1969, p. 83)

A central criticism of Quine’s proposed study of this input–output relation is that it is purely descriptive, and not in any way normative, as traditional epistemology is supposed to be. According to Jaegwon Kim, for example,

Modern epistemology has been dominated by a single concept, that of justification, and two fundamental questions involving it: What conditions must a belief meet if we are justified in accepting it as true? and What beliefs are we in fact justified in accepting? (Kim 1988, p. 381)

But justification manifestly is normative. If a belief is justified for us, then it is *permissible* and *reasonable*, from the epistemic point of view, for us to hold it, and it would be *epistemically irresponsible* to hold beliefs that contradict it. (Kim 1988, p. 383)

The problem with Quine's naturalistic epistemology, according to Kim, is that Quine's causal-dispositional account of the relationship between theory and impacts at our sensory surfaces is descriptive, not normative, and hence tells us nothing about when it is permissible, reasonable, or epistemically responsible for a person to hold a given belief:

It is normativity that Quine is asking us to repudiate. Although Quine does not explicitly characterize traditional epistemology as "normative" or "prescriptive", his meaning is unmistakable. Epistemology is to be "a chapter of psychology", a law-based predictive-explanatory theory, like any other theory within empirical science; its principal job is to see how human cognizers develop theories (their "picture of the world") from observations ("the stimulation of their sensory receptors"). Epistemology is to go out of the business of justification. (Kim 1988, p. 389)

Kim then argues that an epistemology without norms is not an epistemology at all:

It is difficult to see how an "epistemology" that has been purged of normativity, one that lacks an appropriate normative concept of justification or evidence, can have anything to do with the concerns of traditional epistemology. ... For epistemology to go out of the business of justification is for it to go out of business. (Kim, p. 391)

In the first of his Kant Lectures (1980), Quine anticipates and responds to this kind of criticism. He does so in three main steps. His first step is to characterize the traditional concerns of epistemology as follows:

The traditional concerns of epistemology are of two sorts, that I call *conceptual* and *doctrinal*. On the conceptual side epistemology is traditionally a critique of ideas. On the doctrinal side it is a critique of evidence for the truth of science. ... The traditional epistemologist working on the conceptual side could be expected to contribute in two ways to the doctrinal side. He explicates the concepts and thereby the doctrines, thus clearing the way for the doctrinal epistemologist's quest for evidence of the truth of those doctrines. But in addition he makes a head start in that quest itself. For his uncovering of empirical meaning proceeds by relating our concepts to perception, and perception is precisely where any evidence must lie for truths about the world. (Quine, Kant lectures, I, p. 15-16)

Quine's second step is to explain why he thinks his naturalistic investigations of the relations between sentences and sensory stimulation can be viewed as a new way of addressing the conceptual concern of epistemology:

Reoriented now to language, the concern of epistemology on its conceptual side comes to be a concern with the empirical content of language, the empirical meaning of words. (Quine, Kant lectures, I, p. 17)

The conceptual side of Quine's epistemology is a study of "how it was possible to learn the language of science" (Quine, Kant lectures, I, p. 17). Such psychological studies were traditionally regarded as distinct from epistemology. In pursuing the conceptual concerns of epistemology in this way, however, Quine thinks, "we are still in the main stream of epistemology. We have changed horses perhaps, but not streams" (Quine, Kant lectures, I, p. 17).

Quine's third and most important step is to formulate and address what appears to be an objection like Kim's, namely, that Quine's approach leaves out "the normative force of epistemology":

I am sometimes asked what happens to the normative force of epistemology when epistemology is absorbed thus into the empirical science of psychology. Are we bound to say that in science anything goes, just so [as] it is already going? By no means. The critique of thinking has its place in applied science, on a par with engineering. Far from being nullified by the naturalizing of epistemology, it is bolstered by it; for the findings of science itself become available for normative use. (Quine, Kant lectures, I, p. 18)

In the passage Quine equates the normative force of epistemology with "the critique of thinking," his short-hand description in the Kant lectures of the doctrinal task of epistemology. I shall argue that this equation is Quine's considered view: the norms of his epistemology fall exclusively on its doctrinal side. Before I make my case for this reading, however, I will explain Quine's distinction between the doctrinal and conceptual tasks in more detail and contrast his approach to epistemology with the traditional approach that motivates Kim's criticisms.

