

# Replies to Coliva, Leite, and Stroud

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## Abstract

Here I cast some doubt on Professor Coliva's interpretive claim that Moore's "Proof of an external world" is addressed to idealism, not skepticism, and explore the consequences for our understanding of the final paragraphs of the paper. In response to Professor Leite, I examine the disagreement between us on whether the global skeptical hypotheses can be refuted by ordinary evidence. Finally, after analyzing the logic of the skeptical argumentation, I attempt an answer to Professor Stroud's question about the staying power of the representative theory of perception.

## Keywords

Wittgenstein – Moore – skeptical hypotheses – representative theory of perception – vision science

## 1 Annalisa Coliva<sup>1</sup>

Professor Coliva and I share a great admiration for Moore and Wittgenstein, despite some disagreement on what exactly makes them so admirable. In the case of Wittgenstein, we disagree about how to sort out the various voices in *On Certainty*: her Wittgenstein scolds both Moore and the skeptic, concluding that Moore's "here is a hand" is actually an "ungrounded presuppositions ... of the essence of [our] very practices" (Coliva 2018: 204); my Wittgenstein sees

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<sup>1</sup> My thanks to all three commentators for their thoughtful reflections on the book.

the skeptic as an instigator who provokes both Moore and the advocate of “ungrounded presuppositions” to the error of imagining that the only truly acceptable kind of evidence is extraordinary evidence. But I’m not keen to insist on my reading; given that *On Certainty* is first draft notes, we’re both engaged in some unavoidable speculation. Since Coliva and I have recently aired our differing perspectives in another forum, I’ll focus today on Moore.

Her remarks began from an enigmatic passage in Moore’s Schilpp volume replies. There Moore carefully distinguishes the claim that “there are material things,” which he says he has proved, from “I know that there are material things,” which he says he cannot prove (Moore 1942: 668). Coliva takes this to show that the real target of “Proof of an external world” is idealism, not skepticism. This is a not-uncommon view among serious interpreters of Moore and it may well be right, but let me point to three passages that give me pause.

The first is in the opening discussion of Kant’s scandal: that no one has yet proved “the existence of things outside of us” (Moore 1959a: 127). Moore understands this to mean “the existence of things external to our minds” (1959a: 129), but he notes that Kant himself takes “things outside us” to be ambiguous. The two options, for Kant, are “things in themselves” (external in the transcendental sense) and “things to be met with in space” (external in the empirical sense) (1959a: 129–130). Moore rather likes “to be met with in space” and spends several characteristically somewhat tedious pages turning it this way and that.

He then raises this worry: suppose we somehow establish that “two dogs exist;” it clearly follows that “two things to be met with in space exist,” but perhaps it doesn’t immediately follow that “there are two things external to our minds” (Moore 1959a: 138). He returns then to Kant’s two senses and notes that, in Kant’s transcendental sense, “things to be met with in space” aren’t “external to our minds” (1959a: 139). Surely this is a brand of idealism, transcendental idealism, so if idealism were the target of the paper, we should expect some serious argumentation at this point. But here is all of what Moore says about Kant’s transcendental sense of “thing to be met with in space”:

What this supposed sense is I do not think that Kant himself every succeeded in explaining clearly; nor do I know of any reason for supposing that philosophers ever have used “external” in a sense, such that in *that* sense things that are to be met with in space are *not* external.

MOORE 1959A: 139

That’s all there is! Where is the concern about idealism?

He then goes on to explore Kant's empirical sense of "external," i.e., "to be met with in space," comparing it with his own sense of "external," i.e., "external to our minds." Of course dogs' pains, for example, are "external to our minds" but not "to be met with in space," but what about the converse? Must a thing "to be met with in space" be "external to our minds?" Here again we're on the verge of Kant's idealism. What does Moore say? He reminds us of a previous observation—that from the existence of stars, human bodies, or shadows it follows that there are things "to be met with in space"—and he adds:

And I think we can say that of every kind of thing of which this is true, it is also true that from the proposition that there is at least one "thing" of that kind there *follows* the proposition that there is at least one thing external to our minds.

