

DOUBT

Baron Reed

Northwestern University

b-reed@northwestern.edu

One of the troubling aspects of American public discourse is the way in which political debate has so often lagged behind scientific research. Over a period of decades, this has happened on a variety of questions, from the impact of smoking on health, to the harms of exposure to lead in paint and gasoline, to the depletion of the ozone layer, to the existence of climate change deriving from human activities. Long after scientific consensus has been reached and conveyed to the public, the political debate continued to treat these as open questions.

There are a variety of factors that explain why our discourse has developed in this way. Part of the answer is that there has been a network of scientists who have been funded by interested industries—e.g., tobacco companies, the lead industry, oil companies—to conduct research that conflicts with the mainstream scientific consensus. The aim of these rogue scientists has not been to *overturn* that consensus by proving that smoking is safe or that global warming isn't happening. Rather, they hope to *undermine* it by raising enough doubts about the underlying evidence that any action grounded in the scientific consensus is seen as premature at best and ideologically motivated at worst. In the words of an advertising executive who worked with these scientists on behalf of the tobacco industry, "Doubt is our product."¹

Naomi Orestes and Erik Conway, who trace the recent history of some of these industry-sponsored attempts to undermine scientific consensus, argue that their success stems from the misuse of a normal aspect of scientific inquiry: "Doubt is crucial to science—in the version we call curiosity or healthy skepticism, it drives science forward—but it also makes science vulnerable to misrepresentation, because it is easy to take uncertainties out of context and create the impression that *everything* is unresolved. This was the tobacco industry's key insight: that you could

¹ Orestes and Conway (2010: 34). See also Sheerer (2015: 74).

use *normal* scientific uncertainty to undermine the status of actual scientific knowledge.”² If this is the problem—or, at least, a significant part of it—then the solution would be to ensure that the norms and practices of science are better understood by the citizenry. But the problem may be deeper than Orestes and Conway indicate. After all, putting an uncertainty in the proper context does not, by itself, make it any less uncertain. If doubts can be raised about a scientific theory, doesn’t that mean that we don’t really know that theory to be correct? And if we don’t know it’s correct, then how could we be rational in acting on it? This is a very natural line of thought, and just learning more about how scientists conduct their research won’t be enough for us to move past it, because it will still look as though they are doing something illegitimate in setting aside these unanswered doubts.

What we need is not just a better understanding of science but of knowledge and doubt in general, as well as an account of how they interact. I’ll begin by considering a debate familiar to philosophers—that between the Cartesian skeptic and the Moorean defender of common sense—in which the conflict between doubt and knowledge is framed in as stark a way as possible. In this debate, it looks as though we are being offered a simple choice: doubt *or* knowledge, skepticism *or* common sense. But, I’ll argue, this simple choice is illusory.³ On our best understanding of knowledge, it is possible to know something and yet still be in doubt

² Orestes and Conway (2010: 34). They focus on the debates over smoking and human-caused climate change. The lead industry has mounted a similar defense against its critics. The representative of the International Lead Zinc Research Organization has denied that developmental problems in children exposed to lead can be attributed to that exposure, saying that “Unless a complete and total medical history is provided, it is meaningless to ascribe causal factors to one single element”; see Markowitz and Rosner (2013: 37).

³ More strongly, this simple choice is an illusion largely produced by a history of epistemological theorizing that has been shaped by philosophers—like Descartes and Moore—who have intentionally tried to remove moderate approaches that may allow doubt and knowledge to exist, in relative peace, alongside one another.

about it. That is to say, knowledge and doubt do not entirely exclude one another. This suggests that doubt is going to be a more persistent feature of our cognitive lives than might have been expected. If coming to have knowledge does not necessarily put an end to doubting, we will need to find other ways of living with doubt. Progress on that front can be made only if we have a better understanding of what doubt is and what role it plays in our intellectual lives.