2. Quine on the doctrinal and conceptual tasks of epistemology

I assume that in the Kant Lectures Quine does not stipulate new uses for the terms "doctrinal" and "conceptual", but intends to use them as he did in "Epistemology Naturalized".¹ A familiarity with Quine's characterizations in "Epistemology Naturalized" of the distinction between the doctrinal and conceptual tasks of epistemology is therefore very helpful for reading the Kant lectures. In "Epistemology Naturalized," Quine introduces the distinction by explaining how to draw it for studies in the foundations of mathematics. These studies, he writes,

divide symmetrically into two sorts, conceptual and doctrinal. The conceptual studies are concerned with meaning, the doctrinal studies with truth. The conceptual studies are concerned with clarifying concepts by defining them, some

¹This is implied by the way Quine introduces the distinction in the Kant lectures. As we saw in a passage quoted earlier, he writes, "The traditional concerns of epistemology are of two sorts, that I call *conceptual* and *doctrinal*" (Quine, Kant lectures, I, p. 15). I understand Quine's use of the phrase "that I call," not "which I shall call," for instance, to signal to his audience that he intends to use "conceptual" and "doctrinal" in the way he explains them in previous work. The only earlier publication in which he defines the terms in "Epistemology Naturalized." Moreover, apart from the Kant lectures, as far as I know, he does not use the terms again.

²This key point is also emphasized in Verhaegh 2014, pp. 168–171, Johnsen 2017, chapter 10, pp. 168–173,

in terms of the others. The doctrinal studies are concerned with establishing laws by proving them, some on the basis of others. Ideally the obscurer concepts would be defined in terms of the clearer ones so as to maximize clarity, and the less obvious laws would be proved from the more obvious ones so as to maximize certainty. Ideally the definitions would generate all the concepts from clear and distinct ideas, and the proofs would generate all the theorems from self-evident truths. ... If in particular the concepts of mathematics were all reducible to the clear terms of logic, then all the truths of mathematics would go over into truths of logic; and surely the truths of logic are all obvious or at least potentially obvious, i.e., derivable from obvious truths by individually obvious steps. (Quine 1969, p. 70)

This last point—that “the truths of logic are all obvious or at least potentially obvious”—is an allusion to Kurt Gödel’s proof of the deductive completeness of first order logic, which Quine takes to encompass all of logic. Gödel also proved that for any consistent proof system PS for a language L that is rich enough to express all the arithmetical truths, there exists a true arithmetical sentence S of L such that neither S nor the negation of S can be proved in PS (Kleene 1952, Theorem 29 (Rosser’s form)). In short, every proof system for arithmetic is deductively incomplete. *A fortiori*, there is no complete proof system for mathematics and set theory. For this reason the reduction of mathematics to first-order logic is “denied us,” and “mathematics reduces only to set theory and not to logic proper” (Quine 1969, p. 70). As a consequence, Quine observes,

Reduction in the foundations of mathematics remains mathematically and philosophically fascinating, but it does not do what the epistemologist would like of it; it does not reveal the ground of mathematical knowledge, it does not show how mathematical certainty is possible. (Quine 1969, p. 70)

Quine next step in “Epistemology Naturalized” is to extend the distinction between conceptual and doctrinal studies in the foundations of mathematics to “epistemology generally,” as follows:

Just as mathematics is to be reduced to logic, or logic and set theory, so natural knowledge is to be based somehow on sense experience. This means explaining the notion of body in sensory terms; here is the conceptual side. And it means justifying our knowledge of truths of nature in sensory terms; here is the doctrinal side... (Quine 1969, p. 71)

Quine’s account in this passage of the doctrinal task of epistemology—“justifying our knowledge of truths of nature in sensory terms”—is abstract and general. For the conceptual side, by contrast, Quine focuses on “explaining the notion of body in sensory terms.” This is just an expository shorthand, however; the conceptual side of epistemology for Quine also encompasses explanations of a host of other notions, such as those of shape, weight, and relative velocity, that we take bodies to have.

