14

NATURALIZED EPISTEMOLOGY: A BRIEF INTRODUCTION

Kourken Michaelian & Marina Bakalova

1 WHAT IS NATURALIZED EPISTEMOLOGY, AND WHY DOES IT MATTER?

Naturalism is an approach to philosophy that finds applications in fields as diverse as metaphysics, ethics, and epistemology. The debate over the meaning and implications of naturalism is arguably most advanced in the latter field.

What is naturalized epistemology? Answering this question is best delayed until we have begun to review our featured readings (by Quine, Goldman, Kim, and Kornblith). The controversy over naturalized epistemology has been one of the most severe in contemporary epistemology, with metaepistemological debates between proponents and opponents of naturalized epistemology every bit as intense as first-order debates between foundationalists and coherentists, or between internalists and externalists, and the controversy has been in part over what exactly it might mean to naturalize epistemology. Naturalized epistemology thus represents something of a moving target.

Why does naturalized epistemology matter? Even before saying what naturalized epistemology is, we can say something about why proposals to naturalize epistemology have been so intensely controversial. Like most areas of analytic philosophy, epistemology was for much of the 20th century characterized by a strongly *a priori* spirit, with epistemologists defending theories largely on the basis of their intuitive plausibility. Epistemology thus proceeded without any reference to the methods, theories, or findings of related empirical sciences;[1] and while there are important differences between different flavors of naturalized epistemology, many naturalistic approaches challenge the legitimacy of the *a priori* approach by arguing that epistemology ought to proceed in close conjunction with empirical science.

Naturalized epistemology thus posed an important challenge to the very self-conception of the field. Rather than spending their time working out ever-more-refined responses to ever-more-elaborate Gettier cases in which beliefs are nevertheless formed by simple processes such as "visual

1 For one classic text embodying this *a priori* spirit, see (Chisholm, 1977).

perception" (Shope, 2004), for example, epistemologists might, if naturalism is right, need to learn something about how the human visual system actually works. Rather than debating what happens to beliefs subjected to defeaters, which are then subjected to defeater defeaters, which are themselves subjected to defeater defeater defeaters (Lehrer & Paxson, 1969), while assuming that beliefs are simply stored in memory over time (Lackey, 2005), epistemologists might need to learn something about the multiplicity of complex systems underwriting our capacity to remember. In the eyes of many epistemologists, an epistemology that needs to take the details of human cognitive systems into account begins to look too much like psychology,[2] to lose its distinctively philosophical character.

Of course, the fact—if it is a fact—that naturalizing epistemology would risk robbing it, to some extent, of its philosophical character does not by itself demonstrate that it would be a mistake to do so, and, officially, the reservations expressed by many epistemologists with respect to naturalized epistemology were based, more specifically, on a desire to preserve the *normative* dimension of the field. Psychology and epistemology, the standard argument went, might be concerned with a common object, but they approach that object from radically distinct perspectives: psychology is concerned with how we, in fact, *do* go about forming our representations of the world; epistemology is concerned with how we *should* go about forming our representations of the world; and no amount of information about the former will suffice for answering questions about the latter.

We will return to the question of epistemic normativity below, but it is doubtful that this argument tells against naturalized epistemology to any serious extent. Quine (1986) already argued that a naturalized epistemology could retain an important normative dimension. And it is in any case unclear how an epistemology that lacks a solid empirical basis might be able to provide normative guidance worthy of being taken seriously. (In this connection, naturalists often refer to the Kantian maxim that "ought implies can".) One might thus suspect that resistance to naturalized epistemology ultimately stems primarily from a reluctance to engage in the sort of close exchange with psychology and, more broadly, cognitive science that it enjoins. The source of resistance here appears to be twofold. On the one hand, there is reluctance to learn the relevant science: given how much psychologists have learned about the workings of perception, memory, and so on, achieving a reasonable level of mastery in these domains requires a serious investment of time and effort. On the other hand, there is doubt about whether epistemologists will have anything to say that might be of interest to psychologists: given how much psychologists now know about the workings of perception and memory,

2 Throughout, when we use the term "psychology", we mean psychology in its broadest sense, including "cognitive psychology", "neuroscience", "decision science", etc.

there would seem to be little room here for epistemologists to make a useful contribution. We return to both sources of resistance below.