MOORE 1959A: 144

This time he offers his "reason for saying this" (1959a: 144). The example now is a soap bubble. It's to be met with in space; it could exist without being perceived (otherwise it's an hallucination of a soap bubble); it could exist without my having any experience (it's "external to my mind"); in fact it could exist without any of us having any experience (it's "external to our minds"). Otherwise—don't you see?—"it would not be a soap bubble" (1959a: 144). But isn't the falsity of idealism just being presupposed here?

The third passage comes from the very reply to critics that includes the distinction between proving "there are material things" and proving "I know that there are material things." Two pages later, he considers Wisdom's objection to his proof, based on Wittgenstein's initial reaction:

Those philosophers who have denied the existence of matter have not wished to deny that under my trousers I wear pants.

MOORE 1942: 670

Moore admits that

Some philosophers have so used the expression "material thing" that there is no contradiction in saying "There are human hands, but there are no material things" ... so ... that from "This is a human hand" it does *not* follow that "there are no material things" is false.

MOORE 1942: 669

Who are these philosophers? Moore's example is the phenomenologists, who take human hands to be "logical fictions," not material things.

Now maybe phenomenology isn't a form of idealism, but surely many idealists would also find it natural to say both "there are human hands" and "there are no material things." As Moore says of the phenomenologist, when "material thing" is used in this way,

the assertion "there are no material things" is merely an assertion that a certain kind of *analysis* of such a proposition as "this is a human hand" is true. (1942: 669)

Both phenomenologist and idealist analyses would support this usage. So here, once again, Moore is face to face with the idealist. Here, once again, we should expect our refutation, we should expect Moore to tell us why a hand isn't a batch of sense data or some idealist's concoction, why it is a material object. But here is what Moore says:

With this meaning of "there are no material things," then, it is really impossible to prove that that statement is false in the way I gave.

MOORE 1942: 670

If what you mean by "there are no material things" is "hands are batches of sense data" or "hands are creations of the mind," then Moore has nothing to say to you. So I'm unconvinced that idealism is his target.

If this is right, then why does Moore insist that he's only proved "there are material things," not "I know there are material things?" Here Coliva takes us back to the wonderfully vexing final two paragraphs of "Proof." There Moore admits that he can't prove the premises to his argument, that he can't prove "here's one hand and here's another" (Moore 1959a: 149), but he nevertheless insists that "I can know things, which I cannot prove" (1959a: 150). Coliva takes him to be espousing a kind of externalism, to be denying that  $K$  implies  $\kappa\kappa$ . The exemplar here is the Plain Man knowing on the basis of perception without being able to offer the Plain Inquirer's defense of its reliability.

Maybe she's right about that, but I read these paragraphs differently. Unlike the Plain Man ignorant of vision theory, Moore thinks he does have evidence for his belief in his hands—"the evidence of my senses" he says in the paper "Certainty" (Moore 1959b: 243)—and for his belief that he's not just dreaming that "this is a hand;" in fact he thinks he has "conclusive evidence that I am awake" (Moore 1959a: 149). He's even more explicit in his reply to Malcolm. Malcolm has claimed that Moore would defend "I know there are material things" in the following way:

Both of us know ... that there are several chairs in this room, and how absurd it would be to suggest that we don't know it, but only believe it, and that perhaps it is not the case.

MALCOLM 1942: 351

Speaking of this argument, Moore writes:

I think he is quite right that ... I should approve of a statement of the kind he attributes to me as *a* good argument against ["I don't know there are material things"]. But nevertheless I should hesitate to say in the case of ["I don't know there are material things"] that by using the sort of argument Mr. Malcolm gives I have *proved* that ["I don't know there are material things"] was false, whereas I *have* said in the case of ["There are no material things"] that that sort of argument is a *proof* that ["There are no material things"] is false.