Quine's first example of an epistemologist who "pondered the epistemology of natural knowledge on both sides of the bifurcation" is David Hume. Quine briefly comments on Hume's identification of bodies with sense impressions, as a contribution to the conceptual side of epistemology, and then notes that Hume's work on the conceptual side of epistemology does not contribute much, if anything, to the doctrinal side of epistemology, since, as Hume himself emphasizes, "general statements, also singular statements about the future, gain no increment of certainty by being construed as about sense impressions" (Quine 1969, p. 72). Quine then writes,

On the doctrinal side, I do not see that we are farther along today than where Hume left us. The Humean predicament is the human predicament. (Quine 1969, p. 72)

This clever turn of phrase summarizes a point that is central to understanding Quine's naturalistic epistemology, but widely misunderstood. The lesson Quine takes from Hume's work is not just, as Kim believes (Kim 1988, p. 386), that there is no hope for the project of deducing theory from evidence and thereby showing that our theories are as certain as our evidence. The lesson is much more radical: there is no hope even for the apparently more modest project of showing that our theories, when viewed from the outside—i.e., without assuming the correctness of any of their inductive inferences or the truth of any of their laws—are more likely than not to be true.² Although Quine does not emphasize the point in "Epistemology Naturalized," starting at least as early as 1946, when he taught a course on Hume's Philosophy, he agreed with Hume's radical critique of traditional epistemology. In a series of terse notes that he wrote for his lectures on Hume, Quine endorses Hume's argument that any attempt to justify inductive inferences will inevitably be circular:

Hume has explained our prediction psychologically: "Why we expect," in terms of association. But question remains: is it in *fact*, apart from our psychological vagaries, more likely than otherwise that the conjunction will continue? Is our psychological propensity *just*? This is the problem of prediction, or *induction*—a central problem of philosophy. Hume's answer is no. ... In a sense [an inductive inference] has a ground, viz., observed always true; but this would be circular as an argument for induction. In effect: induction proved by induction. [Here Quine cites some passages from Hume's *Enquiry*.] It works, yes; or has; but that is irrelevant, unless we assume causality in order to infer from this past success that the success will continue. Hume's negative doctrine is inevitable, I think, in any thoroughgoing empiricism; and it does not depend on the more extreme or questionable features of his particular underlying system of elements and psychology. (Quine 1946, pp. 94–95; part of this passage is also cited in Fogelin 2004)

²This key point is also emphasized in Verhaegh 2014, pp. 168–171, Johnsen 2017, chapter 10, pp. 168–173, and in a less direct way, but with a similar appreciation of the central importance for Quine of the Humean predicament, in Gregory 2008.

Quine grants that Hume's critique of the ambitions of traditional epistemology is a kind of skepticism, but, like Hume, argues that it points the way toward a more fruitful epistemology:

While it is a skepticism, it is not a doctrine of despair and inactivity. The same old drive to science and induction exists, and is applauded; but it is a natural drive, its methodology is ultimate and irreducible to deductive logic, and the effort to find a formulation below and beyond science itself is vain and doomed to failure. Skepticism as a counsel of despair exists in Hume only with regard to this latter point. Indeed, Hume points out quite eloquently that skepticism in this sense, far from being antithetical to science is decidedly in the scientific spirit. (Quine 1946, p. 135–136; also cited in Fogelin 2004)

On this point, as on many others, Quine also agrees with Rudolf Carnap. By the mid-1930s, following Hume, Pierre Duhem, and Karl Popper, Carnap concludes that no validation of inductive inferences or scientific laws from outside of science—no account from outside of science of why the inductive inferences we draw are justified or the laws we accept are likely to be true—is possible (Carnap 1936–37, p. 426; Carnap 1937, pp. 317–320). Carnap recommends that philosophers interested in clarifying what it is reasonable to believe abandon the traditional epistemological project, and focus instead on describing and prescribing scientific methods of inquiry from within science itself, without presupposing any methodological or epistemological standpoint that purports to be higher or firmer than our best scientific judgments (Carnap 1934).

