

COGNITIVE SCIENCE AND METAPHYSICS

PARTNERS IN DEBUNKING

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George Bealer does it. Roderick Chisholm does it a lot. Most philosophers do it openly and unapologetically, and the rest arguably do it too, although some of them would deny it. What they all do is appeal to intuitions in constructing, shaping, and refining their philosophical views. (Kornblith 1998: 129)

Is cognitive science relevant to metaphysics? From the perspective of a realist metaphysician aiming to describe the objective structure of reality itself, it may be natural to think that cognitive science is largely irrelevant. It may seem that cognitive science could at most shed light on *folk metaphysics*, which concerns the contours of our conception of the world and not the structure of reality itself. Folk metaphysics may seem as irrelevant to real metaphysics as folk physics is to real physics.

Yet Goldman (1992, 1993, 2007, 2015; also Paul 2010a) argues that cognitive science is relevant to metaphysics. I take his core point to be that some arguments in metaphysics are premised on intuitions, and that cognitive science is relevant to assessing what we find intuitive, and whether a given intuition should be respected or debunked. In short: cognitive science is relevant to metaphysics via *the debunking project*. For instance, suppose one believed – following Kripke (1980) – in the modal essentiality of origins on the basis of intuitions about certain thought experiments, but one then discovered that those very intuitions were produced by a cognitive module one had independent reason to believe was broken. Then one's basis for believing in the essentiality of origins would be debunked. To put this point in other terms: folk metaphysics *is* evidentially relevant to real metaphysics (in a way that folk physics is not relevant to real physics). And so cognitive science, by illuminating folk metaphysics, casts indirect light on real metaphysics.

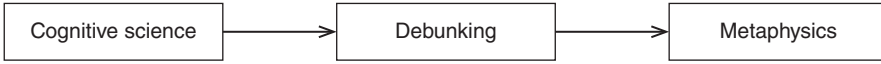


Figure 16.1 Goldman’s picture (the relevance of cognitive science to metaphysics).

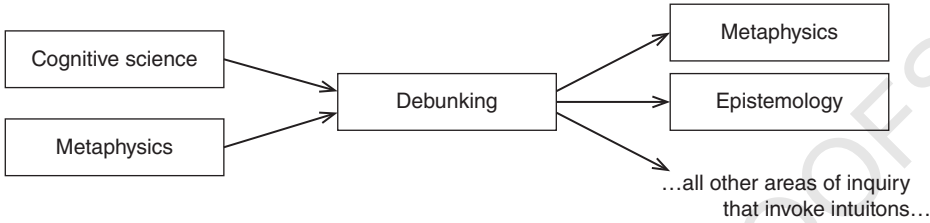


Figure 16.2 Schaffer’s picture (metaphysics as a partner in the debunking project).

I am convinced. I agree with Goldman that cognitive science is relevant to metaphysics via the debunking project. But I offer two adjustments (or perhaps just elaborations) to Goldman’s picture. First, I take the relevance of cognitive science to be not specific to metaphysics, but rather to be generic to any intellectual inquiry that invokes intuitions. Secondly – and perhaps more importantly – I take metaphysics itself to play a crucial role alongside cognitive science within the debunking project. For a crucial part of the debunking project is selecting *when to debunk*, and a crucial part of selecting when to debunk is assessing *whether the intuition fits reality* (or when the module is *failing to track reality*). So in place of Goldman’s one-way slogan that cognitive science is relevant to metaphysics, I prefer to say that cognitive science and metaphysics serve as *partners* within the wider debunking project. Visually the difference between Goldman and I may be depicted as in Figures 16.1 and 16.2 (with arrows representing relevance).

I do not know whether Goldman would disagree with my picture, or regard it as just an elaboration of his own. I am after all agreeing with Goldman that there is a pathway of relevance from cognitive science to metaphysics via the assessment of intuitions (the “debunking” box). I am then adding, first, that the debunking project does not specifically target metaphysics but rather has a generic impact on any intellectual inquiry that invokes intuitions. But that addition is clearly in line with Goldman’s (1992: 1–6) overarching idea that cognitive science proves relevant throughout philosophy.

I am also adding a second root node for metaphysics, representing my claim that cognitive science and metaphysics are partners in the debunking project. *If* I have any major disagreement with Goldman (note the “if”), it is here. On my picture there is no “external vantage-point” from which to critique metaphysics, nor is there any prospect that cognitive science can take on the debunking project alone. The assessment of intuitions relevant to metaphysics is in part a metaphysical assessment. This proves relevant to the extent to which one can appeal to cognitive science to defeat naïve realism, and proves relevant to the places where I criticize Goldman for overreaching against naïve realism. It also proves relevant to general issues of philosophical methodology, and the not-always-acknowledged place of metaphysics therein.

If I have any criticism to make of Goldman's work on cognitive science and metaphysics, it is not that he overplays the role of cognitive science, but that he underplays the role of metaphysics.

Before proceeding, I pause to avert two potential misunderstandings. Firstly, no one is denying that there may be other connections between cognitive science and metaphysics. For instance, if – as Wittgenstein (1969: 36e) imagines – our skulls were filled with sawdust, this presumably would make trouble for some metaphysical theories of mind such as mind-brain identity theories. I only mean to follow Goldman in tracing out one particular connection (via the debunking project). Secondly, no one is assuming that there is any true unity to cognitive science or metaphysics. Perhaps these disciplines are unified merely by family resemblances and academic politics. Again I only mean to follow Goldman in detailing a particular task of debunking intuitions, and then to further elaborate the connection(s) with one's background picture of reality.

Overview: In section 1 I make the general case for metaphysics as a required partner to cognitive science in the debunking project, for providing an external standard to assess intuitions. In sections 2 and 3 I consider the specific case studies of color, temporal passage, and spatial unity. These illustrate the general role of metaphysics in debunking, while also shedding more light on the interplay between cognitive science and metaphysics.

1 Metaphysics for Debunking

1.1 Goldman's liaison

Is cognitive science relevant to metaphysics? I think that cognitive science is generically relevant to any field of inquiry featuring arguments premised on intuitions, because cognitive science has a role to play in assessing what we find intuitive, and whether a given intuition should be respected or debunked (which I am labeling “the debunking project”). On this point I follow Goldman (2015), who writes:

What lies “behind” commonsense intuitions, experiences, and judgments (which metaphysics use as *prima facie* guides to the nature of reality) should be probed, including what can be gleaned from the scientific study of the cognitive engine.

I call this idea *Goldman's liaison*, since I take it to be Goldman's core insight on the matter:

Goldman's liaison: Cognitive science is relevant to debunking intuitions, including those used in metaphysics.

I do not claim that *Goldman's liaison* is original with Goldman. Indeed the background idea of looking to the mind to critique our naïve view of reality perhaps runs through the history of philosophy. But I take Goldman to be the leading contemporary exponent and developer of the view.ⁱ

My use of the terms “intuitions” and “debunking” may be misleading, for I mean both very broadly. Under “intuitions” I include commonsense beliefs and sensory seemings, since – as Goldman (*forthcoming*) is explicit – these are all cognitive outputs whose evidential bearing on metaphysics needs to be assessed:

The metaphysician’s initial evidence bearing on the theories would be a set of ordinary experiences, intuitions, or beliefs about the domain that each theory tries to accommodate in its own way. A basic assumption here is that such experiences, intuitions, and beliefs are examples of evidence that metaphysicians (legitimately) use when weighing competing theories.

Likewise under “debunking” I include all assessments of these cognitive outputs, where the assessment could in the end be one of respecting the output, or even in principle (Goldman *personal communication*) one of *boosting* the evidential force of the output. I use “the debunking project” and speak of “debunking intuitions” as metonyms for the more general project of assessing cognitive outputs for evidentiary force, in part because this aspect of the project tends to attract the most interest.

It might help to distinguish *Goldman’s liaison* from other theses in the vicinity. To begin with, given the holism of confirmation, everything is relevant to everything. Following Duhem and Quine, Fodor (1983:105) notes: “[T]he facts relevant to the confirmation of a scientific hypothesis may be drawn from anywhere... In principle, our botany constrains our astronomy, if only we could think of ways to make them connect.” *Goldman’s liaison* goes beyond an utterly generic claim of the form: “Everything is relevant to everything; *a fortiori*, cognitive science is relevant to metaphysics.” It identifies a definite way in which cognitive science and metaphysics connect, namely via the assessment of intuitions.ⁱⁱ

There is also a sense in which cognitive science might be thought to have something very specific to say just about metaphysics. For instance, in a broadly “Kantian” vein one might think that there are certain specific questions – “metaphysical” as said with a sneer – which lie beyond the ken of human cognition. If there is such a very specific sort of relevance, *Goldman’s liaison* does not attempt to describe it. *Goldman’s liaison* identifies a definite way in which cognitive science and metaphysics connect, but only by in effect grouping metaphysics under the more general heading of *inquiries featuring arguments premised on intuitions*. When the metaphysician argues from intuitions about when mereological composition occurs, she is – from the perspective of *Goldman’s liaison* – doing the same thing as when the epistemologist argues from intuitions about when knowledge is present, when the philosopher of language argues from intuitions about what a word means, or when the ethicist argues from intuitions about what actions are required. In all these cases one can ask whether the intuition should be respected or debunked.