MOORE 1942: 668–669

So unlike the Plain Man with his externalist way of knowing, Moore thinks he has good arguments, good grounds—it's just that they don't add up to proof.

So why not? Why hasn't he proved that he knows he has two hands? At the end of "Proof," he says that he knows he has two hands, but that he can't prove this "unless we do know of the existence of external things" (Moore 1959a: 150). In other words, he thinks he knows he has hands, but he can't prove it, if proving requires us to proceed "from scratch." Likewise, he has "conclusive evidence" that he's not now dreaming—ordinary dreaming—but he can't prove that he's not, that is, his evidence disappears if he's not allowed to use any of the everyday and/or scientific things he knows about human dreaming.

So has Moore ended up agreeing with the skeptic? Not at all. He thinks he perfectly well knows he has hands—on the basis of his ordinary evidence—despite being unable to prove it—that is, despite his lack of extraordinary evidence. Those who think otherwise, he concludes, "have no good reason for their dissatisfaction" (Moore 1959a: 150). Obviously, the Plain Inquirer would agree: the lack of extraordinary evidence—"proof," in Moore's terms—in no way undercuts our ordinary evidence.

## 2 Adam Leite

Let me now turn to Professor Leite, a fellow traveler whose company is most welcome on this sparsely populated route. Sadly, my claim not to have refuted the various global skeptical hypotheses has troubled him for some years now.

In the course of our exchanges, I've been tempted more than once to concede the point, only to backslide into my misgivings. Perhaps even more annoying to Leite has been my tendency to think that this disagreement between us isn't all that important. We agree on what seem to me the main points: the hypothesis that I'm now dreaming in the ordinary sense can be refuted in perfectly ordinary ways (following Austin); the skeptic's "from scratch" challenge can't be met; but the latter failure doesn't undermine the former success. Our only disagreement, then, is over the status of the hypotheses of extraordinary dreaming, the Evil Demon, and the Brain in the Vat. I take these as colorful ways of posing the "from scratch" challenge; Leite takes them to fall to everyday considerations, alongside ordinary dreaming. The main points of agreement remain in place, so I ask myself, why quibble?

What prompts me to backslide is the conviction that there's an epistemic gulf between the threat of ordinary dreaming and the threat of extraordinary dreaming, and that something has gone wrong when that gulf seems to disappear. So I ask myself, what use do I actually make of this purported gulf? Well, it's intended to explain why the Dream Argument is so intuitively persuasive: because we start out agreeing that ordinary dreaming must be ruled out and end up agreeing that extraordinary dreaming can't be ruled out, and we fail to notice the slide from one to the other. OK, but all that's really needed for this diagnosis to be effective is the observation that so many of us tend to sign onto the claim that extraordinary dreaming can't be ruled out; this would be enough to explain the argument's power even if, as Leite insists, we're actually wrong to believe that extraordinary dreaming can't be ruled out.

So I still don't see that a lot hangs on this disagreement between Leite and me, but that said, let me continue in my stubborn resistance.

Leite's leading example is the Children of Brunets hypothesis. I take this as another variation of the Evil Demon and extraordinary dreaming—that is, as the claim that the Children of Brunets are completely wrong, as completely wrong as the subject of an extraordinary dream. Leite agrees that:

if you have brunet parents, your situation relative to this hypothesis is structurally analogous in every respect to your situation regarding the Evil Demon hypothesis.

LEITE 2018: 211

For that matter, I don't see that I even have to think I have brunet parents; if the hypothesis were true, I might well believe they're both blonds, so all of us, regardless of our imagined parentage, are susceptible to this challenge.