2 VARIETIES OF NATURALISM

Returning to the question set aside above: what is naturalized epistemology? Quine, in his foundational work, is explicit about wanting to link epistemology tightly with psychology. Many subsequent proponents of naturalized epistemology have shared this goal, but, as Goldman emphasizes in "Naturalistic Epistemology and Reliabilism" (1994), the goal itself is subject to multiple interpretations. Moreover, weaker flavors of naturalism are available, which, while retaining a family resemblance to Quine's approach, envision only a much looser connection between epistemology and science. "Naturalistic epistemology''has thus come to refer to a broad family of interconnected views.

The family tree, at the highest level, has three branches, which Goldman refers to as *metaepistemic*, *substantive*, and *methodological* naturalism. Metaepistemic naturalism should be understood on the model of metaethical naturalism. Just as metaethical naturalism is a metaphysical thesis about the nature of ethical properties, metaepistemic naturalism is a metaphysical thesis about the nature of epistemic properties. On this view, epistemic properties are natural properties, in the sense that they reduce to, supervene on, or stand in some other appropriately tight relationship to uncontroversially natural properties. For example, just as, in ethics, certain positions see moral properties, such as the goodness of an action, as reducing to natural properties, such as the net happiness resulting from the action, in epistemology, certain positions see epistemic properties, such as the justification of a belief, as reducing to natural properties, such as the reliability of the process that produces the belief.

This is a variety of naturalism so bland that most epistemologists endorse it,[3] and metaepistemic naturalism is quite far from Quine's methodological concerns. Somewhat closer to the latter, but still distinct from them, is substantive naturalism. Substantively naturalistic views "invoke physico-causal processes of the epistemic agent, or perhaps relations that

3 Most, but not all: Goldman argues that Chisholm (1977), for example, may have rejected metaepistemic naturalism. We note that which natural facts are responsible for delivering knowledge is much less controversial than which natural facts promote human flourishing. There is no real disagreement (even among nonnaturalized epistemologists) that our naturally endowed cognitive faculties are responsible for producing knowledge, and on what kind of faculties they are. In contrast, there is more than one theory about what natural moral facts amount to, if such facts exist at all (take the classical example of Mill vs. Aristotle). However, this does not undermine the analogy between ethical and epistemic naturalism, in the sense that both state that the relevant normative properties are tightly related to the relevant natural properties.

obtain between the cognizing agent and its environment" (Goldman, 1994, p. 302). Reliabilism, for example, which analyzes knowledge in terms of the reliability of belief-producing processes, is substantively naturalistic. First-order epistemologies that analyze knowledge in terms of normative notions such as "evidence", in contrast, are incompatible with substantive naturalism.

Finally, methodological naturalism is what Quine had in mind when discussing naturalized epistemology. The core claim of methodological naturalism, to which we turn next, is that epistemology should be based on, informed by, or otherwise closely connected to psychology and other relevant empirical sciences.

3 METHODOLOGICAL NATURALISM

The precise nature of the appropriate relationship between epistemology and psychology has been one point of contention among methodological naturalists, but Quine himself is explicit on this point: epistemology is (or is to become) *part* of psychology. His essay (one of our featured readings), "Epistemology Naturalized" (1969), has come to serve as a sort of manifesto for this strong form of naturalized epistemology. Like many manifestos, its general spirit has turned out to be more important than its details, many of which are no longer directly relevant to our concerns. Quine's focus is as much on philosophy of science as on what we now think of as epistemology, and he sets himself, in part, in opposition to Carnap's project of a rational reconstruction of science. Rather than attempting such a reconstruction, Quine suggests, we would do better to attempt to describe how we actually arrive at our scientific picture of the world: "Why not just see how this construction really proceeds? Why not settle for psychology?" (Quine, 1969, p. 75).

The natural worry here, for those wedded to an old-fashioned view of the role of the philosophy of science, has to do with circularity: if the role of philosophy is to demonstrate the validity of empirical science—the legitimacy of the way we move from observation to scientific theory—then obviously we must not make use of empirical science itself in our demonstration. Responding to this worry, Quine argues that, if our goal is not to demonstrate the validity of the move from observation to theory, but rather to understand how that move actually occurs, then worries about circularity are no longer relevant: "Better to discover how science is in fact developed and learned than to fabricate a fictitious structure to that effect" (Quine, 1969, p. 78). So, for the naturalist, traditional epistemology has, in an important sense, been asking the wrong question.