Goldman’s liaison is compatible with any combination of views on these other theses. I myself would accept the general holism of confirmation, but would not accept the claim that there is something specifically defective about metaphysics (see Bennett 2016).ⁱⁱⁱ But for present purposes these should be regarded as largely independent matters. Though since I argue that metaphysics plays a crucial role alongside cognitive science within the

debunking project, I am in effect arguing that those who would reject metaphysics thereby bar themselves from participating in the debunking project in the first place. (The cost of rejecting metaphysics just got higher.)

Goldman's liaison does embed a particular conception of at least some lines of metaphysical inquiry, namely as being inquiries that draw on intuitions. But I think it does so in a highly uncontroversial way. First of all, no assumptions are made about what intuitions are. I am using the term “intuition” in the broadest sense, including naïve beliefs, or dispositions to believe, or *sui generis* states of seeming true.^{iv} My own view is that we enjoy beliefs, dispositions to believe, and states of seeming true, and that each of these is invoked in various places in metaphysics, and that each of these is open to assessment and potential debunking. But *Goldman's liaison* requires no stand on the matter.

Secondly, no assumptions are made as to whether intuitions feature in the content of a given premise or merely as the rationale for the premise. Perhaps the relevant premise in a case of modality might be “intuitively, it is not possible to have water without H₂O” or perhaps the relevant premise is merely “it is not possible to have water without H₂O” where the justification for this premise would be that it is intuitive.^v My own view is that both are eligible to serve as premises, and that each of them is open to assessment and potential debunking. But again *Goldman's liaison* requires no stand on the matter.

It is only assumed that intuitions, whatever they may be, are used in some way or another. Even this may seem controversial. For instance Cappelen (2012) argues that intuitions play no real role in philosophy, and that there is merely a bad stylistic reflex in the discipline now to insert “intuitively” in place of stating a reason. My own view is that philosophers have tended to use “intuitively” to mean intuitively, and that this has an evidential meaning requiring a kind of immediate judgment.^{vi} But in any case Cappelen would say that one should just replace “intuitively” with a direct evaluation of the (worldly, non-psychologized) claim at issue. *Goldman's liaison* can still come in here, since there is still room to assess and perhaps debunk our capacities for a direct evaluation of a given worldly claim. So in that sense I take *Goldman's liaison* to use “intuition” in an inessential way (cf. Cappelen 2012: 224–7), merely as a pointer to whatever exactly is going on, in metaphysics and elsewhere, when philosophers assert premises which they call “intuitive.”

Think what you will of intuitions. I take it that everyone needs to make sense of the prospect of *debunking*, in which certain beliefs (typically folk beliefs) are shown to be evidentially defeated. The friend of *Goldman's liaison* is really committed to two essential claims:

- Cognitive science is relevant to debunking, and
- Some claims in metaphysics are potentially open to debunking.

Talk of intuitions is only coming in as a mediator between these two claims: the claims in metaphysics that are potentially open to debunking are *intuitions*, and cognitive science is relevant to the debunking of *these very intuitions*. So anyone who would make sense of debunking can make sense of *Goldman's liaison*, whether or not they like to posit intuitions as playing this mediating role.

1.2 The debunking project

Evolution suggests that human cognition is a powerful but flawed tool. On the one hand it is plausible that many of our cognitive faculties evolved to help us with the four ‘F’s (feeding, fighting, fleeing, and reproduction), and plausible that this pressured our ancestors towards reliably tracking the environment. On the other hand it is equally plausible that many of our cognitive faculties evolved to give us quick and dirty heuristics reliable only for limited purposes in evolutionarily salient contexts.

In particular, some of our intuitions seem insightful. People naturally intuit, when shown two hands, that – in the words of Moore (1993: 166) – “here is one hand and here is another.” People naturally intuit that $2 + 3 = 5$. Barring radical skepticism, it seems that our native endowments actually guide us in the right direction in these cases. But some of our intuitions seem to be crude superstitions. People intuit that the earth is flat, and that animate spirits dwell in trees, rivers, and rocks. If science has taught us anything at all, it seems that some of our naïve prejudices deserve to be debunked.

Thus consider the intuition that animate spirits dwell in trees, rivers, and rocks, as a paradigm case of an intuition that needs debunking. I take it that the debunking project, as applied to this case, has at least three connected components. First, there is a psychological story to tell – in this case involving what Boyer (2001; cf. Guthrie 1993; Bloom 2007) calls a “hypertrophy of social cognition” – in which we tend to over-attribute psychological agency (our “theory of mind module” delivers many false-positives). In this vein Bloom (2007: 149) notes:

The classical demonstration here is that of Heider and Simmel (1944), who made a simple movie in which geometric figures – circles, squares, and triangles – moved in certain systematic ways, designed, based on the psychologists’ intuitions, to tell a tale. When shown this movie, people instinctively described the figures as if they were specific people (bullies, victims, heroes) who have goals and desires...^{vii}

But secondly – and most crucially for my purposes – there is a background metaphysical picture in play, informed in part by science, against which one judges the intuitions. I presume that it is false that animate spirits dwell in trees, rivers, and rocks. I presume that it is false that the geometric shapes in Heider and Simmel’s movie are agents with real goals and desire. *It is because the intuition conflicts with my background metaphysical picture that I seek to debunk it.* If I really believed that rocks and movie images of triangles were agents, I might then regard the animist intuitions as respectable instead. Likewise I do not seek to debunk the intuition that here is a hand, or that $2 + 3 = 5$, because in fact I think that these intuitions fit the world.

Thirdly, given the psychological story and the background metaphysical picture, there is an epistemic account to be given of how the animistic intuition loses evidential standing. For the sake of definiteness I will take on an epistemological backstory on which intuitions provide *prima facie* justification for belief, which converts to *ultima facie* justification in the absence of ultimately undefeated defeaters.^{viii} The loss of evidential standing involved in debunking can then be identified with *defeat*.^{ix} So the picture looks as given in Figure 16.3.

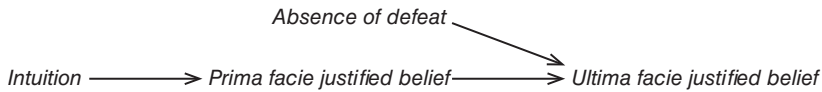


Figure 16.3 Epistemological backstory for defeat.

This is not the only way the epistemological story may be told. For instance, for those – no doubt including Goldman (1979) himself – who favor a more reliabilist-oriented backstory, there may be ways to think of defeat in reliabilist terms (see Nichols 2014, esp. section 2 on “process debunking”; see generally Grundmann 2009).^x Or for those – including myself – who favor a relevant alternative theory, one may think of defeat in terms of the relevance of alternatives in which the mind is misreading the world (see Lewis 1996: 558). The epistemological backstory may even be told in more minimal terms, by replacing “loss of evidential standing” with the weaker idea of some lowering of rational posterior credence. Goldman (2015) – at least for one cluster of cases (the projections: section 3.1) – takes up a Bayesian model with some limited constraints on rational priors, to associate debunking with at least some dampening of rational posterior credence.

The epistemological backstory is more of a fixed background. It provides the machinery of debunking, into which the psychological and metaphysical inputs are fed, and an epistemic verdict on a given intuition is then issued as output. (For this reason I do not include an “epistemology” box into the input to “debunking” in my picture of the terrain.) Nothing I say in the main text should depend on the details of the epistemological backstory. I am only supposing that the epistemological backstory has the resources to say why the psychological story about the hypertrophy of social cognition, together with the metaphysical story on which animism is to be rejected, can work together to show how animistic intuitions lack sufficient evidential standing to engender *ultima facie* justified belief. Any viable epistemology should find a way to make sense of debunking.^{xi}

What emerges from this paradigm case of a belief that needs debunking are three crucial and interconnected aspects of the debunking project:

- **The psychological aspect:** Debunking requires identifying the psychological mechanisms involved in the production of the intuition and showing them to work in a certain way.
- **The metaphysical aspect:** Debunking requires painting in the background metaphysical picture so as to establish that the psychological mechanism is *going wrong* by working in this way.
- **The epistemological aspect:** Debunking requires showing how an intuition produced by psychological mechanism gone wrong in this way thereby loses evidential standing.

For present purposes the crucial point is the second bulleted point. Even given a fixed epistemic backstory, cognitive science cannot go it alone when it comes to debunking, but requires metaphysics as a partner. What follows is primarily an elaboration of this point.

