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Degrees of Naturalism in Epistemology and Philosophy of Science

Matthew Kern
Kent State University

ABSTRACT

Naturalism in philosophy of science explicitly came on the scene in 1969 with the publication of W.V. Quine's "Epistemology Naturalized." Quine's view can be seen as a backlash to prior foundationalist and positivist views that understood epistemology and philosophy of science as independent of and prior to science itself. Here Quine argued that it is not fruitful to try to justify scientific practice by means of an a priori philosophical theory or method. Instead, we ought to take the results of the sciences for granted, and not worry about trying to answer Hume on skeptical worries about induction, according to Quine. This results in a "naturalistic" project in which the normative discipline of epistemology is replaced by the descriptive discipline of human psychology. First, I will examine Quine's paper in depth. Second, I will examine the responses of Jaegwon Kim and Alan Berger, who both advance, in their own ways, the objection from normativity. Third, I will examine a naturalistic response from Ronald N. Giere. I will ultimately argue for an intermediate version of naturalism, in which the data of the sciences are taken as relevant to philosophy without standing in need of justification by philosophy, and yet philosophy cannot be replaced by science as Quine would wish.

I. INTRODUCTION

Naturalism in philosophy of science explicitly came on the scene in 1969 with the publication of W.V. Quine's "Epistemology Naturalized." Quine's view can be seen as a backlash to prior foundationalist and positivist views that understood epistemology and philosophy of science as independent of and prior to science itself. Foundationalism (in this context) is the view that scientific knowledge ought to be deduced from indubitable first principles and that the sciences need to be justified from an independent perspective by means of a purely rational methodology (i.e., something like an inductive logic). The positivists took a foundationalist approach to philosophy of science in several ways: (1) their reduction of the meaning of scientific statements/theoretical language to observation statements/observational language, (2) their use of the analytic-synthetic distinction to create a sharp divide between the empirical subject matter of the sciences and the conceptual subject matter of philosophy, and (3) their insistence on the need for formulating an inductive logic which would secure the epistemic privilege of science in relation to all other forms of human inquiry.

By the second half of the twentieth century, many philosophers of science had grown deeply skeptical of this program. Reductions of meaning to observation were notoriously fraught with problems, since one would have to state every possible piece of potential experience that could confirm or disconfirm a statement for the reduction to be legitimate. This proved to be a mightily difficult task, though theorists such as Rudolf Carnap (in his work *Aufbau*) continued to attempt to reduce the meaning of a statement to a "sense-datum language." However, the biggest opponent of the positivists at this time was Quine, who attacked both elements (1) and (2) of the positivist program in his influential "Two Dogmas of Empiricism." Quine attacked (1) on the grounds that there is no such thing as the meaning of a statement, since the same statement can mean different things (i.e., have different confirmation and disconfirmation conditions in light of possible experience) depending on how those statements are holistically related in each individual's web of belief. Quine attacked (2) on the grounds that the term 'analyticity' did not have a clear meaning, since it was closely tied to other confusing notions such as 'synonymy,' etc.

It is the third part of the positivist program – the search for an inductive logic – that Quine more explicitly attacked in his later 1969 article "Epistemology

Naturalized." Here Quine argued that it is not fruitful to try to justify scientific practice by means of an a priori philosophical theory or method. Instead, we ought to take the results of the sciences for granted, and not worry about trying to answer Hume on skeptical worries about induction. This results in a "naturalistic" project in which the normative discipline of epistemology is replaced by the descriptive discipline of human psychology. Science is not in need of philosophical justification, but provides tools for understanding how human knowledge acquisition works. Therefore, there is no need for anything like epistemology as traditionally conceived (as an a priori search for normative principles that can provide a firm foundation for knowledge and tell us what statements are justified, etc.) There were many responses to Quine. Some were sympathetic to traditional epistemology, while others thought that Quine was on the right track but went too far in proposing the replacement of philosophy by science.

First, I will examine Quine's paper in depth. Second, I will examine the responses of Jaegwon Kim and Alan Berger, who both advance, in their own ways, the objection from normativity. Third, I will examine a naturalistic response from Ronald N. Giere. I will ultimately argue for an intermediate version of naturalism, in which the data of the sciences are taken as relevant to philosophy without standing in need of justification by philosophy, and yet philosophy cannot be replaced by science as Quine would wish.