1. DOUBT AND DOGMATISM

Consider G.E. Moore's famous proof of an external world:

1. Here is a hand. [Said while holding up one hand.]
2. Here is another hand. [Said while holding up the other hand.]
3. Hands are external objects.
4. So, there is an external world.⁴

Taken as a response to skepticism, there is something deeply unsatisfying about Moore's argument.⁵ Surely, if this were all it took to respond to skepticism, it wouldn't have been a serious concern for so many centuries. But, at the same time, most philosophers want to say that we *do* know many mundane truths. We do know we have hands; we do know that hands are not figments of the imagination but real things; and we also do know that the argument is valid.

So, the disagreement between the Cartesian skeptic and the Moorean anti-skeptic does not seem to be one where we can simply split the difference. Either the skeptic's argument is successful—and Moore is badly wrong about his own cognitive state—or Moore is right and the skeptic is making one of the most inexplicable mistakes imaginable.

⁴ Moore (1939).

⁵ Many philosophers take Moore to be arguing against the skeptic, though some say his target is in fact the idealist; see Sosa (2009: ch. 1). Given that Moore's defense of the proof turns on whether he knows the premises to be true, there is some reason to think that it is meant to be anti-skeptical. See Coliva (2018: 469). For more on Moore's broader common-sense response to skepticism, see Author (REF).

In response to this puzzling deadlock, some philosophers have offered explanations of why Moore's proof is unsuccessful, though without lapsing all the way into an embrace of Cartesian skepticism. Crispin Wright, for example, has suggested that the problem is that the warrant for the premises fails to transmit to the conclusion.⁶ This happens because the warrant for the premises depends in some way on an antecedent warrant for the conclusion—i.e., you would be warranted in thinking, on the basis of your sense experience, that you have hands only if you were already warranted in thinking that there's an external world. So, the premises cannot provide epistemic support for the conclusion. This is compatible, nevertheless, with the conclusion being warranted for you in a different way.

The diagnosis of transmission-failure is controversial. Some philosophers think that the premises of the proof can be known without having to depend on an antecedent warrant for the conclusion—either because your knowledge that you have hands is simply the product of a reliable belief-producing process or because it is grounded in perceptual experience, which is itself in no need of buttressing from general knowledge about the nature of the world.⁷ Such views will need a different way of explaining what is problematic about Moore's proof, as it looks like they should permit you to move rather easily from knowing that you have hands to knowing that you aren't dreaming, hallucinating, etc., and hence to knowing that skepticism is wrong.⁸

According to James Pryor (2004), there's nothing wrong with the structure of justification in Moore's proof. The premises do support the conclusion, and you could come to know the conclusion on that basis. The problem, rather, is that the proof is *dialectically ineffective* as a response to the skeptic—and this is so because the skeptic already has doubts about what it's possible to know. As Pryor and other philosophers have argued, merely having a belief—even one that is unjustified—can make you

⁶ Wright (1985 and 2004). See also Davies (1998).

⁷ For the first sort of view, see Goldman's (1979) classic presentation of reliabilism. For the latter, see Pryor (2000, 2004).

⁸ See Fumerton (1995), ch. 6, and Cohen (2002).

rationally committed to (or precluded from) holding other beliefs.⁹ For example, suppose you believe that Luxembourg will outperform all other countries at the next Winter Olympics. This would be an absurd belief to have, given that Luxembourg sometimes doesn't even participate, rarely sends more than a handful of athletes, and has thus far won only a grand total of two medals at the Winter Olympics. Nevertheless, *given that you believe Luxembourg will outperform all other countries*, it would be even more irrational for you to fail to believe that Luxembourg athletes will win numerous medals at the next Winter Olympics. There is simply no other way Luxembourg could outperform all other countries; in that sense, it seems that you are already committed to thinking Luxembourgers will win numerous medals. Failing to follow through on your commitment, no matter how poor a commitment it is, seems to be itself a problematic kind of irrationality.