1.3 Metaphysics for selectivity

Given that human cognition is a powerful but flawed tool one should expect *selective debunking*. Human cognition is not a complete disaster. Barring radical skepticism, some of our intuitions deserve respecting. But human cognition is equally not a perfect oracle. If science has taught us anything at all, some of our intuitions deserve debunking. I have already suggested some candidates for intuitions to be respected (Moore’s “here is one hand and here is another”, $2 + 3 = 5$), as well as intuitions to be debunked (the earth is flat, animate spirits dwell in nature). But leaving these specific candidates aside, I take it as non-negotiable that some intuitions should be respected but others should be debunked. No other attitude fits a naturalistic conception of human cognition as a powerful but flawed tool.

(Indeed the very prospect of an unselective story raises self-undermining concerns. An unselective story in which all intuitions are to be respected is self-undermining, given – as I take to be the case – that among our intuitions is the very intuition that some of our intuitions deserve debunking. But worse, an unselective story in which all intuitions are to be debunked is self-undermining, given that the debunking project is itself premised on certain intuitions including an intuitive epistemological backstory about defeat.^{xii})

The need for selective debunking invites the question: *When should an intuition be respected and when should it be debunked?* One *bad* answer – bad because unselective – is that an intuition can be debunked when one can tell a cognitive story about how it arises. This is unselective (and thus bad) because of course there is always some cognitive story to be told about every cognitive output, intuitions included. Cognitive outputs are not miracles. They all have causal aetiologies through our cognitive engines.

A second *bad* answer – also bad because unselective – is that an intuition should be debunked when it can be triggered in error. This is unselective (and thus bad) because every human cognitive process is fallible and can be triggered in error. We can make mistakes even about simple visual beliefs and simple arithmetical beliefs. If perfection is needed for evidential standing then nothing stands.

A better version of this second answer is that an intuitions should be debunked when it is *often* triggered in error, or more generally when it is *unreliable* as an indicator of reality. (This fits the reliabilist backstory of Goldman 1979, and also Goldman’s (2015) analogy between debunking intuitions and discovering when a gas gauge is stuck.) This offers a more selective answer. But it is one that requires a metaphysical component, for to assess what is and what is not reliable as an indicator of reality, one needs some conception of what is out there in reality. By reliabilist lights, debunking requires *comparing* the cognitive output to the metaphysical facts, in order to measure their degree of correlation.

I am claiming that metaphysics is needed to answer the question of when to debunk. An intuition should be debunked when it fails to fit the world, by failing to find a place in the background metaphysical picture, as presumably informed by science. Thus I say:

- **Metaphysics for selectivity:** Determining whether a given intuition deserves debunking requires determining whether it fits reality.

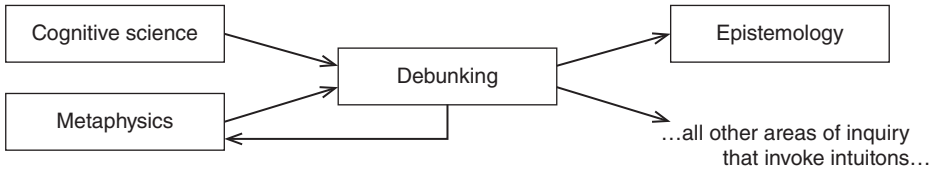


Figure 16.4 Schaffer's picture re-drawn with a loop.

When I spoke of *the metaphysical aspect* of the debunking project (section 1.2), it was by way of helping render debunking selective.

But the need for a background metaphysical picture comes out not only in explaining why we debunk in particular cases (for example, naïve animism: section 1.2), but also in the very idea of *assessing* a folk theory on anything more than internal grounds of coherence. A crucial part of that further assessment is in terms of an external comparison with reality. The background metaphysical picture is providing the external standard against which folk conceptions may be judged for fit. In short: our intuitions may be assessed for internal coherence and for external fit with reality. The latter is a metaphysical assessment.

What is this background metaphysical picture, and where does it come from? The picture is our conception of the objective and intrinsic nature of reality. I leave open how this should be understood.^{xiii} The picture needs to be informed by science, but science itself just gives us models and equations, which themselves stand in need of metaphysical *interpretation*. Or perhaps better: science itself is continuous with and commingled with metaphysical inquiry. So the background metaphysical picture itself must draw on intuitions (including those used in preferring a given interpretation of science). In that sense one is seeing a kind of feedback loop in which an initial intuitive metaphysical picture, augmented with information from physics and cognitive science (*inter alia*), is being used to assess itself and reach a wider reflective equilibrium. Such a loop is implicit in my picture diagrammed in Figure 16.2, in which I label two boxes as “metaphysics,” but equally could have drawn things with a single “metaphysics” box and a loop, as in Figure 16.4.

In any case, invoking the metaphysical aspect of the debunking project as part of the answer to the question of when to debunk has two immediate consequences. First it resituates metaphysics from being the target of debunking to being a crucial part of the machinery of debunking itself. But secondly it shows how considerations from cognitive science alone cannot be expected to defeat the hardened naïve realist. For the naïve realist who would insist that colors, morals, or spirits are part of reality may thereby resist the call to debunk, simply by clinging to their metaphysics and claiming that the relevant intuitions fit reality.

1.4 Can cognitive science fly solo?

Is there any alternative to invoking a metaphysical aspect to debunking (as per *Metaphysics for selectivity*)? In particular, are there any purely internal signs of defective cognition, such that cognitive science could all by itself discern when debunking is called for and

when not? Of course the folk theory may itself be incomplete, or incoherent in various respects. (It is an empirical psychological matter whether this is so.) But it may not be. And even if the folk theory is incomplete or incoherent, one may still want to assess various completions of the theory, or various coherent portions of the theory. Is there any way that cognitive science could – on its own – fully assess a complete and coherent (refinement of) folk theory?

It is hard to answer such a question in the abstract, but there is a tempting idea which I think does not work, involving the idea of *hermetic cognition*. Goldman (1993: 123), in discussing the debunking of modal beliefs about essences, says:

How exactly might cognitive science contribute to this conclusion [that we are not in touch with an extra-mental modal fact]? It might be in a position (eventually, if not now) to assure us that there is a cognitivist story to be told that explains the existence of our intuitive reactions and their inter-personal uniformity without appeal to any “detection” of extra-mental modal facts. We might then be in the situation of those who reject the inference from religious experience to theism on grounds that the religious experience can be explained purely psychologically, without reference to divine sources.

Likewise Goldman (2015) – following Joyce (2006) and Street (2006) in discussing the case of debunking moral beliefs – says:

Cognitive science can weigh in on this question. It certainly studies perceptual systems (also called “senses”) and sometimes discovers new ones. Comparative cognitive science discovered echolocation in bats. Human cognitive neuroscience has discovered many types of *interoceptive* senses in the human brain, i.e., brain mechanisms for monitoring the positions and conditions of one’s own bodily organs... There is no comparable discovery of any *moral* sense, whether an exteroceptive sense or an interoceptive sense. This might be interpreted as evidence against the existence of any sense for tracking moral truths...

So one might look for the following internal sign of lack of fit with external reality: the intuition is generated by a cognitive system that is *disconnected from reality*, in the sense of lacking any plausible way of detecting or otherwise tracking the truths it claims to deliver. In other words, the cognitive system lacks the right input profile to render these intuitions suitably connected to the world. The cognitive system may be dismissed as hermetically sealed off from the world, without judgment as to what there might be out in the world.

But first, being hermetic is not *necessary* for debunking. A cognitive system can come equipped with all sorts of sensory transducers and still deliver intuitions that deserve debunking if the affiliated sensory system is sufficiently poor, or if the system itself is doing poor things with its sensory input. Some of the intuitions generated by our folk physics module are presumably of the latter sort. The folk physics module seems strongly connected to perceptual inputs. Only it encodes some false assumptions about reality, and when it generates intuitions solely on this basis, such intuitions deserve debunking.^{xiv} Likewise in the case of color – to be discussed in some detail in section 2 – the problem is evidently *not* a lack of any sensory input from the world. So metaphysics is still needed to determine when to debunk, for cognitive systems that are highly connected to the world.

More interestingly, being hermetic is not *sufficient* for debunking either. A cognitive system can lack any relevant sensory transducers and still deliver intuitions that deserve respecting. Indeed, presumably our capacities for abstract logical and mathematical reasoning are subserved by capacities without any relevantly direct links to perception. (There is no “inner eye” turned upwards to Platonic heaven.) So, barring a radical “debunking” all of our abstract intuitions in one fell swoop, one needs to allow respectable intuitions severed from any direct perceptual input. How could these intuitions be respectable? There might still be evolutionary pressure, for instance, for these modules to conform to mind-independent mathematical structure, even if these modules are not directly informed by this structure. So there might be some evolutionary pressure towards carrying a sealed-off but still reliable map of mathematical reality.^{xv}

Indeed – returning to the case of morality – it seems at least *possible* that there is a mind-independent moral structure which typically mandates cooperative familial and social relationships. And there are natural evolutionary pressures that could have led our ancestors to seek cooperative familial and social relationships, and punish those who defected from this moral behavior. In that case there might even be some evolutionary pressure towards carrying a sealed-off but reliable map of “moral reality.” (I am not saying that this is a plausible story, and I am not saying that morality in the end deserves respecting; I am only explaining how the fact that there is no moral sense organ does not suffice to recommend a debunking stance against morality.)