Even if there is no hope of validating our scientific theories, however, following Carnap one might think it worthwhile to devise rational reconstructions of our scientific theories, including contextual definitions of terms that clarify how sentences in which the terms occur are linked to sensory evidence. (Such contextual definitions would not, of course, show how to deduce theory from evidence; due to the holism of theory testing, they would at best only provide what Carnap 1939 calls “partial interpretations” of theories.) Quine sees two reasons for Carnap's interest in such rational reconstructions. The first is that “such constructions could be expected to elicit and clarify the sensory evidence for science even if the inferential steps ... must fall short of certainty [and cannot increase in likelihood of truth]”; The second is that such reconstructions would “make all discourse as clear as [but not as certain as] observation terms and logic and ... set theory” (Quine 1969, pp. 74-75; with my own editorial remark added in brackets). But Quine argues these two remaining goals of the conceptual side of epistemology are better pursued in the science of psychology:

Why all this creative reconstruction, all this make-believe? The stimulation of his sensory receptors is all the evidence anybody has had to go on, ultimately, in arriving at his picture of the world. Why not just see how this construction really proceeds? Why not settle for psychology? Such a surrender of the epistemological burden to psychology is a move that was disallowed in earlier times as circular reasoning. If the epistemologist's goal is validation of the grounds of empirical science, he defeats his purpose by using psychology or other

empirical science in the validation. However, such scruples against circularity have little point once we have stopped dreaming of deducing science from observations [or even of showing that our observations provide objective grounds, independent of our acceptance of a given theory, for believing that our science is likely to be true]. If we are out simply to understand the link between observation and science, we are well advised to use any available information, including that provided by the very science whose link with observation we are seeking to understand. (Quine 1969, pp. 75–76; with my interpretation in brackets)

Quine’s central point here is that, on the conceptual side of epistemology, once one has abandoned any hope of validating science by a rational reconstruction, one might as well settle for psychology. A related point is that if what Carnap was trying to do on the conceptual side with his rational reconstructions counts as continuous with traditional epistemology, despite not aspiring to provide any vindication or independent support for science, then Quine’s proposed replacement for it should also count as continuous with traditional epistemology. It is in this context, after having made the above points about how his proposal can be seen to improve on and replace Carnap’s project of holistic rational reconstruction, that Quine writes the paragraph I quoted at the start of §1:

Epistemology, or something like it, similarly falls into place as a chapter of psychology and hence of natural science. It studies a natural phenomenon, viz. a physical human subject. This human subject is accorded a certain experimentally controlled input—certain patterns of irradiation in assorted frequencies, for instance—and in the fullness of time the subject delivers as output a description of the three dimensional external world and its history. The relation between the meager input and the torrential output is a relation that always prompted epistemology; namely, in order to see how evidence is related to theory, and in what ways one’s theory of nature transcends any available evidence. (Quine 1969, p. 83)

Here again it is crucial to keep in mind that Quine’s goal of showing “how evidence is related to theory” is not the goal of showing that evidence provides grounds, independent of our acceptance of a given theory, for believing that it is likely to be true. Like Hume and Carnap, Quine abandons this traditional goal of epistemology and seeks to replace it with a more fruitful and attainable one.

3. A closer look at the conceptual side

With these commitments of Quine’s paper “Epistemology Naturalized” in mind, let us now examine Quine’s characterizations in his Kant lectures of the conceptual side of epistemology. In first of these he writes:

Whatever empirical content our words may have ... should be discoverable by reconstructing the steps by which they might have been learned and thus working back to perception, the fountainhead of empirical meaning. Thus the conceptual

side of epistemology becomes, for physicalism, an investigation of the learning of language—specifically of cognitive language. (Quine, Kant Lecture I, p. 16)

For Quine, as we saw from our discussion of “Epistemology Naturalized,” the goal of the conceptual side of epistemology is not to theorize about normative relations of evidential support, but to trace the actual links between sentences and impacts at the nerve endings. These links depend for their existence on our linguistic dispositions and the shared subjective similarity standards that explain them (Quine, Kant Lecture I, p. 11).