The same point holds, not only for belief, but also for doubt: “if the subject just happens to doubt the conclusion [of an argument], without having any reason for doing so, her doubt will rationally obstruct her from believing the argument’s premises.”¹⁰ It may be wrong for you to doubt the conclusion, but *given that you do*, it would be irrational to continue believing the premises. This is, nonetheless, compatible with the premises being *propositionally* justified and transmitting that justification to the conclusion, in the sense that you will *have* justification for believing the premises and the conclusion. But your doubt will rationally preclude you from basing your belief on that justification; in that sense, belief in the premises or conclusion is not *doxastically* justified—at least not when you retain your doubt.¹¹ The problem, then, is not with Moore’s proof but with you “for having doubts that you have no good reason to have.”¹²

⁹ Pryor (2004: 363–366).

¹⁰ Pryor (2004: 365–366).

¹¹ “Those doubts will render your belief in P irrational even if they don’t affect your justification to believe it. And if your belief in P is irrational, then it can’t be a justified or well-founded belief. In this way, then, even unjustified doubts can affect what justified beliefs you’re able to have” (365).

¹² Pryor (2004: 365). Pryor says that rational commitments don’t

The aim of Pryor's view is to find a middle way between the extremes of Cartesian skepticism and Moorean dogmatism. If it works, it does so by conceding that there is something genuinely threatening about the doubts raised by skepticism while also granting that the dogmatist is right in thinking that perception really is capable of providing justification for our beliefs. This is a narrow gap to pass through, and there are two reasons to think that Pryor's view doesn't entirely make it: first, rational requirements of the sort he countenances are far too conservative, and, second, his view leads him to an overly pessimistic view of doubt.

“detach”: “That is, you can have a belief in P, that belief can rationally commit you to believe Q, and yet you be under no categorical requirement to believe Q” (363–364). Pryor (375, n. 37) distinguishes this view from John Broome's claim that rational obligations take “wide scope”: for example, you ought to be such that, if you believe that p and that if p then q (and you care whether q), then believe that q ; see Broome (1999; 2013: 136–146, 157). The rational obligation can be fulfilled in more than one way—by going on to believe that q , but also by dropping one or both of the initial beliefs (and perhaps even by simply no longer caring whether q , though that seems more problematic). Notice that Pryor cannot adopt Broome's view without losing his account of why Moore's proof is dialectically ineffective; on Broome's view, there is no special significance to your already having a particular attitude. So, when confronted with what is (by Pryor's lights) a good anti-skeptical argument, it looks like you ought to believe the conclusion. Looked at in this way, Pryor's response to the question *what's wrong with Moore's proof?* should be *nothing at all*. I suspect this is why Pryor continues to talk about one attitude rationally committing you to another—e.g., “your belief that Johnny can fly still rationally commits you to the belief that someone can fly” (364). Non-detachment in this sense means only that the attitude you have provides no *categorical* requirement to have (or not have) another attitude. The rational requirement persists only as long as you retain your initial attitude. This means that the rational requirements you face are dictated, not simply by consistency (as for Broome), but by consistency with the attitudes you already have. (I am grateful to Leon Leontyev for pressing me on this point.)

To see the first problem, suppose that you are rationally required to believe obvious consequences of your beliefs. Take any two of your beliefs, P and Q . It turns out that P obviously entails if Q then P , and Q obviously entails if P then Q .¹³ If you do what is rationally required, you add these two conditional beliefs to your set of beliefs. But then you notice that you now have two pairs of beliefs: P and if P then Q , and Q and if Q then P . The first pair obviously entails (and therefore rationally requires you to believe) Q , while the second obviously entails (and therefore rationally requires you to believe) P . So, following your rational requirements has led you to the point where two arbitrarily chosen beliefs (together with your newly added conditional beliefs) each rationally require you to believe the other. This can be repeated until, finally, each of your beliefs (along with more newly formed conditional beliefs) rationally requires every other belief you have. Although a belief set so tightly woven might seem the rational ideal, this would actually be disastrous. Suppose you acquire convincing evidence against one of your beliefs. You would like to drop it, but it is rationally required by all of your other beliefs. In order to change one belief, you would have to change all of them. Given this choice, almost certainly you will simply ignore the new evidence. This is the sense in which rational requirements are too conservative: they lock in place the attitudes you currently have, no matter how good a reason to change them you might encounter.

