

Second Philosophy*

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Perhaps some of the movie-goers among you have had the experience of sitting through a film with no discernable plot and no significant action, only to be accused by your companions of having missed the point. 'It's not supposed to be dramatic', they tell you, 'it's a Character Study!' The conventions of this genre seem to require that it centre on an otherwise inconspicuous person who undergoes some familiar life passage or other with terribly subtle, if any, reactions or results. Well, if a thesis is to a philosophy talk what a plot is to a movie, I'm afraid I'm about to inflict the counterpart to a Character Study: I'll introduce a distinctive inquirer and record her progress through a particularly venerable philosophical neighbourhood. My apologies in advance for what will be more a saunter than a journey.

I. DESCARTES

To explain what 'Second Philosophy' is supposed to be, I should begin with Descartes and his *Meditations on First Philosophy* (1641). The key to this work is Descartes' dramatic Method of Doubt.¹ It starts modestly enough, noting that our senses sometimes deceive us about objects that are very small or very distant, but quickly moves on to perceptual reports that seem beyond question, like my current belief that 'this is a hand'. Still, the meditator wonders, might I not be mad, or asleep?

Yet at the moment my eyes are certainly wide awake ... as I stretch out and feel my hand I do so deliberately, and I know what I am doing. All this would not happen with such distinctness to one asleep. Indeed! As if I did not remember other occasions when I have been

tricked by exactly similar thoughts while asleep! As I think about this more carefully, I see plainly that there are never any sure signs by means of which being awake can be distinguished from being asleep. The result is that I begin to feel dazed ... Perhaps ... I do not even have ... hands ... at all. (Descartes [1641], p. 13)

In his dizziness, the meditator anxiously grasps for a fixed point

... whether I am awake or asleep, two and three added together are five, and a square has no more than four sides. It seems impossible that such transparent truths should incur any suspicion of being false. (op. cit., p. 14)

But the midnight fears cannot be stopped. What if God is a deceiver or worse, what if there is no God, and I am as I am by mere chance? Mightn't I then be wrong in absolutely all my beliefs?

I have no answer to these arguments, but am finally compelled to admit that there is not one of my former beliefs about which a doubt may not properly be raised. (op. cit., pp. 14–15)

And he concludes that

in future I must withhold my assent from these former beliefs just as carefully as I would from obvious falsehoods, if I want to discover any certainty. ... I will suppose therefore that ... some malicious demon of the utmost power and cunning has employed all his energies in order to deceive me. I shall think that the sky, the air, the earth, colours, shapes, sounds and all external things are merely the delusions of dreams which he has devised to ensnare my judgement. I shall consider myself as not having hands or eyes, or flesh, or blood or senses, but as falsely believing that I have all these things ... this is an arduous undertaking ... (op. cit., p. 15)

Arduous, indeed, to deny that I have hands, that I'm now standing here giving this talk, that you are all sitting in your chairs, listening as I rehearse the familiar Cartesian catechism. We might fairly ask, what is the point of this difficult exercise?

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The point is not that I am somehow unjustified in believing these things. Despite the doubts that have just been raised, Descartes and his meditator continue to regard my ordinary beliefs as

highly probable ... opinions, which, despite the fact that they are in a sense doubtful ... it is still much more reasonable to believe than to deny. (op. cit., p. 15)

The very reasonableness of these beliefs is what makes it so difficult to suspend them. For this purpose, some exaggeration² is needed:

I think it will be a good plan to turn my will in completely the opposite direction and deceive myself, by pretending for a time that these former opinions are utterly false and imaginary. (op. cit.)

So, the Evil Demon Hypothesis is designed to help to unseat my otherwise reasonable beliefs, though the doubt raised thereby is 'a very slight, and, so to speak, metaphysical one' (op. cit., p. 25).

But this just pushes the question back one step. We now wonder: why should I wish to unseat my otherwise reasonable beliefs? The meditator is explicit on this point. He is concerned about the status of natural science, and he realizes that

It [is] necessary, once in the course of my life, to demolish everything completely and start again right from the foundations if I [want] to establish anything at all in the sciences that [is] stable and likely to last. (op. cit., p. 12)

The Method of Doubt, the suspension of belief in anything in any way doubtful, is just that, a method—designed to lead us to a firm foundation for the sciences:

I must withhold my assent from these former beliefs just as carefully as I would from obvious falsehoods, *if I want to discover any certainty in the sciences*. (op. cit., p. 15, emphasis mine, underlined phrase from the 1647 French edition)

The hope is that once we set aside all our ordinary beliefs, reasonable or not, some absolutely indubitable foundational beliefs will then emerge, on the basis of which science and common sense can then be given a

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firm foundation. The Method of Doubt is the one-time expedient that enables us to carry out this difficult task.

Janet Broughton, the scholar whose account of Descartes I've been following here, describes the meditator's situation like this:

Of course, there is nothing about the strategy of this [Method of Doubt] that guarantees it will do what we want it to do. Perhaps we will find that all claims can be impugned by a reason for doubt. Perhaps we will find some that cannot, but then discover that they are very general or have few interesting implications. (Broughton [2002], p. 53)

But, as we all know, this is not the fate of Descartes' meditator. In the second Meditation, he quickly establishes that he must exist—as he must exist even for the Evil Demon to be deceiving him!—and that he is a thinking thing. From there, he moves to the existence of a benevolent God, the dependability of 'clear and distinct ideas', and so on, returning at last to the reasonable beliefs of science and common sense.

Alas, a sad philosophical history demonstrates that the path leading from the Evil Demon Hypothesis to hyperbolic doubt has always been considerably more compelling than the route taken by the meditator back to ordinary belief. Still, the Cartesian hope of securing an unassailable foundation for science has persisted, down the centuries. So, for example, the good Bishop Berkeley (1710) suggested that our sense impressions are incontrovertible evidence for the existence of physical objects, because such objects simply *are* collections of impressions, but the price he paid—subjective idealism—was one nearly all but Berkeley have found entirely too high. More recently, Russell (1914) and early Carnap (1928, on some readings, anyway) applied the full scope and power of modern mathematical logic to the project of constructing physical objects as more robust logical constructions from sensory experiences, but both efforts ultimately failed, even in the opinions of their authors. There is surely much in this historical record—both in the detail of each attempt and in the simple fact of this string of failures—to lead us to despair of founding science and common sense on some more trustworthy emanations of First Philosophy. Thus, Quine speaks of a 'forlorn hope' and a 'lost cause' ([1969], p. 74).

But perhaps the situation is not as tragic as it is sometimes drawn. Let's consider, for contrast, another inquirer, one entirely different from Descartes' meditator. This inquirer is born native to our contemporary scientific world view; she practices the modern descendants of the methods found wanting by Descartes. She begins from common sense, she trusts her perceptions, subject to correction, but her curiosity pushes her beyond these to careful and precise observation, to deliberate experimentation, to the formulation and stringent testing of hypotheses, to devising ever more comprehensive theories, all in the interest of learning more about what the world is like. She rejects authority and tradition as evidence, she works to minimize prejudices and subjective factors that might skew her investigations. Along the way, observing the forms of her most successful theories, she develops higher level principles—like the maxim that physical phenomena should be explained in terms of forces acting on a line between two bodies, depending only on the distance between them—and she puts these higher level principles to the test, modifying them as need be, in light of further experience. Likewise, she is always on the alert to improve her methods of observation, of experimental design, of theory testing, and so on, undertaking to improve her methods as she goes.