Perhaps the absence of direct and relevant sensory input is still a decent warning sign of intuitions that might best be debunked. I remain neutral. My point is just that it does not yet settle the question of whether or not to debunk, and that metaphysics must still play a role in the end in providing a picture of reality to serve as an external standard of comparison, whether the cognitive system is hermetic or not.

A second tempting idea is to think that there are independently known forms of defective belief-formation. Goldman himself (1979: 9) gives the following as examples of “faulty processes of belief-formation”: “confused reasoning, wishful thinking, reliance on emotional attachment, mere hunch or guesswork, and hasty generalization.” But it is not obvious that these are uniform cognitive processes, and especially not obvious that any of these forms of belief-formation are to be found in many of the interesting cases such as color (section 2). Color just seems directly given in sensation.

Indeed, even in cases where these forms of belief formation might be thought to apply, one can still question whether these forms of belief-formation are in fact faulty for the given case. For instance, Plantinga (2000: 195–8) suggests, in reply to Freud, that God might have designed us to undergo wishful thinking for the purpose of getting to believe in God, in which case wishful thinking would be an epistemically proper basis for theistic belief. Likewise, while Singer (2005) and Greene (2008) argue that deontological thinking is based on non-rational emotional responses, Nichols (2014) counters that one still needs “a framework-external specification of why the emotional processes are epistemically defective.” (Nichols (2014) also points out that dismissing intuitions when emotionally laden “threatens to be a doomsday argument for normative ethics.” Indeed it might be that virtually all human cognition is emotionally laden.)

Perhaps – at least in those cases when one can assimilate the intuition to those of a generally poorly produced sort – one again finds a decent warning sign of an intuition that might best be debunked. My point is just that it does not yet settle the general question of whether or not to debunk in two respects: it does not apply to many crucial cases (for example, color), and it remains possible to allow that the intuition, while being of a generally poorly produced sort, is also of a more specific well-produced sort (for example, Plantinga’s idea that wishful thinking might be specifically proper for theistic belief).

Goldman (1992: 53) also introduces the notion of an “autonomous” internal explanation, as the sign of when to debunk in a selective way:

The [presumption against veridicality] arises only when a feeling or intuition can be given an *autonomous* internal explanation, where an internal explanation is autonomous if it either *excludes* expansion into a fuller explanation citing the metaphysical posit or is *unreceptive* to such expansion.

A system can be autonomous in this sense without being hermetic. Indeed when the non-hermetic folk physics module generates intuitions solely on the basis of false assumptions about the world (for example, intuitions about curvilinear motion on the basis of impetus), the explanation excludes expansion into a fuller explanation citing the metaphysical posit (impetus itself), *precisely because there is no such thing as impetus*. Likewise if the hermetic folk mathematics module generates intuitions via a sealed-off but reliable map of mathematical reality, the explanation positively invites expansion into a fuller explanation citing the metaphysical posit (mathematical facts), for instance as the facts *for which there was evolutionary pressure to conform*.

But this shows that Goldman’s own criterion of autonomy is not itself internal to cognitive science, but points outwards towards the metaphysical aspect of debunking. By Goldman’s own lights, whether a cognitive explanation is receptive to a fuller explanation citing the metaphysical posit depends (*inter alia*) on whether the posit fits reality. This is not necessarily a criticism of Goldman for he does not explicitly deny the existence of a metaphysical aspect of debunking (he is silent on the matter). In any case I conclude that metaphysics is a required partner to cognitive science for the debunking project. Part of the task of assessing intuitions for debunking is assessing whether they fit reality.

2 Case Study: Color

I have argued – albeit largely in the abstract – that metaphysics is a required partner to cognitive science for the debunking project. In what remains I focus on rendering the point concrete, by taking up cases. Goldman himself, over the arc of his 1992, 1993, 2007, and 2015, discusses a fairly wide range of cases including:

- the spatial and temporal unity of objects (1987: 539–43; 1992: 62; 1993: 101–8; 2015)
- temporal passage (1992: 53; 2015)
- the individuation of events (2007: 12–18)

- modality and essences (1992: 55–62; 1993: 119–23; 2015)
- causation (1987: 538)
- morality (1987: 538; 2007: 8)
- color (1992: 43, 50; 1993: 114–19; 2007: 5; 2015)
- numbers (1992: 46), and
- deities (1987: 543; 1992: 46; 2105).

Goldman initially sees these cases as generally inviting a (1987: 539) a “revisionary metaphysics” of an anti-realist bent, according to which (1987: 538) “certain parts of our conceptual scheme (e.g., space, time, unity, cause, moral value) are really the handiwork of the mind,” resulting in some form of (1992: 51) “ontological demotion” to a less realist position than naïve common sense begins from. The relevance of cognitive science is in showing how and why the naïvely realist starting point needs revisionary demotion.

In Goldman (2015) he comes to draw a distinction between two types of case. In one type of case – which I label “projections” – Goldman takes the phenomenon at issue to lack objective reality, and the intuitions in question to be mere projections of the human mind, which – as Hume (1975: 294; cf. Goldman 1987: 542) memorably said of taste – “has a productive faculty, and gilding or staining all natural objects with the colours, borrowed from internal sentiment, raises in a manner a new creation.” In a second type of case – which I label “relations” – Goldman takes there to be an objectively real phenomenon but one which must be reinterpreted in a revisionist spirit, as relativized to a cognitive system:

- **Projections:** no objective reality (temporal passage, morality, modality and essences, deities)
- **Relations:** objectively real relations (color, temporal unity of objects, individuation of events).

I primarily focus on the case of color, with an occasional glance at some other cases en route. I focus on color since it is a central example for Goldman and since virtually all of the general morals I want to draw can be drawn from that case. I draw three overall morals:

- Whether the cognitive story supports debunking depends on the background metaphysical picture.
- The detailed cognitive story is sometimes irrelevant to the debunking project.
- There is no metaphysical distinction between projections and relations but rather an epistemic distinction between undermining and rebutting defeaters.

The first bulleted point is the most important moral with respect to my claim about the role of metaphysics in the debunking project. But the second bulleted point makes the complementary claim that the role of cognitive science is sometimes fairly minimal. Sometimes one only needs the (utterly trivial) claim that our cognitive system produces these intuitions, and one needs no further details whatsoever as to how the

cognitive system does so. For as long as the cognitive system produces these intuitions, and they do not fit reality (as given by the background metaphysical picture), it already follows that the intuitions are liable to defeat and a consequent loss of evidentiary standing.

2.1 Color cognition

So onto color: in his earlier presentations, Goldman (1993: 117) – drawing on Gleitman’s (1981) treatment of hue – says: “This entire picture of our internal color coding system makes it difficult to interpret our color experience, upon reflection, as anything but a highly idiosyncratic artifact of that system.” He specifically (1992: 43) picks up on metamerism (the way in which objects with different spectral reflectance distributions can still present the same color appearance, due to the way that human color receptors respond only to cumulative features), saying: “Metamerism shows that the color divisions that humans make are arbitrary or bizarre by the standards of physics. These divisions are a product of our humanly idiosyncratic visual system.”

In his Goldman (2015) – drawing on Averill’s (1992) and J. Cohen’s (2004, 2009) defenses of color relationalism – Goldman focuses not on metamerism but instead on differences between the visual systems of normal humans (trichromatic) and pigeons (tetra-chromatic). He follows J. Cohen, in opting for what Cohen calls “the ecumenical policy that both sorts of visual systems are right, and that one and the same object can have more than one color property” (2004: 462). The end result, as Cohen makes clear, is a revisionary construal of color as a relational property of a visual system: “It is a consequence of this relational construal that one and the same object can be simultaneously green for your visual system and not green for the visual system of the pigeon on your window ledge” (2004: 463).

Color relationalism leads Goldman to a distinction between cases calling for what I have labeled a “projectivist” treatment, and cases calling for what I am labeling a “relational” treatment (with color and temporal unity coming in for the latter). The difference is supposed to be that projectivism is a form of anti-realism about the phenomena in question, positing no objective correlate in the world; while relationalism is a form of revisionary realism about the phenomena in question, positing an objective (but relational rather than intrinsic) objective correlate in the world.

Obviously there is much more to be said about color cognition beyond the existence of metamerism and comparative differences with pigeons. But these are the main factors Goldman notes, and will suffice for the purpose of working through a concrete case of potential debunking.

2.2 Projections as relations

I have three comments to offer on Goldman’s discussion of color, the first – and most minor of which – concerns the projectivist/relationalist distinction, or lack thereof.