4 NATURALISM AND NORMATIVITY

Of course, one might at this stage raise the sort of worry about normativity discussed above: the philosophy of science is one thing, the psychology of science is another, and to replace the former with the latter is to abandon any hope of achieving the goals of the former. In addition to the responses noted above, naturalists often respond to this worry by rejecting attempts to set philosophy up as a sort of court in which science is to be judged. Science is, after all, by far our most successful knowledge-producing enterprise, and, as such, it can do more to establish its own legitimacy than philosophy can ever hope to do. Philosophy therefore ought no longer aim to be prior to science: "The old epistemology aspired to contain, in a sense, natural science; it would construct it somehow from sense data. Epistemology in its new setting, conversely, is contained in natural science, as a chapter of psychology" (Quine, 1969, p. 83). If worries about circularity linger here, then we ought to keep the coherentist context in mind.[4] The picture of epistemology as providing a demonstration of the rationality of the link between observation and theory that Quine is rejecting is essentially foundationalist. While naturalistic conceptions of epistemology have subsequently been combined with a variety of different first-order epistemological theories (see, e.g., Goldman's discussion of naturalism and reliabilism in his featured reading), naturalized epistemology retains coherentist roots.

Needless to say, this sort of response has not satisfied all epistemologists. Kim, in his featured reading "What Is 'Naturalized Epistemology'?" (1988), points out that much of traditional epistemology, including traditional foundationalism,[5] is naturalistic in one of the weaker senses identified by Goldman: while it is concerned with justification, a normative notion, it attempts to explain justification in descriptive terms. Why, then, does Quine reject traditional epistemology? As Kim reads him, he rejects it because he rejects epistemic normativity in its entirety: for Quine, "epistemology is to go out of the business of justification" (Kim, 1988, p. 389).

Quine himself, however, is explicitly willing to countenance a certain degree of normativity in naturalized epistemology. As he writes elsewhere, "normative epistemology is a branch of engineering. It is the technology of truth-seeking, or, in a more cautiously epistemological term, prediction. . . . The normative here, as elsewhere in engineering, becomes descriptive when the terminal parameter is expressed" (Quine, 1986, pp. 664–665). The suggestion here seems to be that naturalized epistemology is normative in

4 According to coherentism, a belief is justified to the extent that it coheres with the remainder of one's beliefs.

5 According to foundationalism, a belief is justified to the extent that it is supported by (beliefs that are themselves supported by) beliefs that are epistemically basic.

the sense that it provides us with guidance about how to go about building up our representations of the world, where the guidance in question is, roughly, hypothetical or conditional in nature. Just as engineering might advise us, for example, to avoid using certain materials when building bridges, naturalized epistemology might advise us to avoid relying on visual perception in circumstances which are likely to give rise to visual illusions. The normativity in the engineering case is of an unmysterious kind: what engineering tells us is that, *if* you want to build a bridge that will not collapse the first time there is a strong wind, *then* you should avoid certain building materials. The same thing goes for the normativity in the epistemology case: *if* you want an accurate representation of the world around you, *then* you should be aware of circumstances in which vision is likely to be unreliable.

In one sense, this hypothetical normativity is weaker than the more categorical normativity that epistemologists have traditionally sought; in another sense, it may actually be stronger. Echoing Quine, Kornblith, in his featured reading, "Naturalism: Both Metaphysical and Epistemological" (1994), argues that naturalized epistemology need not give up on the normative concerns of traditional epistemology. Naturalized epistemology can continue to give epistemic advice, in the manner described above. Indeed, the naturalist is in an important sense better positioned than the traditional epistemologist to give such advice, for he is free to avail himself of the findings of our best cognitive science: "If we wish to offer constructive advice for improving our epistemic situation, we need to begin with an accurate assessment of our epistemic strengths and weaknesses" (Kornblith, 1994, p. 47). As noted above, it is unclear how any epistemology that lacks the sort of solid empirical basis that naturalists aim to give it might be capable of providing normative guidance worthy of being taken seriously.

5 THE COSTS AND BENEFITS OF NATURALIZING EPISTEMOLOGY

Perhaps we can therefore set aside worries about the ability of naturalized epistemology to accommodate epistemic normativity. But what of the additional, practical worries noted above? Making epistemology part of psychology involves significant costs, in the form of time devoted to learning the relevant psychology. Is the naturalistic project worth these costs? The answer to this question depends in part on the potential benefits of a naturalized epistemology for psychology itself. Can epistemology, once naturalized, hope to make a worthwhile contribution to psychology?