We philosophers, speaking of her in the third person, will say that such an inquirer operates 'within science', that she uses 'the methods of science', but she herself has no need of such talk. When asked why she believes that water is H_2O , she cites information about its behaviour under electrolysis and so on; she doesn't say, 'because science says so and I believe what science says'. Likewise, when confronted with the claims of astrology and such like, she doesn't say, 'these studies are unscientific'; she reacts in the spirit of this passage from Feynman on astrology:

Maybe it's ... true, yes. On the other hand, there's an awful lot of information that indicates that it isn't true. Because we have a lot of knowledge about how things work, what people are, what the world is, what those stars are, what the planets are that you are looking at, what makes them go around more or less ... And furthermore, if you look very carefully at the different astrologers they don't agree with each other, so what are you going to do? Disbelieve it. There's no

evidence at all for it. ... unless someone can demonstrate it to you with a real experiment, with a real test ... then there's no point in listening to them. (Feynman [1998], pp. 92–3)

My point is that our inquirer needn't employ any general analysis of what counts as 'scientific' to say this sort of thing, though we philosophers use the term 'science' in its rough and ready sense when we set out to describe how she behaves.

This, then, is the Character of our Character Study, a mundane and unremarkable figure, as the genre dictates. Following convention, we hope to tease out the hidden elements of her temperament by tracing her reactions to a familiar philosophical test: the confrontation with scepticism. So, how will she react to the challenge Descartes puts to his meditator? Does she know that she has hands?

In response to this question, our inquirer will tell a story about the workings of perception—about the structure of ordinary physical objects like hands, about the nature of light and reflection, about the reactions of retinas and neurons, the actions of human cognitive mechanisms, and so on. This story will include cautionary chapters, about how this normally reliable train of perceptual events can be undermined—by unusual lighting, by unusual substances in the blood-stream of the perceiver, and so on—and she will check as best she can to see that such distorting forces are not present in her current situation. By such careful steps she might well conclude that it is reasonable for her to believe, on the basis of her perception, that there is a hand before her. Given that it is reasonable for her to believe this, she does believe it, and so she concludes that she knows there is a hand before her, that she has hands.

But mightn't she be sleeping? Mightn't an Evil Demon be deceiving her in all this? Our inquirer is no more impressed by these empty possibilities than Descartes' meditator; with him, she continues to think it is far more reasonable than not for her to believe that she has hands, that she isn't dreaming, that there is no Evil Demon. The question is whether or not she will see the wisdom, as he does, in employing the Method of Doubt. Will she see the need 'once in [her] life, to demolish everything completely and start again' (Descartes [1641], p. 12)?

This question immediately raises another, which we haven't so far considered, namely, what is it exactly that Descartes' meditator sees as forcing him to this drastic course of action? The only answer in the *Meditations* comes in the very first sentence:

Some years ago I was struck by the large number of falsehoods that I had accepted as true in my childhood, and by the highly doubtful nature of the whole edifice that I had subsequently based on them. (Descartes [1641], p. 12)

Our inquirer will agree that many of her childhood beliefs were false, and that the judgements of common sense often need tempering or adjustment in light of further investigation, but she will hardly see these as reasons to suspend her use of the very methods that allowed her to uncover those errors and make the required corrections! It's hard to see why the meditator feels differently.

The reason traces to Descartes' aim of replacing the reigning Scholastic Aristotleanism with his own Mechanistic Corpuscularism. As he was composing the *Replies* that were to be published with the first edition of the *Meditations*, he wrote to Mersenne:

I may tell you, between ourselves, that these six *Meditations* contain all the foundations of my physics. But please do not tell people, for that might make it harder for supporters of Aristotle to approve them. I hope that readers will gradually get used to my principles, and recognize their truth, before they notice that they destroy the principles of Aristotle. (Descartes [1641a], p. 173)

To get a sense of the conflict here, notice that on the view Descartes comes to by the end of the *Meditations*, all properties of physical objects are to be explained in terms of the geometry and motions of the particles that make them up; the features we experience—like color, weight, warmth, and so on—exist, strictly speaking, only in us. For the Aristotelians, in contrast, physical objects themselves have a wide variety of qualities, which brings Aristotelianism into close alliance with common sense.

This background is laid out beautifully by Daniel Garber, who then takes the final step:

Descartes thought [that] the common sense worldview and the Scholastic metaphysics it gives rise to is a consequence of one of the universal afflictions of humankind: childhood. (Garber [1986], p. 88)

On Descartes' understanding of cognitive development, children are 'so immersed in the body' (Descartes [1644], p. 208) that they fail to distinguish mind and reason from matter and sensation, and

The domination of the mind by the corporeal faculties ... leads us to the unfounded prejudice that those faculties represent to us the way the world really is. (Garber [1986], p. 89)

So these are the 'childhood falsehoods' and Aristotelianism is the resulting 'highly doubtful edifice' that the meditator despairs of in the opening sentence of the *Meditations*.³ As the errors of childhood are extremely difficult to uproot in adulthood, only the Method of Doubt will deliver a slate clean enough to allow Descartes' alternative to emerge: the resulting principles of First Philosophy will be completely indubitable, and as such, strong enough to undermine the authority of common sense.⁴

Now our contemporary inquirer, unlike the meditator, has no such Cartesian reasons to believe that her most reasonable beliefs are problematic,⁵ so she lacks his motivation for adopting the Method of Doubt. Still, if application of the Method does lead to First Philosophical Principles that are absolutely certain, principles that may conflict with some of our inquirer's overwhelmingly reasonable, but ever-so-slightly dubitable beliefs, then she should, by her own lights, follow this course. Even if all her old beliefs re-emerge at the end, some of them might inherit the certainty of First Philosophy.⁶ Though she quite reasonably regards such outcomes as highly unlikely, she might well think it proper procedure to read past the First Meditation, to see what comes next. The unconvincing arguments that follow will quickly confirm her expectation that there is no gain to be found in this direction.⁷

So our inquirer will continue her investigation of the world in her familiar ways, despite her encounter with Descartes and his meditator. She will ask traditional philosophical questions about what there is and how we know it, just as they do, but she will take perception as a

mostly reliable guide to the existence of medium-sized physical objects, she will consult her astronomical observations and theories to weigh the existence of black holes, and she will treat questions of knowledge as involving the relations between the world—as she understands it in her physics, chemistry, optics, geology, and so on—and human beings—as she understands them in her physiology, cognitive science, neuroscience, linguistics, and so on. While Descartes' meditator begins by rejecting science and common sense in the hope of founding them more firmly by philosophical means, our inquirer proceeds scientifically, and attempts to answer even philosophical questions by appeal to its resources. For Descartes' meditator, philosophy comes first; for our inquirer, it comes second—hence 'Second Philosophy' as opposed to 'First'. Our Character now has a label: she is the Second Philosopher.⁸

II. STROUD'S DESCARTES

The Descartes we've been examining so far—perhaps he should be called Broughton's Descartes—regards the sceptical hypotheses as a mere tool in his search for a new foundation for science,⁹ but contemporary epistemologists tend to entertain a more potent scepticism that takes centre stage all on its own. To see how our Second Philosopher fares in this context, let's turn our attention to this Descartes, of whom Barry Stroud writes:

By the end of his *First Meditation* Descartes finds that he has no good reason to believe anything about the world around him and therefore that he can know nothing of the external world. (Stroud [1984], p. 4)

This Descartes would seem to stand in clear conflict with common sense, and with our Second Philosopher.