II. QUINE'S "EPISTEMOLOGY NATURALIZED"

I will begin with Quine's original 1969 paper, "Epistemology Naturalized." Quine begins by tracing the origin of the foundationalist views that he is fighting against. Quine identifies the distinction between a theory of concepts/meanings and a theory of truths in the attempted reduction of mathematics to logic (Quine 1969, 70-71). He further traces back the history of this distinction to Hume, who identified objects with sense impressions (a form of reductionism about meaning), and who denied that we can justifiably make statements about the future based on past experience (the denial of the rationality of induction) (Quine 1969, 72). Later, meaning was identified primarily with sentences and set theory was employed for the sake of categorizing sense impressions (Quine 1969, 73). Quine cites Carnap's *Aufbau* as an example of this kind of work (Quine 1969, 74). Meanwhile, progress in answering Hume on the side of a "theory of truths" was still unsuccessful;

this was considered a scandal for philosophy in that it eliminated any hope for certainty (Quine 1969, 75). Carnap had sought to find a "rational reconstruction" of how we make inductive inferences, but Quine challenges this task and suggests that we take a simpler approach: "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?" (Quine 1969, 75).

Quine immediately responds to the objection that such a strategy would be flagrantly circular. We cannot deduce science from observations, so why should we keep trying? In order to understand how we come to know the world, we ought to use anything at our disposal, even the results of the sciences that pertain to human perception (Quine 1969, 76). The project of translating science into observation terms and logic has failed and will always continue to fail, so why should we keep trying to do that (Quine 1969, 76)? At the very best, these translational efforts are stilted and fabricated, argues Quine. We cannot formulate the "difference that the truth of a given statement might make to experience" in a single sentence; rather, whole theories have experiential import (Quine 1969, 79). Here Quine links his confirmation holism with the hopelessness of performing the translation that the positivists were after, and more importantly, with the impossibility of offering an inductive method that could justify scientific practice from a perspective outside of science (Quine 1969, 79-80). In other words, the indeterminacy of translation removes the possibility of translational schema that could justify scientific inferences by means of a purely sensorial or experiential language.

At this point, Quine provocatively suggests that the positivists had in a sense not gone far enough: not only is metaphysics dead— epistemology (as traditionally conceived) is also dead (Quine 1969, 82). With the failures of the positivists, we are only left with epistemology as a chapter of the natural sciences (Quine 1969, 82). The project now is to understand how a human subject, after being exposed to certain patterns of sensory information, etc., comes to have a description of the world (Quine 1969, 83). Quine makes some ambiguous statements at this point. He says that "something like the old rational reconstruction" can still go on, but "we can now make free use of empirical psychology" (Quine 1969, 83). Epistemology and natural science are "in" each other as component parts (Quine 1969, 83-84). For Quine, awareness ceases to be a necessary condition for

justification; instead, we will talk about an organism that is being stimulated by an environment (rather than internal states). Instead of observation statements, we will have statements for which "all the speakers of the language give the same verdict when given the same concurrent stimulation" (Quine 1969, 87). The end of traditional epistemology should not lead to the "epistemological nihilism" of Kuhn, Polanyi, and others; instead, we can finally make progress by means of psychology, linguistics, and evolutionary biology (Quine 1969, 87-90). Quine presents a provocative and strong critique of traditional epistemology, but what does his project really amount to, and can it possibly serve as a replacement for traditional epistemology?

My central contention at this point is that Quine's pitch for naturalized epistemology is rather vague, though the general thrust of his argument is strong. First, Quine is quite right that there is no straightforward way to answer Hume on his own terms. There really is no way to non-circularly justify the very practice of making inductive inferences. Furthermore, it really is impossible to reduce scientific theories to observational terms. Many scientific theories appeal to unobservable entities such as genes, quarks, electrons, etc., and we cannot cash out the meaning of statements with those terms by speaking of the readings of an electrometer, or any similar strategy. Our scientific theories make statements about the structure of reality by quantifying over these entities. In fact, one might think that science is essentially defined by the positing of unobservable entities to explain observable phenomena. Quine is also quite right to cast doubt on the possibility of an inductive logic or a rational reconstruction of the inferential steps that an ideal scientist would make to justify a theory (a theory of scientific justification). Furthermore, there is ultimately no way to justify science from outside of science. The claim that science does not need a justification is more questionable, but it may be the only way for a scientific philosopher to allow scientific theory into philosophy. But naturalized epistemology is not circular, since it does not even try to justify science.