Limitations of space preclude developing detailed answers to these questions here, but there is room for optimism on both scores. On the one hand, the investment of time required for epistemologists to get up

to speed with the relevant psychology is considerable, but this may be time well spent. An understanding of the empirical workings of visual and memory systems, for example, can serve both to make epistemologists aware of the inadequacy of epistemologies of vision and memory that presuppose overly simple accounts of the processes of seeing and remembering, and, by suggesting more adequate accounts of these processes, to suggest new epistemological problems for epistemologists to investigate. In the case of memory, epistemologists tend to view remembering as a matter of preserving beliefs over time, when in fact remembering is a constructive, inferential process which may or may not eventuate in belief. Appreciating this point is likely to lead to the rejection of certain otherwise plausible-seeming epistemological claims, e.g., that memory can preserve but not generate knowledge (see Michaelian, 2011). Simultaneously, it suggests new epistemological problems, e.g., empirically grounded forms of skepticism about memory knowledge (see Shanton, 2011). On the other hand, empirically informed philosophy need not cease to be philosophy, and naturalized epistemology may bring valuable rigor to discussions of key conceptual questions in psychology (see Klein, 2015).[6]

FEATURED READINGS

W. V. Quine (1969). "Epistemology Naturalized"
https://philpapers.org/rec/quien

Jaegwon Kim (1988). "What Is 'Naturalized Epistemology'?"
https://philpapers.org/rec/KIMWIN

Alvin I. Goldman (1994). "Naturalistic Epistemology and Reliabilism"
https://philpapers.org/rec/ALVNEA

Hilary Kornblith (1994). "Naturalism: Both Metaphysical and Epistemological"
https://philpapers.org/rec/KOMNBM

FURTHER READINGS

Anderson (2003)
Surveys work on embodied cognition, one current naturalistic approach to the mind.

6 Marina Bakalova's work on this chapter was supported by funding from the Institut français de Bulgarie.

Bishop & Trout (2005)
Argues that naturalized epistemology can provide guidance on solving real-world reasoning problems, focusing on the example of statistical prediction rules.

BonJour (1994)
An important argument against Quinean naturalized epistemology.

Boyd (2003a, 2003b)
Two key articles on "Cornell realism", an influential naturalistic approach to ethics.

Brook (2009)
A discussion of potential roles for philosophy, especially philosophy of mind, in interdisciplinary cognitive science.

Churchland (1989)
Develops an approach to the mind based on neuroscience.

Feldman (1999)
Argues that epistemological questions such as skepticism cannot be investigated empirically.

Foley (1994)
A detailed discussion of Quinean naturalized epistemology.

Fumerton (1994)
Argues that naturalized epistemology cannot adequately respond to skepticism.

Goldman (1986)
An important exploration of the epistemological implications of cognitive science.

Goldman (1992)
Another important exploration of the epistemological implications of cognitive science.

Harman (1986)
Develops a naturalistic approach to belief revision.

Irvine (2014)
Looks at empirically informed philosophy of mind from a philosophy of science perspective.

Kitcher (1992)
An influential discussion of naturalistic philosophy of science.

Knobe (2015)
Surveys the trend towards more naturalistic work in philosophy of mind.

Kornblith (1994)
An important collection of papers on naturalized epistemology.

Kornblith (2002)
A naturalistic treatment of human and animal knowledge.

Ladyman & Ross (2007)
Argues that metaphysics can be based on contemporary science and can in turn contribute to science.

Laudan (1990)
Argues that naturalized epistemology can accommodate epistemic normativity.

Maffie (1990)
An overview of work on naturalized epistemology until 1990.

Robbins & Aydede (2009)
A reference work on situated cognition, a contemporary empirically informed approach to the mind.

Rosenberg (1996)
An overview of work on naturalism in philosophy of science until the mid-1990s.

Ross et al. (2013)
A collection of essays on the possibility of a scientifically based metaphysics.

REFERENCES

Anderson, M. L. (2003). Embodied cognition: A field guide. *Artificial Intelligence*, *149*(1), 91–130.

Bishop, M. A., & Trout, J. D. (2005). *Epistemology and the psychology of human judgment*. Oxford University Press.

BonJour, L. (1994). Against naturalized epistemology. *Midwest Studies in Philosophy*, *19*(1), 283–300.

Boyd, R. (2003a). Finite beings, finite goods: The semantics, metaphysics and ethics of naturalist consequentialism, Part I. *Philosophy and Phenomenological Research*, *66*(3), 505–553.