I simply do not see a real distinction here. As I have commented elsewhere, with respect to projectivist views of causation:

If a causal relation between c and e is real from perspective p , is there not an objective relativized fact that c causes e relative to p ? But if perspectival notions can be rendered objective by relativization, then any alleged perspectival truth will come with an objective relativized counterpart (Schaffer 2010: 848).

So it seems to me that projectivism implies a certain form of relationalism, namely relationalism *relative to the projection*. If some property or relation F is indeed projected from perspective p , there is the real objective relation of *being projected as F by p* . How could projectivism be true without such an objective backing? So I disagree with Goldman (2015) that there is really a “second template” in relationalism that is distinct from projectivism. If anything the relational framework seems like a more general and inclusive framework, allowing for relations to perspectives or cognitive systems, but to arbitrary other factors as well.

For instance, consider the case of deities, from a projectivist perspective. If the ancient Greeks projected the wrath of Zeus upon the thunder, then there is a real relation born between the Greeks and the thunder, of *being projected as the wrath of Zeus*. What is the difference between that and the relational treatment of color, involving a real relation between humans and tomatoes, of *being projected as red*?

That is not to say that there can only be a single template for all cases, but only that projections/relations do not furnish distinct templates. This is also not to say that there is no other sort of difference between these cases. Indeed I think that in the cases Goldman labels as “projections” one sees a cognitive system purporting to detect certain features of reality, which look not to feature in the best metaphysical picture; while in the cases labeled as “relations” one sees *conflicting forms of cognition* (either between cognizers as in the color case, or between multiple modules within a single cognizer as Goldman sees the temporal unity case), and one might doubt that either form of cognition is to be preferred.

It seems to me that a relevant difference between the cases that Goldman labels as “projections” and the cases he labels “relations” is not metaphysical but rather *epistemic*, as between undermining and rebutting defeaters. The epistemic structure of the projection cases is that the evidential force of the intuition is undermined by its failure to fit the structure of reality (as given by the background metaphysical picture). The epistemic structure of the relation cases is that the evidential force of the intuition is rebutted by the evidential force of a contrary intuition (from the other conflicting form of cognition). So it seems to me that in both cases we are looking at a demotion from the naïve claim that there is an objective feature of reality, to the claim that there is merely an objective relation that incorporates the type of cognitive system. The naïve claim is just getting debunked in slightly different ways: by being shown not to fit reality (undermining), or by being shown to conflict with another equally compelling intuition (rebutting).

(Note that even in the rebutting cases, metaphysics is still playing a role. For part of the rebutting story is that it would be objectionably arbitrary to favor the one intuition – for example, that produced by the human visual system – over the other – for example, that

produced by the pigeon visual system. But the idea that this is arbitrary is itself a metaphysically laden judgment, involving the idea that the background metaphysical picture offers nothing against which to uphold the human or the pigeon perspective as more fitting. Nothing in cognitive science itself tells against the naïve-realist-*cum*-pigeon-chauvinist, who posits real colors in the world as pigeons tend to see them, towards which humans are partly color-blind.)

2.3 Do the cognitive details matter?

My second comment on Goldman's treatment of color concerns the extent to which the detailed cognitive story (be it the story of metamerism or the comparative story of human versus pigeon color vision) is really playing a substantial role in the debunking project. As Goldman himself (1993: 114–15) notes, naïve realism about color has been in “ontological trouble” at least since Locke's demotion of colors to the status of secondary qualities, as qualities that are merely “imputed” (1996: 54) and “no more really in [bodies], than Sickness or Pain is in Manna” (1996: 51).^{xvi} For Locke, the ideas of color, sound, taste, and odor do *not* resemble their causes, and so these are the ideas of secondary qualities (unlike motion, in which the idea of motion is thought to resemble real motion, at least given the corpuscularian picture Locke operates with).

What is not clear to me is exactly what (if anything) the various details of metamerism and pigeon vision are adding to the ontological troubles color faces. Was Locke's case for demotion a failure because of his ignorance of pigeons? So long as one has a background metaphysical picture on which color is a secondary quality of some sort or other, coupled with a psychological picture on which the folk naïvely view colors as intrinsic properties “painted directly onto” the surfaces of objects,^{xvii} isn't the former already enough to debunk the latter? What are the various details of metamerism and pigeon vision adding vis-à-vis the debunking project?

I take the various details of metamerism and pigeon vision to come into the story in rebutting various sophisticated attempts to defend a nonreductive realism about color. For instance, metamerism puts pressure on the idea of identifying color with spectral reflectance distributions, insofar as these map many-one onto perceived color. But of course the nonreductive realist need not think that human color vision is perfect (human cognition is generally fallible of course). So there remains room to respond to the case of metamerism by identifying color with spectral reflectance distribution (or some other natural phenomena) while taking the human visual system to be an imperfect detector of that natural phenomenon.

As things stand I see no need to do any serious cognitive science whatsoever, to worry about the place of color in a physical world. The cognitive details are of course intrinsically fascinating. But from the perspective of the debunking project, it seems that the cognitive details can at most reveal just *how poorly* our color categorizations fit into the background picture of reality. The nonreductive realist, however, can always (plausibly) admit fallibility in cognition. The bulk of the debunking work for color thus comes through the metaphysical idea that our color categorizations fail to fit anything at all in reality.

2.4 How and why metaphysics matters

In contrast to the detailed cognitive story – which seems largely irrelevant with respect to debunking naïve realism about color – the background metaphysical picture does seem deeply relevant. Consider again Locke’s distinction between the primary and the secondary qualities. The reason why motion remains a primary quality but color must be demoted comes from Locke’s background corpuscularian picture of reality (via Boyle). If Locke had a background physical image of the corpuscles as themselves little colored dots, then color could have been upheld as a primary quality for Locke, in a way that would have fit naïve realism.

Or consider Goldman’s discussion of metamerism. Metamerism is a phenomenon on which *distinct objective features* (different spectral reflectance distributions, which looked gerrymandered from the perspective of the metaphysical background picture) map to a *common subjective response* (same color appearance). If one insisted on keeping objective intrinsic color in the background picture, one could in principle accept metamerism as either showing a multiple realizability of objective intrinsic color, or (perhaps better) showing that the human visual system is an imperfect detector of color for failing to draw some real distinctions.

Or consider Goldman’s discussion of the human–pigeon comparison. In this case *different subjective responses* map to *common objective features*. That is, different subject responses between normal humans and normal pigeons map to common objective features of surfaces and light which are *neutral between* the human and pigeon ways of seeing things. Indeed in this case there is the somewhat tempting option of thinking of the human system as defective relative to the pigeon system.^{xviii} (And thinking of both systems as defective relative to the decachromatic mantis shrimp.) One could be excused for thinking that we are somewhat color-blind compared to pigeons, in just the same way that a human monochromat or dichromat counts as “color-blind” with respect to her trichromatic colleagues. Goldman seems to think that it would be arbitrary or “species-chauvinist” to defer to either humans or pigeons (or mantis shrimp), but that claim encodes an implicit background metaphysical picture on which nature lacks objective intrinsic color which one species might better track. I agree with that background picture but am only trying to bring it into focus and identify its role in the argument that the human–pigeon comparison supports relationalism about color rather than the view that there are objective intrinsic colors, which pigeons merely happen to discern better than humans.

Goldman partially acknowledges this point in passages such as the following (1992: 44): “[W]hile part of the scientific research that fuels the theory of color is essentially research in physics, another part is cognitive science.” What I am pointing out is that the research in physics is coming into the picture by supporting a certain background *metaphysical* picture of objective reality, as lacking joints corresponding to color cognition. It is only physics *via a metaphysical interpretation* that fuels the debunking project for color.

Putting these last two sections together: I see little coming from the cognitive science side that contributes to the debunking project for color. The cognitive science side is giving us a picture that is perfectly compatible with naïve realism, plus the modest hypothesis that human color vision is highly fallible. (All realistic detector systems are at least to

some extent fallible.) What is doing the bulk of the job of debunking naïve realism is the background metaphysical picture of a colorless physical reality. Color then can only be a projection of the human mind. But all this can be argued for with just the trivial cognitive claim that our cognitive system produces these color appearances in some way or another.

Putting the discussion of color together (in reverse order), I conclude, as stated earlier:

- Whether the cognitive story supports debunking depends on the background metaphysical picture.
- The detailed cognitive story is sometimes irrelevant to the debunking project.
- There is no metaphysical distinction between projections and relations but rather an epistemic distinction between undermining and rebutting defeaters.

Were color the only case to consider it would be tempting to speak of metaphysics as taking the lead role in the debunking project, and to speak of cognitive science as at best a junior partner. For cases in which cognitive science is playing a more serious role one must look elsewhere.

3 Case Studies: Temporal Passage, Spatial Unity

I conclude by considering two further cases, both to see the extent to which the morals drawn from the case of color may generalize, and also to see some different issues arising including respects in which cognitive science is playing a more serious role. The cases that I think are most helpful in these respects are those of temporal passage (the feeling that time “flows”) and spatial unity (the way we treat certain collections of objects as themselves individual wholes).