Nevertheless, it seems that Quine makes too much of a leap in suggesting that we replace epistemology with psychology/linguistics. It does not follow from the fact that we cannot provide an a priori metaphysical/epistemological foundation for science that we must eschew the very notion of justification. To be fair to Quine, it is not clear whether he does want to remove the concept of justification, since he does say that "something like traditional epistemology" will

still go on. But the large thrust of his argument is against the idea of any normative epistemology, and I fail to see how 'justification' could not be a normative notion. Even if knowledge could be naturalized (which seems more plausible, though this would not be knowledge in the sense of "justified true belief"), how could justification be? Finally, it is not clear how naturalized epistemology could allow us to answer questions about the foundation of morality, what a just society would look like, and other normative questions. But it seems that a comprehensive epistemology should tell us how we can know the answers to these questions.

Now one might be an anti-realist about all these notions, but that would require separate argumentation from the arguments for naturalized epistemology. And even if we could talk about how the world impacts our receptors and influences our perception (we can, since we have psychology), it is unclear what that would tell us about what beliefs we should have beyond trivial beliefs that are based on immediate sensory experience. How can naturalized epistemology tell us what to believe about who will win the next presidential election? The defender of Quine will certainly have an answer related to statistics and history, but it seems that this would go beyond the strictures that Quine places on naturalized epistemology here, since those parts of the web of belief are very far removed from sensory irritations. So while Quine's position accounts for the difficulties of prior foundationalist approaches, it seems to leave open other, essentially normative questions (essentially prescriptive questions, to be exact) about knowledge as such unanswered, and it is not clear that Quine has given us a good reason to reject these questions as ill-formed. I will now turn to two philosophers, Kim and Berger, who express some of my criticism of Quine in more detail.

III. THE NORMATIVE OBJECTION TO NATURALIZED EPISTEMOLOGY

My main concern with naturalized epistemology is its seeming elimination of normativity from the concept of knowledge. Jaegwon Kim expresses this worry in his paper "What is 'Naturalized Epistemology?'" Kim begins by recounting the Cartesian epistemic project. Descartes' goal was to find, from indubitable foundations, propositions that were worthy of belief (Kim 1988, 229). This project involves two components: (1) formulating the standards by which propositions are evaluated for belief or rejection and (2) determining what beliefs one ought

to hold by applying the criteria of (1) (Kim 1988, 229). Modern epistemology has inherited these two goals and reformulated them to an extent. The goals are now (1) to find the conditions for justifiably taking a belief to be true (these conditions must be stated without the use of epistemic terms for them to be useful) and (2) to discover what beliefs we are justified in holding (Kim 1988, 230). Kim especially stresses the parenthetical clause of project (1): "the criteria of justified belief must be formulated on the basis of descriptive or naturalistic terms alone" (Kim 1988, 230). Justification thus has a crucial role to the epistemic project as traditionally conceived, and it provides the normative dimension to the concept of knowledge (Kim 1988, 230). The foundationalist strategy is to begin by finding a set of "directly" justified beliefs and then justify all other true beliefs by relating them to these initial "basic" beliefs (Kim 1988, 231).

At this point, Kim presents Quine's arguments for naturalized epistemology. He says that Quine's claims about reductionism (of meaning) and inductive logic are justified, but claims that no one would quibble with Quine on these matters (Kim 1988, 232-3). The controversy comes about when looking at Quine's conclusions. For Quine is not only arguing against the usefulness of the project of justifying science, but also wants us to replace traditional epistemology with a psychology of cognitive processes (Kim 1988, 233). Kim pinpoints the removal of justification and thus normativity from epistemology as the heart of Quine's project (Kim 1988, 233-4).

I think Kim is fair in representing Quine's position here. Kim's objection is that a nomological theory of belief fixation would only provide a causal description of the relation between sensory input and cognitive output, and this nomological relation could not fulfill the same role in our epistemic efforts as an evidential relation would in a traditional epistemology (Kim 1988, 234). Nomological patterns depend on the psychology of the organism, while evidential factors abstract away from psychology (Kim 1988, 234). The point is not that psychology is irrelevant to epistemology; rather, it is that naturalized epistemology cannot be epistemology at all since it removes the normativity of key terms such as 'evidence' or 'justification' (Kim 1988, 235). In other words, naturalized epistemology cannot be a replacement for traditional epistemology because it is not even trying to do the same thing. A nomological description of belief fixation is just not the same thing as a normative prescription that tells us what beliefs we should hold. Kim concludes that epistemic values must be "consistent with" the facts, but there

must be value for the project to even be considered an epistemic one (Kim 1988, 235-6).