Stroud's analysis brings us back to the dream argument. The meditator realizes that the senses sometimes mislead him, when the light is bad, or he is tired, and so on, so he focuses on a best possible case: he sits comfortably by the fire with a piece of paper in his hand. At first, it seems to him impossible that he could be wrong about this—until he's hit by the thought that for all he knows he might be dreaming.

'With this thought,' Stroud writes, 'Descartes has lost the whole world' (Stroud [1984], p. 12).

At this point, the Second Philosopher is tempted to answer in the spirit displayed by Descartes himself at the end of the *Meditations*:

The exaggerated doubts ... should be dismissed as laughable ... especially ... my inability to distinguish between being asleep and being awake ... there is a vast difference between the two, in that dreams are never linked by memory with all the other actions of life as waking experiences are ... when I distinctly see where things come from and where and when they come to me, and when I can connect my perceptions of them with the whole of the rest of my life without a break, then I am quite certain that when I encounter these things I am not asleep but awake. (Descartes [1641], pp. 61–2)¹⁰

But the trouble, says Stroud's Descartes, is that I might be dreaming that I distinctly see where the paper in my hand came from, I might be dreaming that my current perception of my hand is connected with the rest of my life without a break, and so on. If I think there is some test I can apply to determine whether or not my current experience is or isn't a dream, I might be dreaming that the test is satisfied—I might even be dreaming that this test is effective!¹¹

To this, the Second Philosopher might reply that she knows, by ordinary means, that she is not dreaming, just as Descartes suggests: her tests centre on doing things now that she can't do while dreaming; her belief that she can't do them while dreaming is based on her past dreaming experiences, and so on. Surely we do, in fact, operate in this way. But even if such an adherence to everyday methods could be maintained to rule out the possibility of dreaming, it would be of no use against the Evil Demon hypothesis, for which there cannot in principle be any ordinary tests: the Demon makes it seem to me exactly as it would if there were no demon, so no aspect of my experience could count against his existence. This suggests that the debate over ordinary tests is beside the point, so let's leave this style of response aside, and continue with Stroud's line of thought, assuming the dream hypothesis to be as impregnable as that of the Evil Demon.¹²

So, Stroud's meditator reasons like this. First, if I'm now dreaming, I can't know there's a hand before me, (and this is true, by the way, even if there happens to be a hand there). Second, I can't tell whether or not I'm dreaming—which the Second Philosopher must admit, given the recently-adopted strong sense of the dream hypothesis. From which it is to follow that I can't know that there's a hand before me. But I chose the case of the hand to give perception the greatest possible advantage; if I don't know in this case, I can't know anything at all on the basis of perception. And so, as Stroud puts it, I have lost the world.

The remaining kink here is the unspoken assumption that I can't know the hand is there if I can't rule out the possibility that I'm dreaming. This is hardly required in ordinary life, even under the most rigorous conditions, as Stroud appreciates:

If I testify on the witness stand that I spent the day with the defendant, that I went to the museum and then had dinner with him, and left him about midnight, my testimony under normal circumstances would not be affected in any way by my inability to answer if the prosecutor were then to ask 'How do you know you didn't dream the whole thing?' The question is outrageous. ... Nor do we ever expect to find a careful report of the procedures and results of an elaborate experiment in chemistry followed by an account of how the experimenter determined that he was not simply dreaming that he was conducting the experiment. (Stroud [1984], pp. 49–50)

The worry arises that Stroud's Descartes is simply imposing an artificially high standard on knowledge, a standard we don't in fact consider reasonable. If this is right, then I could be said, under the proper perceptual conditions, to know that there is a hand before me, even if I can't prove that I'm not dreaming.

Understandably, Stroud is keen to argue that his Descartes isn't simply changing the subject from knowledge to some kind of ultra-knowledge. He begins his response by pointing out that its being inappropriate to criticize the witness's or the chemist's knowledge claims in this way doesn't by itself show that ruling out the dream hypothesis isn't necessary for knowledge:

The inappropriately-asserted objection to the knowledge-claim might not be an outrageous violation of the conditions of knowledge, but rather an outrageous violation of the conditions for the appropriate assessment and acceptance of *assertions* of knowledge. (Stroud [1984], p. 60)

The witness and the chemist make their claims to know!edge 'on just about the most favorable grounds one can have for claiming to know things' (op. cit., p. 61), so it isn't appropriate to criticize them for failing to rule out, or even to consider, the possibility that they're dreaming. But this doesn't show that they do in fact know what they claim to know.

Having found this opening, Stroud's Descartes takes it: he thinks it's appropriate for me to assert that I know when there is no reason to think I might be dreaming, but that I still do not in fact know unless I can rule out that possibility. The reason for this discrepancy between conditions for knowledge assertions and conditions for knowledge lies in the contrast between the practical and the theoretical:

It would be silly to stand for a long time in a quickly filling bus trying to decide on the absolutely best place to sit. Since sitting somewhere in the bus is better than standing, although admittedly not as good as sitting in the best of all possible seats, the best thing to do is to sit down quickly ... there is no general answer to the question of how certain we should be before we act, or what possibilities of failure we should be sure to eliminate before doing something. It will vary from case to case, and in each case it will depend on how serious it would be if the act failed, how important it is for it to succeed by a certain time, how it fares in competition on these and other grounds with alternative actions which might be performed instead, and so on. This holds just as much for the action of saying something, or saying that you know something, or ruling out certain possibilities before saying that you know something, as for other kinds of actions. (Stroud [1984], pp. 65–6)¹³

The picture, then, is of a sliding scale of strictness on proper assertions of knowledge:

From the detached point of view—when only the question of whether we know is at issue—our interests and assertions in everyday life are seen as restricted in certain ways. Certain possibilities are not even considered, let alone eliminated, certain assumptions are shared and taken for granted and so not examined. (Stroud [1984], pp. 71–2)

In ordinary life, then, under good perceptual conditions, it's reasonable for me to risk asserting that there is a hand before me, and so, to claim to know that there is a hand before me. But the knowledge claim is just a loose way of speaking, for practical purposes. In a theoretical context—one without practical time pressures, with no limit on the amount of 'effort and ingenuity' (op. cit., p. 66) we can bring to bear on the question of the truth of our claims—in such a context, free of practical restrictions, we have no excuse for speaking loosely and we shouldn't claim to know until we have ruled out every possibility that would preclude our knowing—in particular, we must rule out the possibility that we are dreaming. So Stroud's Descartes hasn't changed the subject; he's simply working with the usual notion of knowledge in an unrestricted or theoretical context.¹⁴

Now there is considerable appeal in this notion of a sliding scale of stringency. The Second Philosopher imagines a shopkeeper concerned about the coins he takes in: are they pure metal or fakes?¹⁵ He instructs his hired assistant to bite each coin to be sure, knowing that many counterfeits are laced with harder metals. He also knows that more sophisticated counterfeiters produce fake coins with softness comparable to pure coins by a different, more difficult process, and that these finer fakes can be detected by an optical device he keeps in the back of his shop. But the fellows capable of this fine work are now in jail, so he doesn't bother to include this extra twist in his instructions to his assistant. Under these conditions, when the assistant says he knows a particular coin is pure metal, the shopkeeper realizes that the fellow doesn't really know, because he hasn't used the optical device in the back room and doesn't know that the coin isn't one of the finer fakes, but the knowledge claim is appropriate in the context, and the shopkeeper would be out of line to correct him.