When I claim not to have evidence one way or the other on the Children of Brunets hypothesis, Leite contends that I'd be embarrassed "to stand up in

front of a Cognitive Science class” (Leite 2018: 211) and say this. He’s surely right that I’d be embarrassed, but not because I’d be ignoring the cognitive science community’s expert evidence that parental hair color is irrelevant to cognitive ability. What would embarrass me would be the need to explain the odd kinds of hypotheses philosophers tend to entertain while doing epistemology. I’d have to explain about the Evil Demon and extraordinary dreaming, and point out that the Children of Brunets hypothesis, despite looking like something that falls in their scientific purview, is really something quite different—as Leite says, the structural equivalent of the Evil Demon and the rest. So I stand by the thought that the Brunet hypothesis is just another colorful way of posing the “from scratch” challenge, and just as impervious to ordinary evidence.

Coming at my recalcitrance from the opposite perspective, the Drunken Speech example is intended to show that I can properly appeal to considerations in the “good” case that would lead me astray in the “bad” case. In contrast with the Brunets, this specimen looks akin to ordinary, not extraordinary, dreaming—in other words, the kind of case that can be settled on perfectly ordinary evidence. But this doesn’t involve appealing to considerations in the good case that would lead me astray in the bad case. I think I’m not now dreaming because my experience is coherent, consistent with a long train of memory and plans for the future, people and things don’t appear from nowhere or morph into quite different people and things for no reason, I can smell roses, quench my thirst by drinking water, and so on indefinitely. None of these considerations would be available if I were dreaming. Similarly, I can tell I’m not now drunk because I can touch my nose with one finger, walk a straight line, read a book, follow a train of thought, because I remember what I’ve been doing in the past few hours and it hasn’t included drinking. Again, none of these considerations would be available to me if I were drunk. In contrast, every consideration now available to me would also be available if I were extraordinary dreaming or deceived by an Evil Demon “of utmost cunning.” So the Drunken Speech case doesn’t incline me to think I could refute extraordinary dreaming in the same way as I refute ordinary dreaming.

But these examples are just intended as intuition pumps for Leite’s principled objections, so let me turn to those ...

The first centers on so-called “epistemic asymmetry:” the same considerations are available to me whether or not I’m extraordinary dreaming, in the “good” case or the “bad” case, but (according to Leite) if I’m not extraordinary dreaming, if I’m in the “good” case, these considerations amount to evidence—though of course I can’t tell the difference (in at least one sense, see below).

In the project of analyzing knowledge, this counts as a kind of externalism. Perhaps perversely, I don't much care about policing what counts as "knowledge" and what doesn't, but I take the Plain Inquirer's epistemological concerns to be different: among other things, she wants to evaluate and improve her beliefs. She's being told that what she has available to her counts as evidence if and only if the belief whose grounds she's investigating is true—but in pursuit of her project of evaluation and improvement, this kind of purported evidence isn't much help.

Now Leite thinks I can't take this line if I'm going to embrace the Wittgensteinian insight that we shouldn't ask for extraordinary evidence. But to ask for evidence that I can evaluate as evidence isn't necessarily to ask for evidence that's independent of all my ordinary ways of finding out about the world; the two only coincide for the global skeptical hypotheses, which is why I take those hypotheses to be colorful ways of demanding extraordinary evidence.

This might come out more starkly for another of Leite's worries, this one about the Plain Inquirer's policy of considering the grounds for a given claim "from a position of agnosticism" (Leite 2018: 217). He doesn't appear to think this leads us astray in ordinary cases, say like ordinary dreaming, but he agrees that asking whether or not I'm extraordinary dreaming from this perspective leaves me helpless, because of the way the hypothesis is structured. (This is the sense in which I can't tell the difference between the "good" case and the "bad" case—if I look at them from the position of agnosticism.) He acknowledges that, in such cases, my agnosticism generates the demand for extraordinary evidence. Where we differ is on what's to blame for this impasse: Leite blames it on agnosticism, because it generates the wrongheaded demand in certain cases; I blame it on the perverse structure of those cases, designed to require extraordinary evidence.