Kim lays out my worries about normativity quite well and advances the objection to Quine in a very straightforward and blunt manner while accurately representing Quine's project. Alan Berger nuances this objection in a way that may be further helpful.

In his paper "The Quinean Quandary and the Indispensability of Nonnaturalized Epistemology," Berger covers much of the same territory and argues for basically the same position as Kim. However, he contributes to the dialectic further with a few more arguments. Once again, Berger recounts the traditional Cartesian project of justification, in which one searches for justified basic beliefs and derives chains of justification from those beliefs to all other justified beliefs (Berger 2003, 367-8). Berger insightfully notes that the first part of the Cartesian project – the formulation of criteria of justification – drops out of Quine's project, since Quine adopts, from the beginning, the criteria of science for this task (Berger 2003, 368). All of this is familiar ground from Kim.

Berger contributes something new when he attributes a view that he calls "epistemic if-thenism" to Quine. This is a strategy for reducing normative language to descriptive language. It offers us conditionals with antecedents that specify the epistemic goals that one is seeking and with consequents that tell one how one can achieve those goals (Berger 2003, 372). Berger says that Quine appears to be committed to the conditional "If you seek the best way to discover truths and make predictions, then use science" (Berger 2003, 372). But for Quine, the only way we have of identifying truths is by taking them to be the beliefs that we are rationally justified in holding now, and for Quine, those are of course the beliefs justified by science (Berger 2003, 372-3). So the conditional becomes "if you seek to make statements that are scientifically acceptable, then use science," but this is rather unhelpful (Berger 2003, 373). Furthermore, Berger objects that Quine's definition of an observation sentence as "one which all speakers of the language give the same verdict when given [during] the same concurrent stimulation" leaves Quine open to cultural relativism, since this would result in different communities having different observation sentences (Berger 2003, 373-4). The only way that Quine can avoid relativism is to take on board "epistemic authoritarianism," the view that the truth should not be judged independently of the standards of our community (Berger 2003, 374).

Berger's next objection is that there is a circularity within Quine's argument for holism. Quine's thesis for epistemic acceptability is "A theory is epistemically acceptable iff it is compatible with the data" (Berger 2003, 375). As a matter of implication (a matter of logical relations), we cannot deduce something that is logically contradictory with premises that are based on the data, but Quine seems to mean that we should not make such an inference (a matter of psychological reasoning) (Berger 2003, 377). But then Quine is saying that we ought to follow this epistemic principle, and he is doing traditional normative epistemology (Berger 2003, 377). In addition, Quine's arguments for confirmation holism are not based on scientific evidence, but hold as a matter of philosophical principle (Berger 2003, 378-9). Thus, Quine does not seem to take a consistent naturalist stance. Berger goes on to argue that Quine's argument for holism is self-refuting, since it relies on deduction and the notions of validity/invalidity, which Quine sees as contingent truths (Berger 2003, 380-1). But these principles are indispensable to science, and yet cannot be part of science, so naturalized epistemology fails (Berger 2003, 381).

Kim and Berger advance the normative objection against Quine on much the same terms. It just seems that a causal description of human sensory faculties cannot replace a prescriptive account of how we should evaluate propositions. In addition, Berger points out that Quine seems to be inconsistent, since his argument for holism is not based on scientific principles. It is at least difficult to see how it could be. Perhaps one could argue that Quine observed patterns of belief fixation (which need to be understood in behavioristic terms for Quine) in many individuals and came to formulate holism as an empirical hypothesis in this way. However, it seems that confirmation holism is a normative matter for Quine, since any adjustment "can" be made to one's web of belief in light of contradicting evidence. There is of course an ambiguity in this "can," but there is at least some reason to think that Quine is inconsistent here.

However, Berger's last point about Quine's argument for holism being self-defeating is misguided. All that Quine needs to say is that he accepts deductive and implicative notions such as validity/invalidity as central parts of his web of belief. Because they are central to his web of belief, he can use them in arguing for holism, even though he will have to recognize that he "could" have to drop them in light of future experience. But in the end, I take Kim's formulation of the problem with Quine's naturalism to be the main sticking point. Quine is right

about many things, as I noted above, but he seems to go too far in his talk of replacement. But to counter these concerns, I will now examine the work of another naturalist, someone who is sympathetic to Quine. This is the work of Ronald N. Giere.