Likewise, the chemist knows that there are impure metals that pass both the biting test and the optical test, so he can see that the

shopkeeper's claim to know, after using his optical device, is also restricted, despite being appropriate in the given circumstances. Even the chemist's claim to know that the metal is pure will appear restricted to the physicist who realizes that there are atomic variations undetectable by chemical means. And even the physicist may have to admit that there are possible variations he doesn't yet know how to test for, and he will always realize that there may be possibilities he's unaware of that will be uncovered by future scientists. So, even his claim to know that the metal is pure will be subject to the proviso, 'at least as far as current science can determine'.

All this gives the idea of a sliding scale of restrictiveness some initial plausibility. But the Second Philosopher remains troubled by the conclusion that such a scale somehow presupposes an underlying entirely unrestricted notion of the sort proposed by Stroud's Descartes. After all, the scale as she understands it, no matter how stringent it gets, will never require ruling out the hypothesis that the relevant inquirer is dreaming, or deceived by an Evil Demon; these doubts still seem artificial. Furthermore, no notion of a scale seems relevant in a simple perceptual case like my seeing my hand before me; there I'm not hampered by time pressure or ignorance or anything else, no further, more strenuous investigation or special expertise seems relevant.

From the Second Philosopher's point of view, the situation looks like this. She has various methods of finding out about the world, beginning with observation, and as she builds and tests and modifies her theories, she also studies, tests and refines those methods themselves. She has seen, in her day, implementations of various bad procedures for finding out about the world, like astrology and creationism, and she can explain in detail what's wrong with these methods. Now Stroud's Descartes presents her with an alternative hypothesis: perhaps everything she believes is false and she is dreaming, or an Evil Demon has made it seem to her as if what she thinks she knows is true when it is not. This alternative hypothesis is deliberately designed so that none of her tried and true methods can be brought to bear on it. I imagine she will reply along these lines: 'I admit I can't refute the hypothesis, though it's hard for me to see the point of entertaining it.'¹⁶ Perhaps this shows that I can't be absolutely certain that I know what

I think I know, but that doesn't surprise me so much.¹⁷ I constantly work to remove as many "restrictions" as possible, to conduct my inquiries in a detached and unhurried way, as unimpeded as possible by practical limitations and lingering prejudices. This seems to me the best way there is to find out what the world is like. The semantics of the word "know" seem to me quite complex, and I don't pretend to understand them completely,¹⁸ but it still seems to me reasonable to think that we know, in a straightforward and unrestricted sense, that we have hands (in which case scaling seems irrelevant), that water is H₂O (in which case we seem suitably high on the scale), and much, much more.'

This will hardly satisfy Stroud's Descartes, but to avoid an unappealing debate over the concept 'know',¹⁹ let me approach the issue from another direction. Stroud calls the epistemological challenge a 'theoretical' or 'philosophical' one:

We aspire in philosophy to see ourselves as knowing all or most of the things we think we know and to understand how all that knowledge is possible. (Stroud [1994], p. 296)

The Second Philosopher thinks she has at least the beginnings of an answer to this question, in her account of how and when perception is a reliable guide, in her study of various methods of reasoning, and her efforts to understand and improve them.

But this obviously isn't what Stroud has in mind:

In philosophy we want to understand how *any* knowledge of an independent world is gained on *any* ... occasions ... through sense-perception. So, unlike ... everyday cases, when we understand the particular case [like my hands] in the way we must understand it for philosophical purposes, we cannot appeal to some piece of knowledge we think we have already got about an independent world. (Stroud [1996], p. 132)²⁰

From the 'philosophical' or 'external' point of view:

All of my knowledge of the external world is supposed to have been brought into question in one fell swoop ... I am to focus on my relation to the whole body of beliefs which I take to be knowledge

of the external world and ask, from 'outside' as it were whether and how I know it ... (Stroud [1984], p. 118)

In other words, I'm to set aside all my hard-won methods, all my carefully checked and double-checked beliefs, and then explain ... Well, the Second Philosopher will hardly care what she's now asked to explain; the demand that she explain anything without using any of her best methods seems barmy.

From Stroud's point of view, the problem with the Second Philosopher's explanation can be illuminated by a comparison.²¹ Suppose a pseudo-Cartesian inquirer gives the following account of his knowledge of the world: 'I know because I have a clear and distinct idea, and God makes sure that I only have clear and distinct ideas about things that are true; furthermore, I came to believe this about God by means of clear and distinct ideas, so I have good reason to believe I am right.' This account is to run parallel to the Second Philosopher's: 'I know because my belief is generated by such-and-such methods, and such-and-such methods are reliable; furthermore, I came to believe that they are reliable by means of such-and-such methods, so I have good reason to believe that I'm right.' We may be inclined to think that the Second Philosopher *is* right—that perception and her other methods of belief formation are reliable—and that the pseudo-Cartesian is wrong—that there is no such accommodating God—but the best either of these inquirers can say is:

'If the theory I hold is true, I do know ... that I know ... it, and I do understand how I know the things I do.' (Stroud [1994], p. 301)

Given that all knowledge is being called into question at once, neither of them can detach the antecedent, so neither can give a philosophically satisfying account of their knowledge.

In fact, this just repeats the previous observation that the Second Philosopher can't explain her knowledge without using her methods of explanation, but the rhetorical force is heightened by the suggestion that she's in no better position than this woeful pseudo-Cartesian. Of course, she doesn't see it that way; to her, the pseudo-Cartesian is just another in a long line of the benighted—like the astrologer and the creationist—all of whom she can dispatch on straightforward grounds.

What Stroud's comparison invites her to attempt is an explanation of the pseudo-Cartesian's errors that uses none of her methods, a task that seems to her no more reasonable than the original challenge to explain her knowledge using none of her methods.

Perhaps the Second Philosopher's reaction can be clarified by comparison with a few close cousins. Moore, like the Second Philosopher, tends to stick to the 'internal' or 'everyday' versions of the sceptic's questions. Stroud writes:

It is precisely Moore's refusal or inability to take his own or anyone else's words in [the] 'external' or 'philosophical' way that seems to me to constitute the philosophical importance of his remarks. He steadfastly remains within the familiar, unproblematic understanding of those general questions and assertions with which the philosopher would attempt to bring all our knowledge of the world into question. He resists, or more probably does not even feel, the pressure towards the philosophical project as it is understood by the philosophers he discusses²² ... But how could Moore show no signs of acknowledging that [those questions] are even intended to be taken in a special 'external' way derived from the Cartesian project of assessing all our knowledge of the external world at once? That is the question about the mind of G.E. Moore that I cannot answer. (Stroud [1984], pp. 119, 125–6)

Here the Second Philosopher must sympathize with Stroud. Though she, too, fails to feel the 'lure' of the philosophical project, she surely realizes that those who do feel it intend the question of the external world to be understood in a sense that explicitly marks off everything she has to offer as beside the point. For this reason, she, unlike Moore, cannot honestly claim to have answered the sceptic's challenge.