As Quine notes, this inquiry would be circular if our goal were to validate science. The circularity is clear not only from the fact that the inquiry presupposes a great deal about the external world, including that we can learn about the world only via the stimulation of our sensory surfaces (Kant lecture I, p. 18), but also from its criteria for judging when a person has learned a given bit of language. A person has learned to use an observation sentence, such as “It’s raining” or “That’s a rabbit,” according to Quine, only if she “can be counted on to agree with others about the truth value of [utterances of] the sentence on any occasion that they jointly witness” (Kant lecture II, p. 2; with my additions in editor’s brackets). To judge whether this condition has been met for “It’s raining,” for instance, we must judge whether the person utters “It’s raining” when she and we jointly witness that it’s raining. To apply this criterion, we of course need to judge whether, on any given jointly witnessed occasion, it’s raining. Hence it is only by relying on our own observational judgments that we can study the links between observation sentences and sensory stimulation. For this reason, Quine’s investigations of how we learn language provide no validation of any of our observational judgments. The same point applies to theoretical sentences, subject to adjustments that are needed to accommodate the motley of different criteria there are for having learned them. To study the links between sentences and sensory stimulation by studying how language is learned, in short, we must rely on our own affirmations of the very sentences whose links to sensory stimulation we are investigating. The conceptual side of Quine’s epistemology is therefore of no use to a traditional epistemologist such as Kim who seeks a vindication or justification of his scientific judgments from a point of view that does not take their truth for granted.

4. A closer look at the doctrinal side

Where does this leave the doctrinal side? Is Quine unable to make any sense of such terms as “justify,” “evidential support,” and “epistemically reasonable”—terms that, as Kim 1988 stresses, figure so prominently in traditional epistemology? No. Quine can make sense of applying the terms “justify” and “evidential support,” for instance, but only from the standpoint of a particular theory, and not as part of a program to vindicate that theory, but simply to characterize certain relationships between parts of the theory, as seen from the standpoint of those who accept it. As Quine summarizes the point in *Word and Object*, our statements “are justifiable only by supplementing observation with scientific method” (Quine 1960, p. 24; see also Johnsen 2005, p. 83). By “scientific method,” as I shall argue in §5 below, Quine does not mean a body of normative principles that can be used to vindicate scientific judgments, but, instead, the pragmatic,

engineering norms for theory construction that guide our best scientific efforts to explain and predict our sensory experiences. If one seeks the truth and is aware of and endorses scientific method, as Quine understands it, one will construct and accept what one takes to be the best available scientific theory, and reject, or at least not accept, any other theory. Quine does not himself use the term “epistemically reasonable,” but on its most natural quinean explication, to be epistemically reasonable for Quine is simply to seek truth and judge it in this way.

These quinean uses of the terms “justify,” “evidential support,” and “epistemically reasonable” are of a piece with Quine’s rejection of the traditional epistemological assumption that there are fully general, context-independent epistemological standards for evaluating whether any particular applications of scientific method result in scientific theories we are justified in accepting. To see why, consider the point of view of an inquirer who has just finished constructing what she regards as the best available scientific theory and who naturally and immediately accepts the theory. Quine’s naturalistic epistemology implies that she cannot distinguish at the moment of accepting the theory between *taking herself to be* justified in accepting it and *being* justified in accepting it. The point is not just that from her first person point of view she has no way to evaluate whether her acceptance of the theory merely appears justified or, in addition, really is justified. The point, instead, is that if Quine is right, at the moment of judging, *there is no such distinction to be drawn*. In retrospect, an inquirer may conclude that she overlooked something, and hence failed to support her assertions, at a previous time. But if she accepts Quine’s naturalistic epistemology, such a conclusion can make sense for her only if she translates assertions she made at some previous time by sentences of her current theory. And, of course, the same issue recurs for her (new) current theory: in the moment of judging, no distinction can be drawn between taking herself to be justified in making the judgment and being justified in making it, in Quine’s minimal, non-validatory sense.³

That there is no distinction to be drawn, in the moment of judging, between taking oneself to be justified and being justified, is a consequence of Quine’s rejection of the traditional epistemological goal of validating or justifying science. It is perhaps for this reason, among others, that Quine grants that his rejection of this traditional goal “is no minor deviation” (Quine 1992, p. 19). In effect, he agrees with Kim that his new style of epistemology is radically different from what came before it. But he thinks criticisms of the sort Kim presses are ultimately without force because the traditional epistemological goal that the criticisms presuppose—the goal of validating science—has been thoroughly discredited and should be abandoned, for the Humean reasons I noted above.

5. The normative domain of Quine’s epistemology is a branch of engineering

Quine’s claim that his epistemology has normative force is not the claim that it contributes to the traditional project of vindicating science, but the very different claim that it has normative, or prescriptive, elements. Let us look again at the passage I quoted at the beginning:

³I discuss this point and its consequences in more detail in Ebbs 2011.