Here is the second problem: if all of our attitudes are extremely sticky in this way, it means that skeptical doubts will also be highly resistant to change. It is perhaps for this reason that Pryor comes to think of skepticism as an illness: “Skepticism isn’t the truth about all of us, then. It’s just a disease that some of us catch.”¹⁴ (The same could be said, presumably, about any unjustified attitudes. Philosophical argument for

¹³ From P , disjunction introduction permits us to conclude $\sim Q$ or P , and that statement is logically equivalent to if Q then P . Fumerton (1995: 146) uses a similar argument to show that coherentists should not think of coherence in terms of logical entailment.

¹⁴ Pryor (2004: 368). See also Bergmann (2004). Williamson uses similar language: “Scepticism is a disease in which healthy mental processes run pathologically unchecked” (2005: 681).

any view will be dialectically ineffective.) Pryor says that “[t]he way to cure the disease is to realize that skepticism isn’t the truth about all of us: the skeptic’s arguments are flawed” (2004: 368). But someone who already has those doubts won’t be able to realize that the skeptic’s arguments are flawed; seeing how those who haven’t been exposed to skepticism are enjoying their perceptual beliefs won’t help because it will look to you like they’re doing something they’re not entitled to. Your doubts are not just about your own cognitive capacities—they are doubts about the possibility of human knowledge altogether.

Skepticism as disease is a vivid image, but it’s hard to know how seriously to take it. If this picture were literally true, it seems clear that we ought to safeguard our students’ well-being by prohibiting the teaching of Descartes’s *Meditations*, Hume’s *Treatise*, Sextus’s *Outlines of Pyrrhonism*, etc., especially in light of our inability to provide a satisfactory response after doubts have been raised. But that’s not a suggestion that any philosopher would seriously defend. More importantly, I think this conception of skepticism as disease has it wrong about what doubt carried to pathological extremes amounts to: it’s not skepticism but rather obsessive-compulsive disorder (OCD). Here is how David Adam, a science writer who suffers from an obsession with contracting AIDS and compulsively checks to see if blood is on the things he touches, describes it:

OCD dissolves perspective. It magnifies small risks, warps probabilities and takes statistical chance as a prediction, not a sign of how unlikely things are. ... Each time, I believed that one more, one last, check [for blood] would give me the certainty I craved. But one check was never enough. Afterwards, each time, I doubted how thoroughly I had completed the check. So I would do it again.¹⁵

Skeptical doubts may be troubling, but surely not in this way.¹⁶ They are

¹⁵ Adam (2014: 75–76).

¹⁶ As Bayle, the great seventeenth-century skeptic, said, “We must consider as bad jokes or impostures the stories of Antigonus Carystius to

an intellectual challenge—not a constantly swelling anxiety that prevents the enjoyment of anything else in life.

If the aim was to chart a middle way between the Scylla of Cartesian skepticism and the Charybdis of Moorean dogmatism, we have somehow managed to run afoul of both: because skeptical doubts take on the weight of rational requirements, they withstand the force of Moore's proof by making us dogmatically attached to the attitudes we happen to have—we are unable to rethink them, even in presence of compelling reason to do so. In what follows, I will attempt to move past this problem by sketching a new conception of how knowledge and doubt interact with one another.