Quine's naturalized epistemology is another obvious relative, but the Quinean opus includes many themes, some of which seem to conflict with his naturalism, and many statements and restatements, so the assessment of agreement and disagreement here is an arduous one.²³ Still, one note is salient for our purposes here. Quine poses the epistemological challenge this way:

We are studying how the human subject ... posits bodies ... from his data. (Quine [1969], p. 83)

The Second Philosopher, relying more on cognitive science than on empiricism or behaviourism, is less inclined to speak of 'data' and 'positing' and more inclined to cite studies of how prelinguistic infants come to perceive and represent physical objects.²⁴

This brings us to one of Stroud's central concerns about Quine's naturalism. He is unbothered by the idea of relying on science, which he sees as an update of Moore's dogged trust in common sense:

What Moore says is perfectly legitimate and unassailable ... The results of an independently-pursued scientific explanation of knowledge would be in the same boat. (Stroud [1984], p. 230)

As we've seen, Stroud thinks 'there is wisdom in that strategy' ([1984], p. 248), though it doesn't answer the sceptic's challenge as he understands it. The trouble comes in Quine's distinctive conception of the scientific undertaking, in his description of humans as positing objects on the basis of data, where what

... can be said ... in common-sense terms about ordinary things are ... far in excess of any available data. (Quine [1960], p. 22)

For Quine, the naturalized epistemologist studies

the relation between the meager input and the torrential output ... in order to see how evidence relates to theory, and in what ways one's theory of nature transcends any available evidence. (Quine [1969], p. 83)

Though Quine doesn't begin from a sensory given, but from 'the limited impingements' of our sensory surfaces (Quine [1974], p. 3), he persists in the language of 'evidence', 'information' and 'data'.

Stroud worries that this way of describing the scientific project provides a new foothold for the sceptic. If I regard my beliefs about the external world as the result of my own positing, a positing that could have gone any number of different ways without coming into conflict with my sensory inputs, it's hard to see how I can use those beliefs to explain how I come to know what the world is like:

Countless 'hypotheses' or 'theories' could be 'projected' from those same slender 'data', so if we happen to accept one such 'theory' over others it cannot be because of any objective superiority it enjoys over possible or actual competitors ... our continued adherence to our present 'theory' could be explained only by appeal to some feature or other of the knowing subjects rather than of the world they claim to know. And that is precisely what the traditional epistemologist has always seen as undermining our knowledge of the external world. (Stroud [1984], p. 248)

Though Quine hopes to use ordinary science in his epistemological project, the project itself is formed by 'the old epistemologist's problem of bridging a gap between sense data and bodies'; it is 'an enlightened persistence ... in the original epistemological problem' (Quine [1974], pp. 2–3). Stroud's point is that Quine's enlightenment has not saved him; as soon as he allows

a completely general distinction between everything we get through the senses, on the one hand, and what is or is not true of the external world, on the other ...

he is 'cut ... off forever from knowledge of the world around us' (Stroud [1984], p. 248).²⁵ As Quine's line on positing and underdetermination is supposed have resulted from scientific inquiry, Quine's science has undermined itself from within.²⁶

But the commitment to science and common sense doesn't force us to conceive the problem in Quine's way. In fact, if we are interested in explaining how a causal process beginning with light falling on and reflecting off an object, continuing through stimulations of our sensory surfaces, proceeding through various levels of cognitive processing, often results in reliable belief about the external world, we find nothing in the story about 'data' or 'theory', no grounds for identifying one episode in the causal chain—the 'irritation' of our 'physical receptors'—as data or information or evidence that radically underdetermines the rest.²⁷ Ironically, Quine himself, at other times, counsels us to drop such talk of 'epistemological priority' (see Quine [1969], p. 85), but if we do so

We are left with questions about a series of physical events, and perhaps with questions about how those events bring it about that we believe what we do about the world around us. But in trying to answer these questions we will not be pursuing in an 'enlightened' scientific way a study of the relation between 'observation' and 'scientific theory' or of the 'ways one's theory of nature transcends any available evidence' ... (Stroud [1984], p. 252)

Any suggestion that we are addressing the sceptic's original challenge now evaporates.

Of course, the Second Philosopher never embraced this Quinean conception of the project in the first place: she isn't out to explain how we project or infer objects from sensory data, but how we come to be able to detect external objects by sensory means. Stroud has no objection to this project of the Second Philosopher, or for that matter, to Moore's persistence in the everyday or 'internal' reading of the question; in fact, it's hard not to be struck by Stroud's admiration for Moore, in particular. Speaking for himself rather than Descartes, Stroud wonders whether

the fully 'external' or 'philosophical' conception of our relation to the world, when pressed, is really an illusion. (Stroud [1984], pp. 273–4)

His distrust extends not only to scepticism, but to all efforts to answer the 'external' question:

It is what all such theories purport to be about, and what we expect or demand that any such theory should say about the human condition that we should be examining, not just which one of them comes in first in the traditional epistemological sweepstake. In that tough competition, it still seems to me, scepticism will always win going away. (Stroud [1994], p. 303)

Here Stroud and the Second Philosopher come into partial agreement, in their reservations about the very problem of traditional epistemology, the problem of justifying our knowledge of the world without using any of our ordinary means of justification. The difference is that Stroud suspects the problem is somehow incoherent—that there's some

obstacle in principle to posing the completely general question—while the Second Philosopher thinks it's simply misguided.²⁸

III. VAN FRAASSEN

In any case, scepticism of this traditional variety seldom troubles the sleep of our level-headed philosophers of science. Still, they do worry over some partial versions, most often scepticism about unobservables. Van Fraassen's constructive empiricism is a conspicuous example. I'd like to take my Second Philosopher on one last ramble, around this corner of the philosophy of science. For future reference, let me begin by summarizing the development of the Second Philosopher's reasons for believing that there are atoms, despite her inability to see them, with or without her eye-glasses.

Beginning with Dalton in the early 1800s, the atomic hypothesis was used in chemistry to explain various laws of proportion and combining volumes, then Boyle's law and Charles' law, and was elaborated to good effect with the notions of isomers, substitution and valence.²⁹ For a time, difficulties in the determination of atomic weights produced severe worries—one prominent chemist proposed that the atom be 'erased' from science because 'it goes beyond experience, and never in chemistry ought we to go beyond experience' (Dumas)—but by 1860, all this was settled and, in the words of the historian, 'the atom [came] into general acceptance as the fundamental unit of chemistry' (Ihde). In the second half of the 19th century, atoms entered physics by way of kinetic theory, again with dramatic success, including the determination of absolute atomic weights.