IV. A NATURALISTIC RESPONSE TO THE OBJECTION FROM NORMATIVITY & WHERE I PLACE MYSELF

In his paper "Philosophy of Science Naturalized," Ronald N. Giere defends naturalism in philosophy of science against two foundationalist approaches, "methodological foundationalism" and "metamethodology" (331). Giere's naturalism incorporates Kuhn's proposal for a "role for history" in philosophy of science and incorporates a decision theory model to explain theory choice in the sciences (Giere 1985, 331). Giere begins by defending the claim that Kuhn was a naturalist about philosophy of science. Kuhn's denial of a distinction between a context of discovery and a context of justification as well as his talk of "gestalt switches" (as opposed to "rational evaluation of theory") and "persuasion" (instead of "rationality") seem to mix philosophy of science with psychology (Giere 1985, 332). However, even many theorists who were sympathetic to Kuhn in terms of providing a role for history did not accept his naturalism; philosophers such as Lakatos and Laudan still sought to show how scientific inquiry was rational in the course of history (Giere 1985, 332). Giere's goal is to show that Kuhn was quite right in adopting naturalism and refusing to construct a "rational methodology" of this sort (Giere 1985, 332).

Giere recounts three objections against naturalism: (1) the circle argument– it is circular to use science to investigate scientific methods, (2) the argument from norms– naturalism can only describe methods used by scientists, but the point of philosophy of science should be to prescribe what methods scientists should employ, and (3) the argument from relativism– naturalism would be unable to say that evolutionary theory is better than "creation science" (Giere 1985, 333-4). The circle argument is usually used to justify some form of foundationalism. It is in the background of the positivists' claim that logic was at the foundation of the scientific method (Giere 1985, 335). Carnap kept trying to make this project work, but logic did not help us evaluate actual scientific theories, and there was no technical way to cash out the notion of an "initial probability of all hypotheses" (Giere 1985, 335).

Giere notes, however, that this project was also tied up with a circular problem—this inductive logic was supposed to be an explication of our pre-reflective notion of evidential support, and it was supposed to provide evidence in turn for that same notion (Giere 1985, 336). The problem is that "The logic is at best descriptive of our intuitions. It does not insure us that our intuitions themselves are correct" (Giere 1985, 336). Giere also charges the "metamethodology" of Lakatos and Laudan as falling prey to a similar circular problem— this program also only ends up reflecting our intuitions about rationality (Giere 1985, 337).

Giere here finds a crucial insight about the normativity involved in assessing programs in philosophy of science/epistemology. The reality is that all programs involve normative assumptions from the start, and naturalism is not different from any other program on this score. But at least the naturalist is upfront about these assumptions. So, I do not take the circle argument to be a serious threat to naturalism. However, Giere also seems to think that he has answered the argument from norms here. He notes that the foundationalist or metamethodologist can only provide a description of our pre-existing intuitions, and not actually prescribe those intuitions as representative of rationality as such (Giere 1985, 338). However, this response does not seem satisfactory to me. He has not shown that we should give up our search for criteria of justification and simply replace that quest with a search for the causal principles underlying human perception. He has only shown that the normative output of an epistemological theory/theory in philosophy of science will "reflect" the normative input baked into that theory from the beginning. He is correct to point out that this is the case with non-naturalist approaches.

However, as Berger noted, there are normative assumptions baked into Quine's project as well, and it is unclear how this normativity would not be reflected on the output side of analysis too. Quine may very well deny this (and he must for epistemology to be "naturalized" in his sense), but it seems that he implicitly wants us to move from an understanding of psychology to an acceptance of certain human cognitive and behavioral procedures as the best way to know the world, at some point in the move from input to output. If he does not want us to do that, then he is not offering an epistemology as all in the first place. So, we are back to the worries of Kim and Berger again at this point. The Quinean will likely argue in reply that I am assuming a normative conception of epistemology and trying to impose it on Quine, and that Quinean may be right. I do not know if there is a way to avoid question begging at this point, but it still does not seem

like Quine or Giere have done enough to convince a traditional epistemologist to give up his/her discipline.