3.1 Temporal passage

I turn to temporal passage, as a case which is both more controversial metaphysically, and which illustrates the importance of selective constraints on the debunking project. In his initial presentations, Goldman (1992: 52) – drawing on Horwich (1987) – takes up an idea which “grants that we have a *feeling* of the passage of time but offers a psychological explanation of this feeling to undermine its presumed veridicality.” He comments:

If this psychological explanation is correct, it shows that the feeling of temporal flow could arise from the content of experience alone, without any relevant thing actually flowing. Since the notion of such flow is problematic, the invited inference is to reject the existence of such a ‘moving now.’ (1992: 53)

In his Goldman (2015) – drawing on Le Poidevin (2007) and Paul (2010b) – Goldman cites experiments in which subjects experience illusions as if an object is moving, or illusions as to the temporal ordering of events. He takes these experiments to illustrate the

possibility that the experience of temporal passage might itself be illusory. In the Bayesian framework Goldman uses, this all goes to showing that the probability of the evidence (felt temporal passage) is actually rather high even given anti-realism about temporal passage. In a defeater framework, this could be taken to show that the inference from apparent temporal passage to real temporal passage is defeated by how prone we are to suffering non-veridical illusions.

All of the three points made with respect to color extend to this case. First and foremost:

- Whether the cognitive story supports debunking depends on the background metaphysical picture.

If one believes in temporal flow – which I do not but which is a respectable view in the field – then one will take the cognitive story to be a story about an imperfect detector. By far the most eloquent presentation of this idea is given by one of its opponents, namely Williams (1951: 465–6):

The final motive for the attempt to consummate the fourth dimension of the manifold with the special perfection of passage is the vaguest but the most substantial and incorrigible. It is simply that we *find* passage, that we are immediately and poignantly involved in the jerk and whoosh of process, the felt flow of one moment into the next. Here is the focus of being. Here is the shore whence the youngster watches the golden mornings swing toward him like serried bright breakers from the ocean of the future. Here is the flood on which the oldster wakes in the night to shudder at its swollen black torrent cascading him into the abyss.

Note that (as Williams indicates by labeling this “the final motive”) there are other motives for positing real passage, including motives drawn purely from physics and not from naïve feelings of time being like a river or a burning fire or a force that through the green fuse drives the flower. Indeed a more recent and physics-savvy defense of passage is offered by Maudlin, who concludes as follows:

[I]t is a central aspect of our basic picture of the world that time passes, and that in virtue of that passage things change. And there are no good logical or scientific or philosophical arguments that cast doubt on the passage of time, and there are no impediments to representing, in our present physical theories, that time passes. I draw what ought to be a most uninteresting conclusion, but one that has somehow managed to be philosophically bold: time does pass. (Maudlin 2007: 142; cf. Skow 2011)

Of course anyone – such as Maudlin – who believes in temporal passage as an objective intrinsic feature of reality will allow that we can suffer illusions. Again, all realistic detector systems are prone to error. So from the perspective of the believer in real passage, all that has been said are the utterly trivial claim that our cognitive system produces this sense of passage in some way or another, and the utterly unsurprising claim that the system is fallible. This could have been said of any intuitions whatsoever, including ones that many would wish to uphold, such as that here is one hand

and here is another, and that $2 + 3 = 5$ (section 2).^{xix} So whether one comes in siding with Williams against passage or with Maudlin for passage is crucial to what one makes of the cognitive story, and whether one thinks of the cognitive system as “gilding and staining” a static manifold, or just as imperfectly detecting some real flow of the temporal river.

Secondly, and already apparent in the first point:

- The detailed cognitive story is sometimes irrelevant to the debunking project.

After all, to the extent that our naïve belief in temporal passage is debunked, the only “information” we have psychologically is the absolutely generic information that there is some cognitive process producing the intuitions, and that it can produce error. All the “oomph” of debunking – indeed virtually the entire debate – seems to me to be taking place over the background metaphysical picture.

Thirdly, and of least importance for my purposes:

- There is no metaphysical distinction between projections and relations but rather an epistemic distinction between undermining and rebutting defeaters.

In this case one can say that, if human agents project passage onto an objectively static and undirected manifold (as per the perspectivalism of Price 1996), then there is an objective relation of passing relative to a given projected viewpoint. If my “now” includes an apple falling off a table, then the apple is undergoing the jerk and whoosh of free-fall relative to my current agential perspective on the manifold.

The case of temporal passage holds additional interest in two respects. First of all the background metaphysical picture at issue is more controversial than with color. Few nowadays accept naïve realism for color.^{xx} But realism about passage is considered very much of a live view.^{xxi} The case thus illustrates – to my mind – the failure of cognitive science to go it alone on any metaphysically controversial issues. To switch to some of Goldman’s other controversial examples, consider the status of deities. In both cases, all sides may agree that our cognitive system produces certain theistic intuitions. As Bloom – in an article entitled “Religion is natural” – writes:

One of the most interesting discoveries in the developmental psychology of religion is that the bias towards creationism appears to be cognitively natural. Four-year-olds insist that everything has a purpose, including things like lions (“to go to the zoo”) and clouds (“for raining”). When asked to explain why a bunch of rocks are pointy, adults prefer a physical explanation, while children choose functional answers, such as “so that animals could scratch on them when they get itchy.” (Bloom 2007: 150)

The theist would presumably regard this naïve tendency of the mind as a tendency *to get it right*. That the mind has a tendency to these intuitions should be common ground, and cannot possibly count against the theist. If anything it counts for her, insofar as it shows that her views can claim the best fit with folk metaphysics. For atheists – such as myself – it

is the overwhelming theoretical pressure of a background naturalistic metaphysical picture that drives us to demand a debunking of these naïve intuitions.^{xxii}

Goldman (1992: 46) considers the case of the theist who invokes religious experiences rather than naïve creationist intuitions, and says:

The atheist replies that there is an alternate explanation of these phenomena, one that appeals only to psychological and cultural mechanisms. If the latter explanation is more parsimonious, or otherwise provides a “better explanation,” then that undermines the God hypothesis.

But this is in serious danger of overgenerating. Consider again my naïve perceptual intuition that here is one hand and here is another, which I am presuming should be respected rather than debunked. Yet there is a purely psychological explanation of this belief which casts the visual system as a “debunked” generator of falsidical illusions. This is a very parsimonious explanation, insofar as it is consistent with radically minimal hypotheses about the external world (including the most extreme solipsism). So it really matters whether hands have a good claim to be in the background metaphysical picture.

Or consider the status of numbers. Again all sides should agree with the utter triviality that our cognitive system produces certain numerical intuitions. Goldman (1992: 46–7) considers Chomsky’s speculation that “mathematical cognition may be a by-product of the language faculty” and immediately says: “If this sort of conjecture were confirmed, it could add empirical support to a subjectivist, or quasi-subjectivist, ontology of mathematics.” This seems to me again to be at serious risk of overgenerating and “debunking” everything indiscriminately. For presumably every cognitive faculty we have is the product of some evolutionary process, whether directly or by way of a byproduct of some other selective process or just by random chance. If this is empirical support for subjectivism, then the subjectivist is on the verge of a total and unselective “victory.”

So the fifth and final point emerging – in line with the general need for selective constraints on debunking (section 1.3)—is that the debunking project for temporal passage needs real constraints. It is not enough just to say that our cognitive system produces these intuitions, or even to say that the cognitive system in question is liable to error. For these points apply unselectively to every single cognitive output. Again I say that the test for when to debunk is internal coherence and external fit with the background metaphysical picture. Indeed, in the case of temporal passage – just as in the case of color – cognitive science seems to be at best a junior partner in debunking. The main action is in the metaphysics.

3.2 Spatial unity

I move on to spatial unity, as a case which is highly controversial metaphysically, and which illustrates (for the first time) at least two respects in which cognitive science has a main role to play in the debunking project, and is more than a mere understudy to

metaphysics in this task. The case of spatial (and temporal) unity is actually the first case Goldman (1987: 541) explicitly discusses, drawing on *gestalt principles* of unification:

I suggest that Gestalt principles underlie and shape our spatial and cross-temporal “entification” practices, our propensity to view certain sets of spatial elements as parts of one and the same physical object and certain sets of time slices as stages of one and the same continuant.

He gives the case extended discussion in his 1993 (101–8), drawing on gestalt principles as well as Spelke’s (1990) work on infant cognition, which he takes to suggest that infants have “an unlearned conception of physical bodies” (1993: 107) which is augmented between six months and two years of age with gestalt principles leading to an adult conception in which:

We do not readily consider something as a physical body if it lacks cohesion (a pile of leaves), lacks bounds (a drop of water in a pool), or lacks continuity (a row of flashing lights). These may be considered collections of objects or parts of objects, but they are not unitary and independent objects for us (1993: 108).