Despite all this, scientists concerned about atoms still asked 'who has ever seen a gas molecule or an atom?' (Bertholet, 1877) and complained about the appeal to 'forces, the existence of which we cannot demonstrate, acting between atoms we cannot see' (Ostwald, 1895). Even supporters recognized that it might well be thought 'more dangerous than useful to employ a hypothesis deemed incapable of verification' and that scepticism here was 'legitimate' (Perrin). In this climate, a leading textbook of 1904 warned that

The atomic hypothesis has proved to be an exceedingly useful aid to instruction and investigation ... One must not, however, be led astray by this agreement between picture and reality and combine the two. (Ostwald, 1904)

In one of his remarkable series of papers of 1905, Einstein declared his 'major aim' was to 'find facts which would guarantee as much as possible the existence of atoms'.

A decade before, Gouy had argued that the phenomenon of Brownian motion 'places under the eyes the realization of all [the] hypotheses' of the kinetic theorists. Einstein was unaware of this work and only dimly aware of Brownian motion itself, but he concluded that:

According to the molecular-kinetic theory of heat, bodies of microscopically visible size suspended in a liquid will perform movements of such magnitude that they can be easily observed in microscope.

Einstein took the presence or absence of this phenomenon in the exact mathematical terms predicted by kinetic theory as a crucial test, but he apparently thought actual experiments would require a level of precision beyond human reach.

But it was not beyond Jean Perrin, as we now know. He manufactured tiny particles of exact and uniform size and weight and studied how they suspended in a liquid—balancing the scattering forces of Brownian motion against gravity. In this way, he used

the weight of the particle, which is measurable, as an intermediary or connecting link between masses on our usual scale of magnitude and the masses of molecules ...

... and he obtained measurements of absolute atomic weights and Avogadro's number that matched the predictions of kinetic theory. From this beginning, he went on to verify the rest of Einstein's predictions.

In 1908, Ostwald, the same chemist who issued the textbook warning, described the work of Perrin and others as constituting

experimental proof for the discrete or particulate nature of matter—proof which the atomic theory has vainly sought for a hundred years

Poincare, another former sceptic, writes:

we no longer have need of the infinitely subtle eye of Maxwell's demon; our microscope suffices us ... atoms are no longer a useful fiction ... The atom of the chemist is now a reality.

The contemporary Second Philosopher agrees, on these grounds and others that have accumulated since.

Now van Fraassen takes a different view, stunning in its sweep:

When the theory has implications about what is not observable, the evidence does not warrant the conclusion that it is true. (van Fraassen [1980], p. 71)

The sting of this denial is temporarily drawn by van Fraassen's admission that the evidence doesn't even warrant belief in a 'simple perceptual judgement', not because the evidence is sense-data—this way lies traditional scepticism—but presumably because such a judgement involves belief about matters I haven't actually observed (like the other side of the moon, and so on). Indeed, van Fraassen holds that there are no 'rationally compelling' reasons for extending ones belief beyond the evidence precisely as far as he advocates and no further ([1980], pp. 72–3). He draws the line where he does following the lead of his underlying Empiricism, which counsels him 'to withhold belief in anything that goes beyond the actual, observable phenomena' ([1980], p. 202).

Parallel to Stroud's Descartes on the subject of hands, van Fraassen thinks that no evidence whatsoever could rationally compel belief in atoms. Still, the Second Philosopher is somewhat heartened, because she finds here no general sceptical argument—corresponding to the dream hypothesis—that's intended to establish this. Perhaps van Fraassen is simply in the position of the chemists and physicists of 1900—imagining, with some reason, that the existence of atoms 'goes beyond experience' and is 'incapable of verification'. Perhaps he can be persuaded, as they were, by Perrin's experimental evidence and its like. If he is not persuaded, she is eager to hear his objections to that evidence: perhaps there is a misunderstanding she can clear up; perhaps there is some weakness she hasn't noticed!

To her surprise, van Fraassen's reactions don't seem to take this form. Instead, he presents a range of arguments against people who connect the truth of a scientific theory in one way or another to its explanatory power, or who think the terms of mature scientific theories typically refer, or whatever. Now she is disinclined to think a theory true simply because it is the best explanation of the phenomena: the atomic hypothesis gave an excellent account of a wide range of chemical and physical phenomena by 1900, but the existence of atoms still hadn't been established; of course, their existence explains Brownian motion, but this bare description of the situation leaves out the details that made Perrin's experiments so compelling. Furthermore, the 'maturity' of the theory in which an entity appears seems to her an unclear and oddly-chosen indicator of the existence of its objects; what matters is the particular experimental evidence available for the particular entity in question! There is more, of course, but the nature and source of the Second Philosopher's befuddlement should be clear.³⁰

Here van Fraassen makes the helpful suggestion that she has misunderstood the terms of the debate. The Second Philosopher is speaking as one 'totally immersed in the scientific world-picture' (van Fraassen [1980], p. 80). From this point of view,

the distinction between [*atom*]³¹ and *flying horse* is as clear as between *racehorse* and *flying horse*: the first corresponds to something in the actual world, and the other does not. While immersed in the theory, *and* addressing oneself solely to the problems in the domain of the theory, this objectivity of [*atom*] is not and cannot be qualified. (van Fraassen [1980], p. 82)

So, while the Second Philosopher is immersed in atomic theory, the Perrin experiments *do* provide compelling reason to classify atoms as real, as opposed, say, to phlogiston or whatever. But she has not yet, according to van Fraassen, taken an 'epistemic' stance. He writes of the working scientist:

If he describes his own epistemic commitment, he is stepping back for a moment, and saying something like: the theory entails that [atoms] exist, *and* not all theories do, *and* my epistemic attitude towards this theory is X. (op. cit.)

To grasp what's at stake in van Fraassen's empiricism, the Second Philosopher must step back and adopt an epistemic stance. And, at that level, van Fraassen's empiricism counsels belief in the empirical adequacy of the theory—that is, belief in what the theory tells us about observable events and things—rather than belief in its truth.

The Second Philosopher imagines that she understands the distinction between immersion and an epistemic stance. It seems to be what Ostwald recommended in his 1904 textbook: use atoms all you want while you're doing your chemistry, treat them as real, just as you would medium-sized physical objects, when you're explaining chemical phenomena, making chemical predictions, and so on; but, when you step back, notice that the existence of atoms hasn't actually been established and don't confuse the atomic picture with reality. The Second Philosopher knows many examples of this 'epistemic' phenomenon: a theory is used, taken as true during 'immersion', while the theorist nevertheless retains doubts about certain aspects or entities involved. But atomic theory has now passed beyond this, as a result of Perrin's experiments: it was once regarded as empirically adequate; now it is regarded as true.

Once again van Fraassen insists that the Second Philosopher has misunderstood. The 'immersion' and 'stepping back' she describes is all happening *within* what he calls 'the scientific world-picture': Ostwald's reservations about atomic theory were 'immersed', part of the internal scientific process of distinguishing between, say, race horses and flying horses; from the epistemic stance, atomic theory should still be and should always be regarded as empirically adequate only.