I am sometimes asked what happens to the normative force of epistemology when epistemology is absorbed thus into the empirical science of psychology. Are we bound to say that in science anything goes, just so [as] it is already going? By no means. The critique of thinking [the doctrinal concern of epistemology] has its place in applied science, on a par with engineering. Far from being nullified by the naturalizing of epistemology, it is bolstered by it; for the findings of science itself become available for normative use. (Quine, Kant lectures, I, p. 18; with my suggested readings in brackets)

What are these findings and how are they of normative use? Quine writes:

Science tells us about the possible causal chains that lead from events in the outer world to our sensory receptors. It is only by these chains, science says, that we can learn about the world. Science finds no hint of a mechanism for telepathy, clairvoyance, or horoscopic influences. When we hear testimony of occult events, we find with Hume that explanations in terms of motives and illusions *fit more readily into our global science than any hypothesis is apt to do that would accommodate the supposed occult effects*. (Quine, Kant lectures, I, p. 18-19; my emphasis)

Why think of all this as part of “applied science, on a par with engineering”? The italicized sentence of the last-quoted passage suggests an answer: the norms of epistemology are in effect engineering norms that we apply when we construct and revise our theories, norms that guide us in our decisions about which theories to adopt.

But what does Quine mean by “engineering”? A clue to the answer is found in his use of the word “engineering” in his 1946 Hume lectures to characterize the role of reasoning in Hume’s ethics. Quine writes:

[Hume] accounts for the morality of honesty as an institution developed by society for mutual benefit—protection of the property of each. So it is a case of engineering: reason enters as a means, to serve the general end of security of property. (Quine 1946, p. 131)

More generally, according to Quine, Hume reasons as follows:

Reason can answer why do you want to do this? Only by saying “Because it will bring that about.” Why do you want that brought about? Same old regress. We must cut the sequence, saying “Just because I want to;” “just because I like it.” Sheer taste, finally, that which reason serves as an engineer. And similarly for right and wrong: non-rational moral sense, finally, which reason serves as engineer. (Quine 1946, p. 127)

It is clear from these passages that when Quine writes of “engineering” and of “reason serving as engineer,” he is describing reasoning about how best to achieve a goal adopted

independently of the reasoning. The following passage from his 1986 “Reply to Morton White” shows that Quine’s use of “engineering” in his discussions of the norms of epistemology should be understood in exactly this way:

A word now about the status, for me, of epistemic values. Naturalization of epistemology does not jettison the normative and settle for the indiscriminate description of ongoing procedures. For me normative epistemology is a branch of engineering. It is the technology of truth-seeking, or, in a more cautiously epistemological term, prediction. Like any technology, it makes free use of whatever scientific findings may suit its purpose. It draws upon mathematics in computing standard deviation and probable error and in scouting the gambler’s fallacy. It draws upon experimental psychology in exposing perceptual illusions, and upon cognitive psychology in scouting wishful thinking. It draws upon neurology and physics, in a general way, in discounting testimony from occult or parapsychological sources. There is no question here of ultimate value...; it is a matter of efficacy for an ulterior end, truth or prediction. The normative here, as elsewhere in engineering, becomes descriptive when the terminal parameter is expressed. (Quine 1986, pp. 664–665)

Quine’s use of the word “engineering” here and elsewhere is similar to Carnap’s descriptions of the pragmatic, engineering aspects of constructing and adopting languages for scientific inquiry. Carnap compares languages with “instruments,” such as a “motor for a freight airplane,” that we design with a particular goal in mind (Carnap 1956, p. 43). Quine agrees with Carnap that the work of science includes linguistic engineering in the service of explaining and predicting sensory experiences, but rejects Carnap’s assumption that such linguistic engineering does not concern truth or falsity, but merely the choice of a convenient language. In “Two Dogmas of Empiricism,” for instance, Quine writes

Consider the question whether to countenance classes as entities. This, as I have argued elsewhere, is the question whether to quantify with respect to variables which take classes as values. Now Carnap has maintained that this is a question not of matters of fact but of choosing a convenient language form, a convenient conceptual scheme or framework for science. With this I agree, but only on the proviso that the same be conceded regarding scientific hypotheses generally. ... Carnap, Lewis, and others take a pragmatic stand on the question of choosing between language forms, scientific frameworks; but their pragmatism leaves off at the imagined boundary between the analytic and the synthetic. In repudiating such a boundary I espouse a more thorough pragmatism. Each man is given a scientific heritage plus a continuing barrage of sensory stimulation; and the considerations which guide him in warping his scientific heritage to fit his continuing sensory promptings are, where rational, pragmatic. (Quine 1953, pp. 45–46)