Giere presents his own version of naturalism at this point, which he calls "an evolutionary perspective." Much of it seems to mirror Quine's own project, though there is more of an emphasis on the role of evolutionary history. The goal is to "explain how creatures with our natural endowments manage to learn so much about the detailed structure of the world...this problem calls for a scientific explanation" (Giere 1985, 339-340). Again, I believe that this is a worthy enterprise, and it is certainly important and relevant for how we should understand knowledge and knowledge acquisition, but I do not see how it can fulfill the role of traditional epistemology in the intellectual landscape. Also, to continue a point that I had made earlier, I do not see how this project would tell us how we form beliefs about phenomena that are far removed from basic-level sensation. The relationship between sensation, perception and beliefs is also one fraught with difficulties. I am not even sure if 'belief' is a scientific notion. It seems that we can have a nomological account of sensation/perception, a psychological account of belief fixation, and an epistemological account of what beliefs we should have at the same time. These projects are of course interrelated, but distinct in goals. However, Giere is quite right to criticize both traditional rationalists and traditional empiricists for being unable to get beyond subjective experience and find the actual mechanisms that govern our conceptual and linguistic abilities (Giere 1985, 340). And he is right to ignore the objection that invoking evolutionary theory to explain how we know about the world would be circular (Giere 1985, 340). Nor does a physicist need a philosopher to tell him/her that what he/she is doing is justified. In this sense, I support some version of naturalism.

Finally, Giere argues that an evolutionary perspective can deal with the problem of norms and relativism. According to this perspective, norms are a product of a stage in human evolution in which society became so complex that enforced patterns of social behavior were needed to avoid social chaos (Giere 1985, 341). This leads Giere into questions about whether his evolutionary perspective can avoid cultural relativism about epistemic norms. He does not think that he needs to be committed to metaphysical realism, the view that "there is exactly one true and complete description of 'the way the world is'" (Giere 1985, 342). I too find a notion such as this unhelpful for the purposes of metaphysics and epistemology,

and Giere is right that other animals may have equally "good" representations of the world that will differ from our own.

Giere then rebuts Putnam's contention that a naturalist would provide a vacuous definition of rationality. The lesson of naturalistic epistemology is that there is no sharp boundary between animals and humans, and thus between the irrational and the rational (Giere 1985, 342). I again agree with Giere here. The failures of providing an inductive logic or a rational reconstruction have shown that we cannot maintain such a sharp boundary. However, I think that a "replacement" version of naturalism would have to drop any notion of rationality at all, since this is a normative notion. But I think that the notion of rationality is still useful—we need only drop an essentialism about rationality, as Giere claims (Giere 1985, 343). Giere then goes into an extended discussion about the human need to find some essential difference between animals and humans (Giere 1985, 343). I think that this is mostly a red herring, though I recognize that this discussion is in the background when discussing these issues. I do not see how it is directly relevant to the question of whether some form of naturalized epistemology is the most fruitful philosophical program.

Next, Giere provides a naturalistic account of theory choice based on his evolutionary program. From an examination of the way actual scientists are trained and the pedagogical strategy of scientific textbooks, Giere argues for "constructive realism" (Giere 1985, 344-6). This is a realism which "understands hypotheses as asserting a genuine similarity of structure between models and real systems without imposing any distinction between 'theoretical' and 'observational' aspects of reality" (Giere 1985, 346). This realism is not metaphysical in that it is not committed to there being "a single complete description of reality" (Giere 1985, 346).

Then Giere advocates for a "bottom-up" approach to theory choice, rather than the traditional "top-down" approaches (Giere 1985, 347). The point is that a choice between theories is of the same kind as any other choice that an individual makes during his/her life (Giere 1985, 347). Giere advances a decision-theoretic model of theory choice, which is centered around a decision problem defined by a set of possible options and a set of possible states of the world (Giere 1985, 347). The agent's desires are ranked in relation to these states of the world (Giere 1985, 348). Agents adopt a strategy that will fulfill their minimum satisfaction level— there is no need to pick *the* rational choice (Giere 1985, 348).

Giere explains how this model would work by presenting the example of a major revolution in geology related to plate tectonics (Giere 1985, 348-353). One important thing to note is that he allows professional interests to play a role in the process of individual theory choice; this stresses the fact that he wants to talk about human agents with normal desires (Giere 1985, 352). Giere ends his paper by advocating a middle way between a universal naturalistic philosophy of science and one which can only apply to local historical periods (Giere 1985, 353-55). While all these later parts of Giere's article are secondary to his main points, they do provide an interesting look at what an "evolutionary epistemology" could look like. I do not have any quibbles with this part of the paper, though I do not want to necessarily be committed to these notions. I will now conclude by summarizing the core dialectic as I see it, restating my position, and considering an old objection one more time.