Boyd, R. (2003b). Finite beings, finite goods: The semantics, metaphysics and ethics of naturalist consequentialism, Part II. *Philosophy and Phenomenological Research*, *67*(1), 24–47.

Brook, A. (2009). Introduction: Philosophy in and philosophy of cognitive science. *Topics in Cognitive Science*, *1*(2), 216–230.

Chisholm, R. (1977). *Theory of knowledge* (2nd ed.). Prentice-Hall.

Churchland, P. S. (1989). *Neurophilosophy: Toward a unified science of the mind-brain*. MIT Press.

Feldman, R. (1999). Methodological naturalism in epistemology. In J. Greco & E. Sosa (Eds.), *The Blackwell guide to epistemology* (pp. 170–186). Blackwell.

Foley, R. (1994). Quine and naturalized epistemology. *Midwest Studies in Philosophy*, *19*(1), 243–260.

Fumerton, R. (1994). Skepticism and naturalistic epistemology. *Midwest Studies in Philosophy*, *19*(1), 321–340.

Goldman, A. I. (1986). *Epistemology and cognition*. Harvard University Press.

Goldman, A. I. (1992). *Liaisons: Philosophy meets the cognitive and social sciences*. MIT Press.

Goldman, A. I. (1994). Naturalistic epistemology and reliabilism. *Midwest Studies Philosophy*, *19*(1), 301–320.

Harman, G. (1986). *Change in view: Principles of reasoning*. MIT Press.

Irvine, E. (2014). Problems and possibilities for empirically informed philosophy of mind. In M. Sprevak & J. Kallestrup (Eds.), *New waves in philosophy of mind* (pp. 185–207). Palgrave Macmillan.

Kim, J. (1988). What is "naturalized epistemology"? *Philosophical Perspectives*, *2*, 381–405.

Kitcher, P. (1992). The naturalists return. *The Philosophical Review*, *101*(1), 53–114.

Klein, S. B. (2015). What memory is. *Wiley Interdisciplinary Reviews: Cognitive Science*, *6*(1), 1–38.

Knobe, J. (2015). Philosophers are doing something different now: Quantitative data. *Cognition*, *135*, 36–38.

Kornblith, H. (1994). Naturalism: Both metaphysical and epistemological. *Midwest Studies In Philosophy*, *19*(1), 39–52. https://doi.org/10.1111/j.1475-4975.1994.tb00278.x

Kornblith, H. (2002). *Knowledge and its place in nature*. Oxford University Press.

Lackey, J. (2005). Memory as a generative epistemic source. *Philosophy and Phenomenological Research*, *70*(3), 636–658.

Ladyman, J., & Ross, D. (2007). *Every thing must go: Metaphysics naturalized*. Oxford University Press.

Laudan, L. (1990). Normative naturalism. *Philosophy of Science*, *57*(1), 44–59.

Lehrer, K., & Paxson, T. (1969). Knowledge: Undefeated justified true belief. *The Journal of Philosophy*, *66*(8), 225–237.

Maffie, J. (1990). Recent work on naturalizing epistemology. *American Philosophical Quarterly*, *27*(4), 281–293.

Michaelian, K. (2011). Generative memory. *Philosophical Psychology*, *24*(3), 323–342.

Quine, W. V. (1969). Epistemology naturalized. In *Ontological relativity and other essays* (pp. 69–90). Columbia University Press. https://doi.org/10.7312/quin92204-004

Quine, W. V. (1986). Reply to Morton White. In L. Hahn & P. Schilpp (Eds.), *The philosophy of W. V. Quine* (pp. 663–665). Open Court.

Robbins, P., & Aydede, M. (Eds.). (2009). *The Cambridge handbook of situated cognition*. Cambridge University Press.

Rosenberg, A. (1996). A field guide to recent species of naturalism. *The British Journal for the Philosophy of Science*, *47*(1), 1–29.

Ross, D., Ladyman, J., & Kincaid, H. (Eds.). (2013). *Scientific metaphysics*. Oxford University Press.

Shanton, K. (2011). Memory, knowledge and epistemic competence. *Review of Philosophy and Psychology*, *2*(1), 89–104.

Shope, R. K. (2004). The analysis of knowing. In I. Niiniluoto, M. Sintonen, & J. Woleński (Eds.), *Handbook of epistemology* (pp. 283–329). Springer.