Although Quine does not use the word “engineering” in this passage, his endorsement of Carnap’s view that scientific theorizing often involves “choosing a convenient language form, a convenient conceptual scheme or framework for science” is of a piece, I submit,

with his characterization, in the Kant lectures and other writings, of the norms of epistemology as engineering norms. Such norms are pragmatic, in the sense that they concern how to construct theories that “fit [our] continuing sensory promptings” by explaining and predicting them. This pragmatism blurs Carnap’s supposed distinction between choice of convenient language forms and adoptions of empirical hypotheses:

I am as impressed as Carnap with the vastness of what language contributes to science and to one’s whole view of the world; and in particular I grant that one’s hypotheses as to what there is, e.g. as to there being universals, is a bottom just as arbitrary or pragmatic a matter as one’s adoption of a new brand of set theory or even a new system of bookkeeping. Carnap in turn recognizes that such decisions, however conventional, “will nevertheless be influenced by theoretical knowledge.” But what impresses me more than Carnap is how well this whole attitude is suited also to the theoretical hypotheses of natural science itself, and how little basis there is for a distinction. (Quine 1963, pp. 405–406)

By “this whole attitude,” I take Quine to mean the pragmatic engineering attitude toward theory construction. I therefore infer from this passage, and the similar one I quoted just before it, that the norms of epistemology that Quine regards as “on a par with engineering” are not restricted to specialized applications of science to support narrow prescriptions, such as that of not trusting soothsayers or astrologers, but are the norms of scientific theory construction generally.

This reading is independently confirmed by Quine’s own identification of the normative, engineering side of his epistemology with what he calls scientific method:

Normative epistemology, under naturalism, is simply the technology of science, the technology of predicting sensory stimulation. It is scientific method. (Quine 1990, p. 239, cited in Gibson 2004, p. 10)

Quine uses the phrase “scientific method” as an encompassing label for all that goes into good theorizing. He emphasizes that it is not a set of a priori norms that are criterial for good theorizing, but, instead, “a matter of being guided by sensory stimuli, a taste for simplicity, and a taste for old things” (Quine 1960, p. 23). In other words, scientific method for Quine is

the art of guessing, or framing hypotheses. The most general of its norms are perhaps conservatism, or the maxim of minimum mutilation, and simplicity, familiar in ontological contexts as Ockham’s razor. No general calibration of either conservatism or simplicity is known, much less any comparative scale of the one against the other. For this reason alone—and it is not alone—there is no hope of a mechanical procedure for optimum theorizing. Creating good hypotheses is an imaginative art. It is the art of science. (Quine 1995, p. 49)

As Quine explains in *Word and Object*, scientific method thus conceived is integral to our pursuit of truth:

Scientific method, whatever its details, produces theory whose connection with all possible surface irritation consists solely in scientific method itself, unsupported by ulterior controls. This is the sense in which it is the last arbiter of truth. (Quine 1960, p. 23)

To say scientific method is the “last arbiter of truth” is not, of course, to say that it is infallible, but only that it is our best means of judging truth. As Quine explains,

Unlike Descartes, we own and use our beliefs of the moment, even in the midst of philosophizing, until by what is vaguely called scientific method we change them here and there for the better. Within our total evolving doctrine, we can judge truth as earnestly and absolutely as can be; subject to correction, but that goes without saying. (Quine 1960, pp. 24–25)

Anchored by this conception of how best to judge truth, the norms of Quine’s epistemology fall exclusively on the doctrinal side—they are norms for theory constructing, inseparable from scientific method itself.⁴

6. Norms on the conceptual side?

Why then does Quine claim in the Kant lectures that “On the conceptual side normative considerations loom equally large” (Kant lectures, I, p. 19)? In support of the claim he writes,

Terms need to be grounded in perceptual criteria so as to provide perceptual evidence for our scientific doctrines. Here again the empiricist counsel of traditional epistemology emerges. (Kant lectures, I, p. 19)