Missing from Goldman’s discussion, however, is any claim about why these unity intuitions should be debunked rather than respected. Goldman introduces gestalt principles to illustrate “the principles used by the mind to structure the world into units or unities” (1987: 539). So it may be that he is simply *presupposing* that objective reality lacks any principle of unity whatsoever that the principles used by the mind might fit. He may simply be presupposing a metaphysical background picture on which the gestalt principles are not decent indicators of the “real facts” of restricted mereological composition, where the restriction is to pluralities that are sufficiently cohesive, continuous, and bounded. But in any case I must reiterate:

- Whether the cognitive story supports debunking depends on the background metaphysical picture.

Thus the central moral of this discussion remains applicable.

What is interestingly different about the case of spatial unity, and makes the case more favorable to Goldman’s view than the previous cases I have discussed (color: section 2, temporal passage: section 3.1), is that cognitive science can actually be very helpful here, in two distinct respects. The first respect in which cognitive science can be helpful comes in revealing what we find intuitive in the first place. As will not surprise those familiar with the metaphysics literature on composition, there is – as Rose and Schaffer (*manuscript*) put the point – “wide disagreement among metaphysicians as to what the folk intuit about mereological composition and why they do so, and no empirical discipline to the discussion.” Indeed many different metaphysical theories – from universalism (see Thomasson 2007: 183–4) to brutalism (see Markosian 1998: 211) – have been upheld under the banner of fit with folk intuitions. It is an empirical matter – and one that is often not obvious – what is intuitive in the first place, and on this matter cognitive science is needed.^{xxiii}

But secondly, cognitive science may also discover *subtle presuppositions of cognition*. For instance, in the case of folk physics (as mentioned in section 1.3) it takes sustained empirical work to reveal the extent to which our physical expectations are generated by something like an impetus theory. Likewise in the case of folk biology it takes sustained empirical work to reveal the role of essentialist assumptions. Thus Atran speaks of the folk idea of a “biological essence” as “an intrinsic... teleological agent, which physically... causes the biologically relevant parts and properties of a generic species to function and cohere ‘for the sake of’ the generic species itself” (1998: 550–1).

In the case of mereological composition, Rose and Schaffer (*manuscript*) – guided by Kelemen’s (1999) arguments for “promiscuous teleology” as a default heuristic in cognition^{xxiv} – provide an empirical argument that folk intuitions about when composition occurs are driven by teleology, via the principle: “*Teleologically Restricted Composition*: Composition occurs when the plurality has a purpose.” If Rose and Schaffer are right about that claim, it opens up a subtle opportunity for debunking, insofar as teleology is not an acceptable part of the background metaphysical picture but is rather – as Hawthorne and Nolan write: “part of a superseded, pre-scientific muddle about how the world works” (2006: 267).

So in this case the detailed cognitive story is relevant to the debunking project, in two respects:

- Cognitive science can help reveal what is intuitive in the first place.
- Cognitive science can reveal subtle presuppositions of our cognitive engine.

Of course these subtle presuppositions must still be held up to our background metaphysical picture to determine whether or not they deserve debunking. The crucial point is that cognitive science can turn up hidden aspects of our thought as additional matters to hold up against reality. And thus:

- The detailed cognitive story is sometimes irrelevant *but sometimes relevant* to the debunking project.

Cognitive science at its best gives us the *folk metaphysical image*, which must then be compared to *the real metaphysical picture*. The folk metaphysical image might have internal troubles. It might be incomplete or inconsistent. But assuming that it is internally coherent (or can be refined into an internally coherent picture), there remains the question of whether there is external fit with reality. That is a metaphysical assessment.^{xxv}

3.3 Conclusions

So is cognitive science relevant to metaphysics? I agree with Goldman that the answer is *yes*. But I have argued – both in general, and through consideration of case studies involving color, temporal passage, and spatial unity – that metaphysics is also a crucial partner within the debunking project, crucial for determining when a given intuition deserves debunking at all. Intuitions (whether in metaphysics or elsewhere) may be assessed for

internal coherence or external fit with reality. The latter is a metaphysical assessment. Thus in place of Goldman's talk of "the relevance of cognitive science to metaphysics" I find it less misleading to speak of "the joint relevance of cognitive science and metaphysics to the wider project of debunking intuitions."

By working through these case studies I have drawn the following conclusions:

- Whether the cognitive story supports debunking depends on the background metaphysical picture.
- The detailed cognitive story is sometimes irrelevant to the debunking project.
- There is no metaphysical distinction between projections and relations but rather an epistemic distinction between undermining and rebutting defeaters.

With respect to the second bullet point, I have acknowledged that the detailed cognitive story is sometimes relevant in at least the following two respects:

- Cognitive science can help adjudicate debates about what is intuitive in the first place.
- Cognitive science can reveal subtle presuppositions of our cognitive engine.

I have primarily traced out the following implications for thinking of the debunking project as itself a metaphysically laden project:

- There is no "external vantage-point" from which to debunk metaphysics, nor is there any prospect that cognitive science can take on the debunking project alone.
- Cognitive science alone cannot provide much dialectical leverage against naïve realists.
- Metaphysics is an integral part of philosophical methodology, at least as it pertains to the assessment of intuitions for debunking.

And so I conclude that cognitive science and metaphysics are partners in the debunking project, and both deeply relevant to philosophical methodology.^{xxvi}

Notes

- i Paul (2010a: 470) has more recently defended a similar view, on which metaphysical judgments are informed by "ordinary judgments" about what causes what or what is a part of what, such that: "[O]ne role for cognitive science in ontology is to identify places where our ordinary judgments might not be appropriately generated, as with illusions, ..." And also: "[G]iven the role of ordinary judgments in ontological modeling, we need to know if facts about our cognitive apparatus result in certain sorts of perceptual or judgmental bias."
- ii Of course if one thinks that intuitions are used in every intellectual inquiry, then *Goldman's liaison* will apply everywhere, but it will still apply in a specific way (through intuitions). That said insofar as cognitive faculties are used in every intellectual inquiry (think of the role of perception and reasoning in science and mathematics) there is also a generalization: *Cognitive science is relevant to assessing cognition, and hence relevant to all fields of inquiry*. For present purposes I leave open whether intuition should count as a distinctive cognitive kind.

- iii See also Paul 2012 for the case that metaphysics has some distinctive subject matters but no distinctive methodology. As she (2012: 9) puts the claim: “Both fields [metaphysics and science] can be understood as relying on modeling to develop and defend theories, and both use a priori reasoning to infer to the best explanation and to choose between empirical equivalents.” She (2012: 28) concludes: “Metaphysics stands side by side with natural science as an important and legitimate developer of our conceptual schemes.”
- iv See Pust 2012: section 1 for a useful overview of different conceptions of intuitions.
- v See Williamson 2007 (esp. 210–14) for a discussion of the perils of “psychologizing the evidence,” in which we “conceive the evidence in philosophy as consisting of psychological facts, such as the fact that we believe that there are mountains in Switzerland, not the fact that there are mountains in Switzerland” (234).
- vi I credit this point to Jennifer Nagel, from her comments on Cappelen’s book at a 2014 Central APA symposium.
- vii See Arico *et al.* 2011 (esp. section 2) for a useful overview of the psychological basis for agency attribution.
- viii See Pollock 1987 for a seminal treatment, and Grundmann 2011 for a useful overview of these issues. I am remaining neutral on whether there can be purely “factive” external defeaters beyond the ken of the subject, or whether the subject needs to have the belief (“doxastic” defeater), or whether it merely needs to be the case that the subject *should* have the belief (“normative” defeater). In the cases under discussion in the main text, I am concerned with the epistemic status of certain intuitions about the metaphysical nature of reality, for those who have all the relevant beliefs.
- ix Kahane (2011: 106; cf. Mason 2010) associates debunking explanations with undermining defeaters: “Debunking arguments are arguments that show the causal origins of a belief to be an undermining defeater.” Though as will emerge in section 5 there are also cases with the structure of rebutting defeaters. And as Nichols (*personal communication*) has suggested, there may even be cases of debunking which undermine any claim to *prima facie* justification, before issues of defeat even come into consideration. I am not presupposing that there is any deep epistemic unity to debunking.
- x As Cohen (1984: 282–3) points out, while internalists and externalists tend to disagree on *why* a given process is epistemically defective, they still tend to agree as to *which* processes are defective.
- xi Also I am not supposing that there is anything *distinctive* to debunking. For instance, White (2010) argues that the epistemic action in debunking derives from the more general phenomenon of disagreement. For present purposes I take no stand on the matter.
- xii See Korman 2009 for a similar style of self-undermining concern against global challenges to intuition.
- xiii In Schaffer 2009 I argue that the background metaphysical picture is best understood as structured by the grounding relation, so I would take this to be a picture about what grounds what. But nothing in the main text requires this conception of metaphysics. Fine 2001 introduces, as a second primitive notion alongside grounding, the notion of *in reality*, regimented by a primitive “In reality” operator, and glossed (2001: 25) in terms of a “positive idea of the intrinsic structure of reality.” What I speak of the background metaphysical picture looks to correspond to the propositions that Fine would take as real. Though I am not presupposing that one needs to understand this via a new primitive operator.
- xiv For instance, Kaiser, McCloskey and Proffitt (1986) found that naïve subjects – especially between 3rd and 6th grade – tended to predict that a ball emerging from a curved or spiraling tube would continue along a curving trajectory (undergoing curvilinear rather rectilinear motion), presumably due to a naïve folk physics of *impetus*.