Leite thinks this reading of the situation—that agnosticism is fine, the global skeptical hypotheses are at fault—gets me into trouble in cases of epistemic circularity. He takes my suggestion that sense perception has "significant self-support," in Alston's phrase, to show that I don't actually approach the question of the reliability of sense perception in an agnostic spirit. I take that suggestion to show, instead, that the Plain Inquirer isn't actually asking the global question: is sense perception (as a whole) reliable? After all, this is just the semi-skeptical challenge—defend perception on the basis of your other faculties—a challenge that the Plain Inquirer, following Reid, takes to be as unanswerable as the through-going skeptical challenge, but also entirely unmotivated. What the Plain Inquirer does do is engage in ordinary, piecemeal scientific investigation of our various senses.

This investigation does, as Alston suggests, reveal "significant self-support," but that support is actually quite nuanced. As philosophers, we might imagine

a scenario in which the vision scientist begins with an account of what some worldly thing is like—say the Plain Man's chair—what its surroundings are like—good light, no intervening obstacles—and tells a story of how the light rays bounce off the chair and into the Plain Man's eyes, stimulating his retinas and initiating a causal process that results in a reliable belief about the chair. Of course we realize that it isn't quite so simple, because some situations will produce false beliefs, as with the Muller-Lyer illusion, or a mirage, or more exotic attentional anomalies, but still, to a first approximation...

In fact, the complexities of evaluating the reliability of vision go far beyond these commonplaces. Consider, for example, the question, is our color vision veridical? David Marr's information-processing revolution of late last century revealed that the answer depends on a prior question: what is the function of color vision?<sup>2</sup> If its function, if what it's trying to do, is reliably represent a uniform surface color, then the darkening effect of a cast shadow would be a failure, would count as non-veridical, unreliable. But if the goal is to represent both surface color and some lighting effects, the visual system is succeeding in this case—and it might even be handy that it does record the shadow of a hulking predator sneaking up behind us. Similarly, if the function of our spatial vision is to recover the locally Euclidean structure of space, then perspectival contraction is a failure, but perhaps this isn't what the visual system is out to accomplish.

It turns out that specifying the function of various aspects of human vision is a very difficult empirical problem, intertwined with vexing evolutionary puzzles, and sometimes it even appears to uncover tasks in direct conflict with veridical representation: e.g., there's evidence that objects with potential benefits to the agent appear closer than they are—the theory being that this encourages efforts to acquire them (see, e.g., Balcetis and Dunning 2010). My point is just that the actual scientific study of the reliability of vision is a complex and subtle matter, but one that goes about its business as a perfectly legitimate science as long as the question isn't posed in the full generality of the semi-skeptical challenge. So once again, I don't think it's the stance of agnosticism that's the problem, it's the nature of that challenge.

### 3 Barry Stroud

With his usual penetration, Professor Stroud observes that I devote considerable attention in the book, not to the title question of what philosophers do,

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2 Hatfield makes this point for spatial as well as color vision in his 2009, especially in chapters 5, 6, 8, and 9. (In the last two, he treats color much more subtly than I do here.)

but rather to the question of why they do it. As the Plain Inquirer finds the Dream Argument and the Argument from Illusion less than conclusive, she wants to understand what makes them so psychologically compelling nevertheless and even to explore the therapeutic possibilities for releasing their hold on us. I'm not at all confident I understand everything Stroud has said to us today, but he concluded with what I heartily agree to be a very good question along these lines: what accounts for the staying power of the "conception of the restricted scope of sense-perception" (Stroud 2018: 228), a picture he takes to hold sway "from antiquity to the present day" (2018: 230)? I'll come back to this in a moment, but first a few words about the logic of the argumentation leading up to it.

As we've seen, the book characterizes the Dream Argument as resting on an extraordinary form of dream that undercuts not just sense perception, but all my faculties, and that's perfectly indistinguishable from their ordinary functioning. This is intended to generate the thorough-going skeptical challenge, the demand that my beliefs be defended "from scratch," without appeal to anything I might imagine I have reason to believe or any methods I might imagine to be reliable. In contrast, the Argument from Illusion aims at a more limited semi-skepticism: the challenge to defend my perceptual beliefs on the basis of my other faculties. What I didn't mention earlier is the observation that the same semi-skeptical challenge could be generated from a suitably modified Dream Argument, invoking a form of extraordinary dreaming that only distorts my perceptual beliefs. I'm then required to defend my perceptual beliefs on the basis of whatever I can introspect about my experience, to infer from inner to outer, and this is impossible.