2. FALLIBILISM AND KNOWLEDGE PLURALISM

Despite its historical prominence, from the ancient Stoics to Descartes, infallibilism—the view that knowledge requires certainty—is not widely shared in contemporary epistemology. Most philosophers now hold some version of fallibilism, though it should be noted that these versions can diverge as widely as Goldman's externalist reliabilism and BonJour's internalist coherentism. The view is most commonly expressed in one of two ways:

(F1) S knows in a fallible way that p just in case S knows that p on the basis of some justification j and yet it could have been false that p while S had j .¹⁷

(F2) S knows in a fallible way that p just in case S knows that p on the basis of some justification j even though j does not entail that p .¹⁸

the effect that Pyrrho did not prefer one thing to another and that neither a chariot nor a precipice could ever make him take a step forward or backward and that his friends who followed him around often saved his life" (1965: 195).

¹⁷ See, e.g., BonJour (1985), p. 26; BonJour (1998), p. 16; Alston (1992); and Pritchard (2005), p. 17.

¹⁸ See, e.g., Cohen (1988), p. 91; Merricks (1995), p. 842; Jeshion (2000), pp. 334-335; Conee and Feldman (2004), ch. 12; Stanley (2005), p. 127;

Given the standard understanding of entailment, these formulations are essentially equivalent: both are saying that there is a non-actual possible world in which S has j and it is false that p .

But fallibilism understood along these lines faces a serious problem: on either formulation, we cannot account for fallibilistic knowledge of necessary truths.¹⁹ If it is necessarily true that p , then there are no possible worlds in which it's false that p , let alone worlds in which it's false that p while S has j . And, if it is necessarily true that p , then everything—including every j , no matter how irrelevant or irrational—entails it. But that is surely an implausible result. Your belief that the Loch Ness Monster is real cannot justify the proposition that $2 + 2 = 4$.

There are two morals that can be drawn from this point. First, entailment is not an epistemic relation. The mere fact that a proposition is entailed by one of your beliefs—even one that is justified—is not enough to make that proposition justified. The justifying relation must be understood in some other way. My suggestion is that it is not entailment but probability that matters in epistemology. There are, of course, many different ways of understanding probability; I won't endorse one here, but it is worth noting that one may think of the dispute between internalists and externalists as grounded in an underlying disagreement over the sort of probability most relevant to epistemology. Where an internalist might favor an *a priori* conception, like the one defended by John Maynard Keynes, an externalist would prefer a frequentist or counterfactual view.²⁰

Second, the modality expressed in the two formulations of fallibilism above is typically taken to be logical or metaphysical, but it would be better to think of it as epistemic. In saying that S knows that p on the basis of j and yet it *could have been* false that p while S had j , the fallibilist is not looking for a non-actual possible world in which not- p and j are combined. Rather, the fallibilist should say that j leaves it open that not- p might actually be the case. Suppose, for example, that you see a

and Dougherty and Rysiew (2009), p. 128.

¹⁹ See Author (REF).

²⁰ See Russell (1948: part 5) and Fumerton (1995: ch. 7) for more on the epistemic significance of these differing accounts of probability.

medium-sized, four-legged mammal with shaggy white hair approximately a hundred meters away. It's in a field in which you know sheep are usually grazing. Your perceptual experience is apparently normal. You take yourself to have, and in fact do have, good justification for believing it is a sheep—justification good enough for you to know (in a fallible way) that it's a sheep. But your experience is such that it *could* be a sheepdog. This is not merely to say that there is some possible world in which you have this experience while looking at a sheepdog. Rather, it is to say that the experience you are having now does not definitively exclude the animal's being a sheepdog.

In the context of Moore's proof, this means that your perceptual experience of your own hands does not definitively exclude their being illusory in some way—e.g., the shape of your dream or the product of a mad scientist's stimulation of your envatted brain. More generally, perception, memory, reason, and the other cognitive faculties can provide justification for our beliefs—justification good enough to underwrite knowledge—but they do not allow us to rule out entirely the chance of error. On this fallibilist understanding of justification and knowledge, then, it is easy to see why skeptical doubts will arise and persist. Even as we know we have hands and know there is an external world, we can continue to wonder whether this is so.