- xv In this vein Jenkins (2005: 731) suggests that we may carry “a reliable, on-board *conceptual map* of the structure of the world. And we might well be able to learn about the structure of the world by examining such a map.” She sketches an in-principle naturalistic story as to how such a map might be nurtured or implanted by nature (2005: 735–7).
- xvi Indeed this idea goes back at least to Democritus (Taylor 1999: 9): “By convention sweet and by convention bitter, by convention hot, by convention cold, by convention color; but in reality atoms and void.”
- xvii Of course it is a psychological claim that people are in fact naïve realists about color. See Cohen and Nichols 2010 for some empirical work calling this claim into question.
- xxviii This is J. Cohen’s (2004: 462) “defer to the pigeons” option.
- xix Goldman himself (2015) takes the cognitive story to show that “a reasonable metaphysician would substantially revise the likelihood of the occurrence of passage experiences conditional on anti-realism.” But this overgeneralizes. We already know that there is some cognitive story to tell for every single case of cognition. Relatedly, Paul puts the point in term of a challenge to the denier of real temporal flow: “[W]ithout the properties of nowness and passage, we’d have no way to account for the features of our temporal experience” (2010b: 337). Her answer to this challenge is that the relevant features of our temporal experience might be illusions. She is surely right about that – indeed all sides should acknowledge the possibility of illusion – but I think she has thereby missed the stronger challenge. The stronger challenge is that the fact that our temporal experience has these features (felt flow) provides *decent albeit fallible evidence* that the world has these features. The real issue is then whether this sort of evidential force might still be debunked.
- xx Though see Campbell 1993, Gert 2008, and Allen 2011 for various attempts to defend color primitivism, as well as Byrne and Hilbert 2007 and J. Cohen 2009 (esp. 67–74) for critical responses.
- xxi According to Bourget and Chalmers (2014), 26.3% of philosophers favored the static B-theory, 15.5% favored the passage-laden A-theory, while 58.2 % gave some other answer. Acceptance of the A-theory was found correlated with identification with Aristotle, and tended to cluster with thinking that teleportation was death, deontology about morality, and a rejection of switching in trolley problems.
- xxii In this example cognitive science is playing a role in helping determine *what is intuitive in the first place*. As Bloom makes explicit, it is a *discovery* that the cognitive bias towards creationism is so natural and robust (as opposed to a mere culturally local indoctrination process).
- xxiii Just to be explicit: I – along with Goldman (2015) – classify experimental philosophy as “a sector of cognitive science.” Indeed I think that one of the roles for experimental philosophy is to help adjudicate those common philosophical debates over what is intuitive in the first place. For instance, epistemologists disagree as to whether our intuitions about knowledge are sensitive to the practical stakes of the subject. Well-designed experiments can help resolve these disagreements (see Buckwalter and Schaffer 2015).
- xxiv Kelemen, Rottman and Seston (2013: 1075) characterize their view as “akin to dual-processing models that characterize early developing intuitions as heuristics that can be increasingly overridden later in development by effortful processing, but which can nevertheless persistently reemerge in cases when intuitions are favored or forced.”
- xxv Spatial unity is also a case in which there is no metaphysical distinction between projections and relations but rather an epistemic distinction between undermining and rebutting defeaters. For suppose that the visual system uses gestalt heuristics while some other module uses teleological considerations. Then one can think of unity as a projection, or as a relation to a mode of thought (a given plurality might be unified relative to gestalt considerations but not relative to teleological considerations).

xxvi Thanks to Alvin Goldman, Hilary Kornblith, Brian McLaughlin, Michaela McSweeney, Shaun Nichols, L. A. Paul, and David Rose.

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REPLY TO SCHAFFER

There is so much in Jonathan Schaffer's paper with which I agree that it is a bit frustrating to find so many other things for which I am chastised because I failed to say them explicitly, or because I neglected to forswear them. For example, I am chastised for failing to acknowledge the importance of the "*background metaphysical picture*." And I stand accused of neglecting to forswear the notion that cognitive science can "*fly solo*" in debunking maneuvers. Let me try to clear up possible misunderstandings and departures from otherwise large-scale consensus.

There are at least two sources of our (relatively minor) divergences. One difference is that I don't characterize my project as one of guiding metaphysicians about when to debunk. Thus, the "selection" problem, as Schaffer terms it, doesn't arise for me; although I am certainly focused on very nearby territory. In writing my 2015 paper I was very conscious that there is only so much one can do (successfully) in a single paper; so I didn't aspire to cover every relevant base. There are unquestionably important epistemological issues – which Schaffer confronts admirably – that I did not aspire to tackle in that paper.

Schaffer writes:

I agree with Goldman that cognitive science is relevant [to metaphysics] via the debunking project. But ... I take metaphysics itself to play a crucial role alongside cognitive science within the debunking project. For a crucial part of the debunking project is selecting *when to debunk*, and a crucial part of selecting when to debunk is assessing *whether the intuition fits reality*... I prefer to say that cognitive science and metaphysics serve as *partners* within the wider debunking project.

As indicated above, I do not (usually) bill my project as a debunking project, but as something slightly different. Debunking requires an evidential or epistemic threshold that the debunker needs to meet. The evidence against the selected target must attain a high enough level, but it is radically unclear just how high that level should be. I don't know how strong the (undefeated) evidence must be to warrant the "selection" of a debunking action (or precisely what kind of "action" is in question: a doxastic act? a speech act? or what?). I therefore center my discussion on a more tractable task, viz., showing that cognitive science can contribute *new relevant evidence* toward the revision of metaphysical attitudes (that is, doxastic attitudes toward metaphysical theses). Exactly how strong the new evidence might be, and whether or not it is defeated by other evidence – these questions are set aside for another day. In the statement of my quarry, "relevant evidence" is the label repeatedly used (in "Naturalizing Metaphysics," at any rate). Presumably, relevant evidence is obtained when an inquirer gets good reason to adjust his/her credence vis-à-vis a proposition, upwards or downwards. I try to show how this can happen as a result of cognitive science research, without trying to weigh in on the question of whether one's background metaphysical theory can defeat such new evidence and thereby survive a debunking attempt. I don't deny that background metaphysical theory has a legitimate role to play of that sort. But specifying exactly when the all-things-considered evidence is (epistemologically) *sufficient* to "select" a given target for debunking would require a full-blown epistemology, addressing such questions as the nature and proper role of coherence, reflective-equilibrium, and conservatism in epistemology. There is no agreement on these matters among epistemologists, despite repeated invocation of them in discussions of philosophical methodology. This large task, therefore, was excluded from my agenda. As Schaffer seems to suspect (or wonder), however, this does not mean that I reject all forms of "partnership" or hold that cognitive science can "fly solo".

There are at least two places that a background metaphysical theory comes into play. Schaffer spells out one of them clearly, an example in which a background metaphysical theory plays a role in drawing a conclusion from a psychological experiment. Addressing Bloom's discussion of the hypertrophy of social cognition, Schaffer points out that the cognitive scientist assumes, as part of his/her background metaphysical theory, that the geometrical shapes depicted in a Heider–Simmel movie are not agents with real goals or desires. (Hence interpretations of them as such are false.) Analogously, I depict a metaphysician as starting out with a certain "prior probability" associated with a realist hypothesis about essences and a different prior probability associated with an anti-realist hypothesis. For example, the metaphysician might have a .70 credence in the realist hypothesis and .30 credence in the anti-realist hypothesis. Then she encounters new evidence (for example, evidence that young children are quintessentialists), and proceeds first to revise the likelihood of people believing essentialism conditional on its falsity and hence lowering her (posterior) credence for realism. Still her posterior probability for realism may remain pretty high because her original prior for it was very high. In both cases, revisionary conclusions are based partly on background metaphysical theory. In the second case, merely having the priors involves a background metaphysical theory. This illustrates how my own treatment, examined in more depth, is seen to involve

“partnering” between cognitive science and background theory, as opposed to cognitive science “flying solo.”

I repeat that for my purposes the central question posed by Schaffer – the “binary” question of whether or not to “debunk” – need not be addressed at this juncture. As long as studies by cognitive science provide evidence that gives metaphysicians reasons to revise their credences, then a (proper) epistemic impact of cognitive science will be in place. The question of whether or not to debunk – that is, to flat-out deny the existence of a naïvely accepted ontological posit – does not have to be the fulcrum of our enterprise. We do not disagree about the “partnering” of cognitive science with background metaphysical theory, but we do have slightly distinct conceptions of the core question in the terrain.

UNCORRECTED PROOFS