In one point of disagreement with this understanding of the logic of situation, Stroud regards my appeal to extraordinary dreaming as irrelevant—because Descartes also invokes the hypothesis of the Evil Demon. I completely agree that extraordinary dreaming and the Evil Demon are functionally equivalent. I insert extraordinary dreaming to highlight the fact that what's called "dreaming" in many contemporary treatments is actually that functional equivalent, for example, when it's claimed that anything that can be experienced can be dreamt—this is only true if the dreaming is extraordinary.

But there's a more serious point here: Stroud thinks that the Evil Demon hypothesis only accomplishes its mission because Descartes has a particular view of how sense perception works: we're immediately aware only of "images" or "ideas" or "percepts" or what we now call "sense data" that are present to the mind. Since the Evil Demon can produce ideas in our minds that correspond to nothing in an external world, we can't learn anything about it

by perception, we can't infer from inner to outer. As far as I can tell, Stroud is saying that Descartes begins from the very representative theory of perception that the Argument from Illusion is designed to imply. So there are two arguments, it's just that Stroud's Descartes doesn't need one of them, because he begins from its conclusion. What the Dream Argument, or the Evil Demon Argument, then adds is the step from the representative theory of perception to semi-skepticism.

Here I think Stroud is onto an important insight: the representative theory by itself isn't enough to generate a skeptical conclusion. In the book, I consider what would happen in a world where human vision did work this way, where we first become aware of a mental image, then perform some conscious calculation or inference to generate a perceptual belief about how things stand in the world; I argue that a Plain Inquirer in this counterfactual world could study this visual system just as the Plain Inquirer in our world studies ours and come to understand that it is this sort of representative system. What generates the skeptical conclusion isn't the representative theory, it's the requirement that the Plain Inquirer's investigation proceed without appeal to anything but her introspection of her own mental images. This requirement is imposed by Stroud's Evil Demon hypothesis, which sets up the unanswerable semi-skeptical challenge.

Where I would depart from Stroud here is in his assumption that the Evil Demon can't accomplish this unless we start, as his Descartes does, from a representative theory. Suppose instead—as seems, by the way, to be true—that the visual system does without any conscious mental image, without any thought of what seems or appears; suppose it simply delivers the Plain Man's non-inferential belief in the chair in front of him. It seems to me that a sufficiently cunning Evil Demon could arrange for all those beliefs to be false as easily as he could arrange for all the counterfactual Plain Man's mental images to be deceptive. So it seems to me that the Evil Demon or extraordinary dreaming would be enough to deliver the skeptical conclusions without the assistance of a representative theory of perception.

Still, there can be no doubt that the representative theory has been a leading source of skeptical worries in the history of philosophy, which brings us back to Stroud's question: what makes this way of thinking about perception so compelling, as he says “so apparently indestructible, from antiquity to the present day” (Stroud 2018: 230). My suggestion, in concert with Austin's in *Sense and Sensibilia*, is that there's another source for the stubborn belief that perception delivers something essentially inadequate: namely, the lingering influence of outmoded early modern vision science, the notion that the visual system generates a two-dimensional array of light and color, a mental correlate to the

retinal image, and that everything else we think we know by vision—beginning with depth—actually results from subsequent judging. We find versions of this picture in Descartes’s replies (though not in his more physiological works), in Berkeley and Hume, right up to the recent sense data theorists.