The bewildered Second Philosopher might be inclined to think we should seek to understand *why* atomic theory is empirically adequate, so as to understand the world better. Van Fraassen grants that

The search for explanation is valued in science because it consists *for the most part* in the search for theories which are simpler, more unified, and more likely to be empirically adequate ... because having a good explanation *consists* for the most part in having a theory with those other qualities. (van Fraassen [1980], pp. 93–4)

So it's best that working scientists think as the Second Philosopher does, always searching for explanations—it makes for progress—but

the interpretation of science, and the correct view of its methodology, are two separate topics. (van Fraassen [1980], p. 93)

From the interpretive or epistemic point of view

that the observable phenomena ... fit the theory, is merely a brute fact, and may or may not have an explanation in terms of unobservable facts ... it really does not matter to the goodness of the theory, nor to our understanding of the world. (van Fraassen [1980], p. 24)

All the Second Philosopher's impulses are methodological, just the thing to generate good science. Much as Stroud's Descartes recommends that we make knowledge claims in practical life that aren't properly justified theoretically, van Fraassen finds it beneficial to speak the language of current science 'like a native' (p. 82). But the correct interpretation of science—the empiricist interpretation—is entirely independent of its methodology.³²

So the Second Philosopher is once again silenced. Stroud's Descartes left her no reply, because she was asked to justify her knowledge without using any of her means of justification. Similarly, van Fraassen has ruled all her evidence for the existence of atoms as ultimately irrelevant: good, even admirable, for the purposes of science, to one immersed; but not rationally compelling to the epistemologist. Her trouble is that she is so completely immersed: she doesn't speak the language of science 'like a native'; she *is* a native. Van Fraassen introduces her to his epistemic foreign language, where this baffling empiricism reigns: her best theories are taken to be empirically adequate, rather than true, and the desire for an explanation of why they are empirically adequate is perhaps useful as a heuristic, but in truth unmotivated.

In an effort to understand, she asks why we should adopt empiricism in the foreign language. Van Fraassen answers, because 'it makes better sense of science, and of scientific activity' ([1980], p. 73). Better than what?, the Second Philosopher wonders. Better than those accounts of scientific truth in terms of 'best explanations' and 'mature

theories' that van Fraassen explicitly engages and that so befuddled her before. The salient difference now is that these opponents of van Fraassen think science aims for truth; not just empirical adequacy, and though she may flinch at generalities about 'science', the Second Philosopher was dissatisfied before Einstein and Perrin, and perhaps it isn't too great a distortion to say that she wanted to know if atomic theory was empirically adequate because it was true or for some other reason. Still, she concedes that it wasn't clear, before Perrin showed what could be done, that this question could be answered, that the existence or non-existence of atoms could be established, and if it couldn't have been, she might have settled for the empirically adequate theory. She figures the aim is to do the best we can in determining what the world is like, but all this, from van Fraassen's point of view, is just the thinking of one immersed: fine for scientific purposes; irrelevant epistemically.

Under the circumstances, the Second Philosopher seems unlikely to get the hang of this new language—she can't see what style of argument is appropriate there, given that all hers are 'merely immersed'—not to mention that she has little motivation for trying³³—given her watchful and considered confidence in her own methods. From her perspective, the empiricist challenge is hardly more compelling than the Cartesian. To Stroud's Descartes, she concedes that she cannot justify her knowledge without using her means of justification; to van Fraassen, she concedes that she cannot defend the existence of atoms if all her best evidence is ruled irrelevant. But neither of these gives her reason to doubt her methods or to change her ways.

This final stroll has taken the Second Philosopher even further from Quine's naturalist, as Quine's justification for the atomic hypothesis, like those of van Fraassen's proper opponents, depends on general features of the theory rather than detailed experimental results. This separates Second metaphysics, like Second epistemology, from metaphysics and epistemology naturalized, which leads in turn to disagreements in philosophy of mathematics and philosophy of logic. I'll talk about some of these things on Monday. For now, I hope the Second Philosopher's character has been brought into some degree of focus by

this excursion into scepticism. And I hope the lack of philosophical action hasn't left you wishing you'd gone to a different movie!³⁴

NOTES

- * This is the Lakatos Award Lecture delivered at the London School of Economics in May 2003.
- 1. The following account of Descartes goals and strategies comes from the elegant and fascinating Broughton (2002).
- 2. In the 'Fourth Replies', Descartes refers to 'the exaggerated doubt which I put forward in the First Meditation', and in the 'Seventh Replies' he reminds us that 'I was dealing merely with the kind of extreme doubt which, as I frequently stressed, is metaphysical and exaggerated and in no way to be transferred to practical life' ([1642], pp. 159, 308). See Broughton (2002), p. 48.
- 3. As Broughton points out ([2002], p. 31), the meditator comes 'uncomfortably equipped with Cartesian theories' at the outset of the *Meditations*, though those theories aren't revealed to him until the end.
- 4. The need to undercut our most tenacious common sense beliefs explains Descartes' interest in certainty: if p and q conflict, and there is some slight reason to doubt p, but q is certain, we take q to undermine p. See Broughton [2002], p. 51.
- 5. She doesn't see the errors of childhood as based on a serious inability to distinguish mind from body, so she thinks her ordinary methods of inquiry can correct them.
- 6. Not all of the new science will be indubitable, of course. See Garber [1986], pp. 115–16, and the references cited there. Even perceptual beliefs are only trustworthy when *properly* examined by Reason, so some room for error remains here as well (see the final two sentences of Descartes [1641]).
- 7. Recall that our Second Philosopher has no grounds on which to denounce First Philosophy as 'unscientific'. Open-minded at all times, she's willing to entertain Descartes' claim that the Method of Doubt will uncover useful knowledge. If, by her lights, it did generate reliable beliefs, she'd have no scruple about using it. But if it did, by her lights—that is, by lights we tend to describe as 'scientific'—then we'd also be inclined to describe the Method of Doubt as 'scientific'.
- 8. The Second Philosopher is a development of the naturalist described in Maddy [2001] and [to appear], building on [1997]. I adopt the new name here to avoid largely irrelevant debates about what 'naturalism' should be.

9. Both Broughton ([2002], pp. 13–15) and Garber ([1986], p. 82) would allow that Descartes has some interest in replying to the sceptical arguments current among his contemporaries, but they see this as something of a side benefit to carrying out his real project of revising the foundations of science.
10. On Broughton's reading, it seems Descartes' meditator could have said this in the first Meditation.
11. For Stroud on ordinary tests, see [1984], pp. 20–23, 46–8.
12. I suspect that Stroud's Descartes gains some rhetorical advantage by sticking to dreaming, a familiar phenomenon, rather than plumping for the Evil Demon—this makes the challenge seem less like one based on an objectionable requirement of logical certainty. But the familiar phenomenon might well be ruled out in familiar ways.
13. An odd note here. When I say I have hands, there is a risk that I'm wrong, just as there's a risk that I might not get the best seat on the bus if I sit down quickly, but it might still be best, in both cases, to take the action. So I say I have hands without ruling out all possible defeaters. This might incline me also to say that I know I have hands. But if Stroud's Descartes is right, this second utterance is different: it's not that there's a small risk I might be wrong in saying that I know I have hands; there's no chance at all that I might be right!
14. Williams describes this nicely as a sort of 'vector addition': 'The concept of knowledge, left to itself so to speak, demands that we consider every logical possibility of error, no matter how far-fetched. However, the force of this demand is ordinarily weakened or redirected by a second vector embodying various practical or otherwise circumstantial limitations. The effect of philosophical detachment is to eliminate this second vector, leaving the concept of knowledge to operate unimpeded' ([1988], p. 428).
15. I use this example in place of Stroud's plane-spotter ([1984], pp. 67–75, 80–81) to bring out the role of scientific inquiry on the sliding scale.
16. Unlike Broughton's Descartes, Stroud's Descartes doesn't suggest that sceptical hypotheses are themselves means to deeper knowledge.
17. Opinion seems divided on the role of certainty: e.g., Williams holds that knowledge doesn't require certainty ('there is no obvious route from fallibilism ... to scepticism' ([1988], p. 430), while Lewis takes the idea of fallible knowledge to be *prima facie* 'madness' ([1996], p. 221). Stroud sees the requirements of certainty and foundationalism (the epistemic priority of experience), not as presuppositions of the sceptical argument, but as 'natural consequence[s] of seeking ... a certain kind of understanding of human knowledge in general' ([1989], p. 104). (I take up this formulation of the challenge below). My own feeling (which I apparently