V. CONCLUSION: A MODERATE NATURALISM

I will now summarize the dialectic and explicitly situate myself within it. Quine is quite justified in looking for an alternative way to do epistemology, because the foundationalist and positivist strategies that he had inherited had failed. The reduction of scientific meaning to observational language simply cannot be done; scientific statements about unobservable entities do have meaning and are at the heart of many powerful scientific theories today. The distinction between conceptual truths/empirical truths (or analytic truths/synthetic truths) rests on vacuous circularities, does not explain the linguistic phenomena that it is supposed to account for, and is not even needed to do the epistemic work that it was introduced to address. Any attempt to create a purely formalized inductive logic or method of rational reconstruction to secure science as a rational enterprise is doomed to fail. We cannot answer Hume on his own terms. All of this is quite true. And it seems that a good starting point for a scientific philosopher such as Quine is science itself. Those scientific results cannot be justified by an a priori philosophical argument that secures the rationality of the scientific enterprise. It does seem that we should use the results of the sciences in our philosophical endeavors, given the powerful theoretical and technological fruits that they have given us. But I take it that this is not too controversial and results in only a minimal naturalism. The question is whether Quine is right that we should remove

normativity from epistemology and settle for a causal-nomological account of human perception in place of traditional epistemology. It is this claim, if it is to be attributed to Quine (and it is not entirely clear, since Quine leaves some ambiguity in his view), that I just cannot make sense of. I do not know what a non-normative epistemology would even be. Perhaps one could charge me with holding some notion of analyticity in making this claim. However, I am not saying that Quine is logically incoherent in talking about naturalized epistemology. I can only say that his conceptual scheme is incommensurable with my own on this point. And that is not a knockdown argument against Quine; it is just a personal confession.

On a more purely philosophical note, I do think that the objection from normativity is something that any promoter of naturalized epistemology must face. This objection has much more weight behind it than the "circularity" objection or the "relativism" objection. For it seems that in making scientific determinations about how the human perceptual apparatus works, we are not giving the inquirer any guidelines about what beliefs to accept and what to reject. We are only describing the processes that, in an extended and somewhat unclear way, "result" in belief fixation. And it is at the level of beliefs that normativity comes onto the scene, since a set of beliefs can be coherent, incoherent, rational, irrational, etc. When we are just talking about how axons travel down certain nerve endings and provide information to the brain, we are operating in a different space, a space of pure description. This space is only indirectly related to the space of reasons where we can understand beliefs as rational or irrational, etc. This space does not disappear with the death of foundationalism. We still need to use terms such as 'rational' to indicate our commitments in the space of reasons, and just because we are no longer attempting to find a theory of rationality that could justify science, we are not free to abandon a theory of rationality as such.

Giere's use of decision theory even hints at the naturalistic possibilities for a theory of rationality. This theory would talk about the beliefs and desires of a human being as a social organism, but it would still be a theory of rationality, and 'rationality' is normative notion. It is still the domain of philosophy to work with these normative notions, and there is never going to be a science (in the sense of controlled experimentation) that tells you about these notions. Yet they are ineliminable parts of our conceptual scheme, and we continue to use them as we navigate the space of reasons. Kim and Berger, despite advancing many concerns that do not put a dent in Quine's project, both express this in their own ways.

Giere shows the promising directions that naturalism could go in, but does not quell this fundamental concern with regard to the more extreme "replacement naturalism"/naturalized epistemology of Quine. The possibilities for a naturalist epistemology are limitless, but a naturalized epistemology in Quine's sense is not an epistemology at all.

REFERENCES

Berger, Alan. 2003. "The Quinean Quandary and the Indispensability of Nonnaturalized Epistemology." The Philosophical Forum 34 (3 & 4): 367-381.

Giere, Ronald N. 1985. "Philosophy of Science Naturalized." Philosophy of Science 52 (3): 331-356.

Kim, Jaegwon. 1988. "What is Naturalized Epistemology?" In Philosophical Perspectives. Vol 2: Epistemology, edited by James Tomberlin, 229-238. Atascadero: Ridgeview Publishing.

Quine, W. V.. 1969. "Epistemology Naturalized." In Ontological Relativity and Other Essays, edited by W.V. Quine, 79-90. New York: Columbia University Press.