One potential roadblock to my suggestion is Stroud’s and Austin’s contention that the representative theory goes back all the way to the ancients, that it was already old news in the early modern period. Commentators debate how the role of dreaming in the early skeptics compares with its role for Descartes, but focusing instead on the history of vision science, I think it isn’t entirely clear that the representative theory does go that far back.<sup>3</sup> Ancient theories of vision are difficult to interpret, but early extramission theories involve something emanating from the eyes that turns the air into an instrument of touch, directly detecting the distance and shape of the object, and early intromission theories bring a fully three-dimensional representation of the object into the eye. Something close to the kind of representative theory we’ve been talking about only arose in the early 11th century, with the Islamic natural philosopher Ibn Al-Haytham—he first described a point-by-point registration of incoming light at the crystalline humor, which we now understand to be the lens. This information yields a two-dimensional record of the observed scene; the three-dimensional scene we “see” is a product of an unnoticed judgment. Six centuries later, Kepler added the correction that the lens actually serves to focus the light onto the back of the eye, thus introducing a truly optical, two-dimensional retinal image.

But notice, we haven’t yet been told where awareness begins: the representative theory requires that a conscious counterpart to the two-dimensional retinal image is present to the mind. Nothing in what Alhazen or Kepler discovered precludes the possibility that the three-dimensional visual world is what we see, that the purported “inference” from two-dimensions to three- is really better described as pre-conscious physiological processing. Descartes was the one who saddled us with the “idea,” that mental correlate of the retinal image. Attention to actual phenomenology reveals that we aren’t aware of a two-dimensional projection of the visual scene; even when we focus as carefully as we can just on “how things look,” not “how we think they are on the basis of our visual experience,” what we actually find is a foreshortened three-dimensional world, not a two-dimensional projection.

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3 See Lindberg (1976) for more on the history sketched in this paragraph. Also Hatfield (2009: ch. 12) for more on this paragraph and the two following.

So, why did Descartes place our initial awareness where he did, contrary to his own experience? Perhaps so that perceptual error could be chalked up to our faulty judgments rather than our God-given perceptual machinery. Perhaps because he thought, as Stroud suggests, that the Evil Demon could get better purchase that way. But whatever his reasons, the notion that what we're immediately aware of in vision must be closely tied to that optical image projected on the back of the eye has tremendous psychological appeal and centuries of staying power.

OK, but I claimed that this early modern vision theory is outmoded, so what have we learned since then? To begin with, the retina doesn't register the one-to-one, pixel-by-pixel record of incoming light that we imagine; it comes with two different kinds of receptors—rods and cones—sensitive to different aspects of the light and distributed quite unevenly across the retinal surface. Specialized cells further into the retina fire only on patterns of a dark circular center with a bright surround (or vice versa), and cells between the retina and the brain respond to a row of these to detect luminosity edges. So the initial reception isn't the simple registration we imagine, and processing begins immediately, well before the brain. Information from right and left eyes is next combined in the first area of the visual cortex to take advantage of stereopsis and generate a representation in depth. Obviously we aren't consciously aware of any of this activity. To call it "judgment" or "inference" is to engage in metaphor.

Processes like these—extracting edge information from variations of light and color, extracting depth information from the disparities across the right and left inputs—are quite complex. The algorithms involved in our best theoretical reconstructions depend on substantive physical assumptions about regularities in the world: that it presents smooth surfaces, objects with continuous edges, that these can be analyzed at different scales (e.g., the cat's individual hairs vs. the cat's stripes made up of many hairs), that items at the same scale are more similar than across scales, that discontinuities of motion along a line indicate an object boundary, and so on. Presumably the human visual system has evolved to exploit these statistical features of the world we live in, so that it's now capable of registering much more information than the early modernists' impoverished idea—and notably it acquired this ability over generations of interaction with the very contingent features whose regularities it now embodies. In other words, the visual system exploits collateral information about this world in generating our visual beliefs—the visual system itself doesn't operate "from scratch."

Anyway, that's my small suggestion. Perhaps a little dose of contemporary vision science could play a role in a larger treatment to loosen the grip of this particular driver of skeptical worries.

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