Thinking of knowledge in this way—as compatible with doubt and with an uneliminated risk of error—may seem strange. One way of seeing this is to notice that it appears to conflict with the standard understanding of epistemic possibility. Philosophers usually think that it's epistemically possible for you that p just in case you don't know that not- p . Put another way, if you know that p , it isn't possible for you that not- p . So, if you know that you have hands, it isn't possible for you that you don't. And that takes us right back to Moore's proof: once we concede that you know the premises, it looks like you *should* be able to rule out that you are dreaming or deceived. So, if we are going to move past the all-or-nothing choice that Moore's proof poses for us, it seems clear that we have to abandon or modify the standard understanding of epistemic possibility. I'll return to that in a moment.

Before doing so, it will help to flesh out one of the consequences of a fallibilist epistemology. Virtually every philosopher accepts that

justification comes in degrees. You can be more or less justified in believing something, depending on how much evidence you have, how reliable you are, and so forth. To simplify things, let us suppose that there is a scale of justification, ranging from perfect ignorance to complete certainty. We can add knowledge to that scale by locating a threshold such that your belief must be at least that justified in order to count as knowledge. An infallibilist like Descartes will place the threshold at one of the extremes; he will say that certainty is required for knowledge.²¹ A fallibilist about knowledge will not be so stringent. The threshold will be, presumably, closer to certainty than to ignorance, but there will in any case be a gap between the threshold for knowledge and the certainty end of the scale. Your belief might be justified to various degrees within that space; in each instance, it will count as knowledge. That is to say, along with those different degrees of justification, there are also different degrees of knowledge. In this way, fallibilism leads to *knowledge pluralism*: there are many different ways of having knowledge (alternatively: there are many different knowledge relations).²²

Color provides a helpful model for knowledge pluralism. In the same way that blue is both a *determinable* property and various *determinate* shades of blue, so knowledge is both a determinable and its various determinates. And just as the various shades of blue are related to one another in systematic ways—e.g., being darker or lighter in hue, more or less saturated—so too the various determinate ways of having knowledge are systematically related. Most obviously, for example, they may surpass the minimal threshold for knowledge to a greater or lesser degree, but there may also be important differences we track in terms of how much

²¹ There are some subtle complications here, regarding Descartes's views on knowledge and certainty, but they can be set aside for my purposes here. But see Author (REF).

²² See Author (REF). This route to knowledge pluralism relies on there being different degrees of justification and therefore knowledge. It's also possible that there are, in addition to different *degrees* of knowledge, also different *kinds* of knowledge. See Lackey (2011) for an argument that we should distinguish (independently of degree of justification) between first-hand and second-hand knowledge.

we depend on others for the justification in question.²³

Recall that the standard account of epistemic possibility took it to be essentially tied to knowledge: it's possible for you that p just in case you don't know that not- p . If knowledge pluralism is correct, there is no single sort of knowledge that determines what is epistemically possible for you. But we can retain the spirit of the standard view by recognizing many different ways in which the space of epistemic possibility can be shaped. For each determinate knowledge relation, there will be a body of propositions known in that way or that are obvious entailments of those propositions; everything outside of that body of propositions is epistemically possible. So, for example, relative to certainty, almost every proposition will be epistemically possible. Even the premises of Moore's proof could be false, in the sense that there is an uneliminated risk of error when it is certainty that is in question.

These different ways in which we might know something—and different ways in which we might regard something as epistemically possible—help us use knowledge for a variety of purposes, both practical and purely theoretical. Much attention has been paid recently to the claim that

REFERENCES

Adam, David. 2014. *The Man Who Couldn't Stop: OCD and the True Story of a Life Lost in Thought*. New York: Farrar, Strauss and Giroux.

Alston, William. 1992. "Infallibility," in *A Companion to Epistemology*, J. Dancy and E. Sosa (eds.), (Oxford: Blackwell), 206.

²³ Just as there may be multiple dimensions along which colors are systematically related to one another, like hue and saturation, so, too, there may be multiple dimensions along which different knowledge relations are systematically related to one another—e.g., degree of reliability, degree of rational support, degree of being grounded in first-person experience. See Author (REF) for more on knowledge pluralism, including an ambiguity account of how we talk about these different ways of having knowledge.