This explanation is unconvincing, however, for two reasons. The first is that the doctrinal prescription to construct theories that fit with our evidence includes a prescription to link at least some of our terms with sensory evidence, so it is natural to place the latter prescription on the doctrinal, not the conceptual side of epistemology. The second is that, as Quine emphasizes, a reasonable empiricist should not “aspire to a completely operational lexicon” (Kant lectures, I, pp. 19–20). What is prescribed, instead, is a “judicious weighing” of “perceptual criteria” for our use of terms and of “structural simplicity and the other related qualities” of “a satisfactorily explanatory scientific theory.” Such weighing clearly falls on the doctrinal, or theory-construction, side of epistemology. So the puzzle remains: Why does Quine say, “On the conceptual side normative considerations loom equally large”?

⁴Johnsen 2005 sparked some of the thinking that led me to the reading I present here. Gregory 2008, chapter 5, arrives at a similar conclusion, without highlighting, as I do, that Quine’s epistemological norms are part of what he calls the doctrinal side of epistemology, whose task is constructing good theories. Peter Hylton distinguishes between epistemological norms that tell us “how to act so as to obtain successful theories” and epistemological norms for “the thinking-up of successful theories” (Hylton 2007, p. 84). On my reading, the norms of Quine’s epistemology that concern how to act to obtain successful theories are not distinct from the norms for thinking up successful theories.

Expanding on his first attempt to explain this claim, Quine offers the following example:

Mentalistic terms are already loosely anchored in the physical world by how we learn them, but that control lapses when the anchor lines run to excessive lengths. Normative considerations prompt us at that point to look to behavioristic discipline as a corrective. (Kant lectures, I, p. 20)

This passage raises a question that I cannot hope to answer completely here: does Quine think that his critique of mentalistic vocabulary depends in an important way on considerations from the conceptual side of epistemology, such as psychological descriptions of how mentalistic terms are related to impacts at our nerve endings?

One might think that the answer to this question is “yes”. In the Kant lectures, Quine argues that propositional attitude ascriptions (even those, such as “Tom perceives that it’s raining,” which are tightly tied to sensory stimulation) “have no place in an austere natural science” (Kant lecture III, p. 13; this repeats Quine 1960, p. 221). The conclusion is based in part on considerations from the conceptual side of epistemology—in particular, the discovery of excessively long “anchor lines” that run from mental terms to sensory stimulation—and may therefore seem to support Quine’s claim that “On the conceptual side normative considerations loom equally large.”

This line of reasoning is suggestive, but I cannot see that it makes a strong case for locating any norms on the conceptual side of Quine’s epistemology. The problem is that according to Quine all theories are (at least) *underdetermined* by sensory evidence. It is not the observed slack between the idioms of the propositional attitude and sensory stimulation by itself that establishes that they “have no place in an austere natural science” (Kant lecture III, p. 13), but the best explanation of that observed slack. And all such explanations must be arrived at and evaluated on the doctrinal side of epistemology, guided by scientific method, with its “engineering” norms for theory construction. I therefore do not see how the discovery, on the conceptual side of epistemology, of excessively long “anchor lines” that run from mental terms to sensory stimulation, supports Quine’s claim that “On the conceptual side normative considerations loom equally large.”

One could try to accommodate this claim by regimenting Quine’s terms “doctrinal” and “conceptual” so that some doctrinal tasks are also conceptual tasks and the norms for those doctrinal tasks are for that reason also norms for the corresponding conceptual tasks. This possible regimentation of the terms “doctrinal” and “conceptual” is not strictly ruled out by Quine’s uses of them, but it is *ad hoc*, and fills poorly with his explanations of the doctrinal and conceptual tasks of epistemology.

I conclude that by Quine’s own standards, his puzzling claim that “On the conceptual side normative considerations loom equally large” is false, or, at best, highly misleading. When we are working on the doctrinal side of epistemology, constructing theories in our

pursuit of truth, our task is to construct theories whose terms are linked to impacts at our nerve endings as closely as possible, given our other theoretical goals. When are working on the conceptual side of Quine's epistemology, our task is to describe both how a child may come to learn her first language and the links between her sentences and sensory stimulation that come to exist as a result of such learning. It is the doctrinal side of Quine's epistemology that is normative in Quine's pragmatic, "engineering" sense. The conceptual side of Quine's epistemology is purely descriptive.

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