share with Williams) is that the sceptical challenge isn't of much interest (unless as a Method, as for Broughton's Descartes) if it rests on a requirement of certainty. (Fallibilism doesn't trouble me as it does Lewis.)

18. The Second Philosopher may well suspect that her linguistic inquiry into the semantics of 'know' will not turn up anything determinate and unified enough to play the role of the 'underlying concept' Stroud's argument requires. Williams ([1988], p. 428) seems to make a similar suggestion, though in a different argumentative setting. Lewis finds the concept complex, but still more strictly codifiable than seems likely for a rough and ready notion like knowledge.
19. For example, over the certainty requirement: it's hard to see how the argument just rehearsed from the possibility that I'm dreaming to the conclusion that I don't know I have hands can be pressed without requiring that knowledge be certain; the sliding scale seems to be an attempt to defend this requirement. But leaving aside the word or concept (see previous footnote) of 'knowledge', what really matters is whether or not I have good reason to believe I have hands.
20. From the philosophical perspective, no certainty requirement seems to be presupposed: if I admit (as I must) that I might be dreaming, I have no grounds on which to count this hypothesis as unlikely—because I can't appeal to other knowledge of the world—and thus I have no good reason to believe that I have hands. (Stroud doesn't put the case quite this way in [1996], p. 132, but I think the spirit is the same.) As Stroud claims, the requirement of certainty emerges from the sceptical reasoning, because, in the absence of other information, any room for doubt leaves me with no good reason to believe. Thus, it seems to me that two different arguments for the sceptical conclusion are being offered, depending, on which considerations support the key move from 'I could be dreaming I have hands' to 'I don't know I have hands', the move, that is, that rules out the response that the dream hypothesis is sufficiently unlikely to be dismissed: in the first version, the sliding scale argument purportedly shows that certainty is required for knowledge, so the dream hypothesis must be conclusively defeated; in the second version, the philosophical perspective disallows the appeal to collateral information that would show the dream hypothesis to be unlikely.
21. This is adapted from Stroud [1994], a reply to externalism. See also Stroud [1989].
22. Stroud notes ([1984], p. 120) that 'even Homer nods'—there are places where Moore leans farther than perhaps he should toward the 'external' understanding.

23. See Fogelin [1997] for a discussion of one major fault line in the Quinean opus, between naturalism on one side and the likes of holism and ontological relativity on the other. I emphasize the tension between naturalism and holism in [1997]. Stroud [1984], chapter VI, highlights the difficulty of finding a single, consistent Quinean doctrine on scepticism. On epistemology itself, Quine sometimes says, 'why not settle for psychology?' ([1969], p. 75), while the Second Philosopher imagines a broader study, including various other human studies, plus her accounts of the things known. But see also Quine [1995], p. 16, where naturalized epistemology is described as 'proceed[ing] in disregard of disciplinary boundaries but with respect for the disciplines themselves and appetite for their input'.
24. Fogelin traces Quine's approach to Carnap's *Aufbau*: 'Quine's inspiration comes from the library, not the laboratory' ([1997], p. 561).
25. I'm not sure Quine would disagree with this diagnosis. After all, his views on proxy functions suggest that the world could be made of numbers instead of physical objects, for all our evidence tells us. Stroud needn't take a God's eye view and declare all these ontologies as equally good (Quine [1981], p. 21); he need only point out that science itself has told us that its evidence doesn't support its ontology over many rivals. Thus, it's hard to see how Quine has 'defend[ed] science from within, against its self-doubts' (Quine [1974], p. 3).

Quine replies that his 'only criticism of the sceptic is that he is over-reacting' when he 'repudiates science' (Quine [1981a], p. 475). I'm not sure what this repudiation comes to, apart from denying that science is knowledge. But Quine himself declares that there is no sense in which the world can be 'said to deviate from ... a theory that is conformable to every possible observation' (op. cit., p. 474). It sounds as if there is no fact of the matter about ontology that we can be said to know or fail to know.

It's hard to resist Fogelin's conclusion (Fogelin [1997]) that Quine's naturalism sits ill with his ontological relativity. Surely ordinary science thinks there is a fact of the matter about whether the world is composed of physical objects, as opposed to numbers.

26. See Stroud [1984], pp. 225–34.
27. See Quine ([1960], p. 22, [1969], pp. 82–3, [1974], pp. 2–3). Gibson ([1988], p. 66) suggests that Quine should be understood as linking the 'irritations' to 'holophrastically acquired observation sentences'. If so, then we're back to the previous situation, with a gap between those observation sentences and 'theory' (and the latter includes observation statements understood referentially).
28. I'm not sure whether Stroud's worry is over the coherence of the way the sceptical challenge is raised, that is, by generalizing from a particular case

- (Descartes' inability to know by perception that he has hands) to the whole of our purported knowledge of the world, or over the coherence of the philosophical perspective itself, whether or not it's forced upon us by the sceptical argument. If the former, he might still take the challenge to be coherent and unanswerable (as the Second Philosopher does).
29. For details and references, see [1997], pp. 135–42. Achinstein [2002] adopted the same general tone on the efficacy of the Perrin experiments.
 30. Cf. van Fraassen [1985], p. 252: 'A person may believe that a certain theory is true and explain that he does so, for instance, because it is the best explanation he has of the facts or because it gives him the most satisfying world picture. That does not make him irrational, but I take it to be part of empiricism to disdain such reasons.' These aren't the Second Philosopher's reasons.
 31. van Fraassen uses 'electron', in this quotation and the next, but the same would seem to go for atoms.
 32. Like van Fraassen, Broughton's Descartes thought his contemporary scientists were wrong, but he clearly didn't take this fact to be methodologically irrelevant—his aim was to change the way science was done.
 33. Notice that van Fraassen, like Stroud's Descartes but unlike Broughton's Descartes, is not offering an improvement in scientific methods.
 34. My thanks to Sam Hillier, David Malament, and Kyle Stanford for helpful conversations and comments on earlier drafts, and to the audience at the Lakatos Lecture at LSE for stimulating discussions.

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