Bergmann, Michael. 2005. "Epistemic Circularity: Malignant and Benign," *Philosophy and Phenomenological Research* 69: 708–726.

BonJour, Laurence. 1985. *The Structure of Empirical Knowledge*. Cambridge, MA: Harvard University Press.

———. 1998. *In Defense of Pure Reason*. Cambridge: Cambridge University Press.

Broome, John. 1999. "Normative Requirements," *Ratio* 12: 398–419.

———. 2013. *Rationality through Reasons*. Oxford: Wiley-Blackwell.

Cohen, Stewart. 1988. "How to Be a Fallibilist," *Philosophical Perspectives* 2: 91–123.

———. 2002. "Basic Knowledge and the Problem of Easy Knowledge," *Philosophy and Phenomenological Research* 65: 309–328.

Coliva, Annalisa. 2018. "Moore and Mooreanism," in D. Machuca and B. Reed (eds.), *Skepticism: From Antiquity to the Present* (London: Bloomsbury), 467–480.

Conee, Earl, and Feldman, Richard. 2004. *Evidentialism*. Oxford: Clarendon Press.

Davies, Martin. 1998. "Externalism, Architecturalism, and Epistemic Warrant," in C. Wright, B. Smith, and C. Macdonald (eds.), *Knowing Our Own Minds* (Oxford: Oxford University Press), 321–361.

Dougherty, Trent, and Rysiew, Patrick. 2009. "Fallibilism, Epistemic Possibility, and Concessive Knowledge Attributions," *Philosophy and Phenomenological Research* 78: 123–132.

Fumerton, Richard. 1995. *Metaepistemology and Skepticism*. Lanham, MD:

Rowman & Littlefield.

Goldman, Alvin. 1979. "What Is Justified Belief?" in G. Pappas (ed.), *Justification and Knowledge* (Dordrecht: Reidel), 1–23.

Jeshion, Robin. 2000. "On the Obvious," *Philosophy and Phenomenological Research* 60: 333–355.

Lackey, Jennifer. 2011. "Assertion and Isolated Secondhand Knowledge," in *Assertion*, J. Brown and H. Cappelen (eds.). Oxford: Oxford University Press, 251–275.

Markowitz, Gerald, and David Rosner. 2013. *Lead Wars: The Politics of Science and the Fate of America's Children*. Berkeley, CA: University of California Press.

Merricks, Trenton. 1995. "Warrant Entails Truth," *Philosophy and Phenomenological Research* 55: 841–855.

Moore, G.E. 1939. "Proof of an External World," *Proceedings of the British Academy* 25: 273–300.

Oreskes, Naomi, and Erik Conway. 2010. *Merchants of Doubt*. New York: Bloomsbury Press.

Pritchard, Duncan. 2005. *Epistemic Luck*. Oxford: Clarendon Press.

Pryor, James. 2000. "The Skeptic and the Dogmatist," *Noûs* 34: 517–549.

———. 2004. "What's Wrong with Moore's Argument," *Philosophical Issues* 14: 349–378.

Shermer, Michael. 2015. "Forging Doubt," *Scientific American* 312: 74.

Sosa, Ernest. 2009. *Reflective Knowledge*. Oxford: Clarendon Press.

Stanley, Jason. 2005. "Fallibilism and Concessive Knowledge Attributions," *Analysis* 65: 126–131.

Williamson, Timothy. 2005. "Knowledge and Skepticism," in F. Jackson and M. Smith (eds.), *The Oxford Handbook of Contemporary Philosophy* (Oxford: Oxford University Press), 681–700.

Wright, Crispin. 1985. "Facts and Certainty," *Proceedings of the British Academy* 71: 429–472.

———. 2004. "Warrant for Nothing (and Foundations for Free)?" *Aristotelian Society Supp.* Vol. 78: 167–212.