

# Abduction, Skepticism, and Indirect Realism

J. Adam Carter

*Forthcoming in Philosophical Studies.*

## Abstract

Moore and Russell thought that perceptual knowledge of the external world is based on abductive inference from information about our experience. Sosa maintains that this ‘indirect realist’ strategy has no prospects of working.<sup>1</sup> Vogel disagrees and thinks it can and does work perfectly well, and his reasoning (and variations on that reasoning) seem initially promising, moreso than other approaches.<sup>2</sup> My aim, however, will be to adjudicate this dispute in favor of Sosa’s pessimistic answer, and in doing so, to better uncover the important role abductive inference *does* have in a wider theory of perceptual knowledge, even if it doesn’t feature in any promising vindication of (anti-skeptical) indirect realism.

## 1. Indirect realism

a. Here is a datum that both skeptics and their opponents will grant: when it *seems to you* that *p* (e.g., it is raining outside, you are sitting in a chair), it doesn’t *follow* that this is so. The experience as of hands, the skeptic points out, is compatible with the obtaining of alternative or ‘skeptical’ hypotheses, such as the hypothesis that your *seeming to you* that *p* is an artifact of an elaborate deception generated by a powerful manipulator.

Does this matter, given that skeptical hypotheses seem so unlikely? Perhaps. A famous line of skeptical reasoning draws attention to the sense in which it seems the ‘common sense’ hypothesis of the external world – viz., that apparent chairs are *chairs* (not projections) that apparent rain is *rain* (not dream rain) – is simply *underdetermined* by your experiences relative to other competing hypotheses. The *seeming-that-it’s-raining* and *seeming-that-there’s-a-chair* would be just as they are, as the thought goes, if the common sense real world hypothesis obtained, or if any some other imagined skeptical hypotheses obtained.

b. The logical compatibility, highlighted by the skeptic, of its seeming to one that something is so and its being so presents a kind of structural question to epistemologists. How do we ‘bridge the gap’ between how things appear to us (what it seems we start with) and how things are?

A familiar strategy here, championed by Moore, maintains that perceptual beliefs are inferential beliefs:<sup>3</sup> Inferences *from* sensory experiences, *to* things being the common sense way we take them to be. Moore thinks this inference is a good inference, good enough to get us justified beliefs and knowledge, as much as we take ourselves to have.

---

<sup>1</sup>See Sosa (2009, chap. 5).

<sup>2</sup>(Vogel 1990).

<sup>3</sup>(Moore 1925)

This is a kind of *indirect realist* strategy; our perceptual knowledge is always mediated by inference; the inference is one we make from sense-data, which are taken to be produced by interactions between physical objects and our senses. It is also a kind of qualified optimism; there is no *immediate* knowledge of objects; but, the *inferences* we make from the content of our experiences (what Moore called sense data) are *good inferences*.

c. But are they *really* good? Hasn't the skeptic pointed out that your seeming to see a chair – the experience you have as of a chair – would be just as it is if a chair wasn't there, but you were being deceived?

True, the skeptic might say this. Another way to put the idea is that, as the skeptic sees it, the experience you have doesn't (given the compatibility of the experience with the common sense hypothesis and the deception) actually *favor* the common sense hypothesis over alternatives; that you have a hand is *underdetermined* by the experience of a hand.<sup>4</sup> But if that is right, then how can the inference we make from the content of our experiences be a good inference?

d. Russell had thought the inference was good.<sup>5</sup> And he thought that this is so *even if* we grant that your experience (as of a chair, of rain) would seem the same to you either way, were the common sense hypothesis to hold, or one of the skeptical alternative hypotheses.

For Russell, to vindicate the inference as a good one, we just have to appreciate that the common sense hypothesis is a *simpler* hypothesis. As he puts it:

There is no logical impossibility in the supposition that the whole of life is a dream, in which we ourselves create all the objects that come before us. But although this is not logically impossible, there is no reason whatever to suppose that it is true; and it is, in fact, a less simple hypothesis, viewed as a means of accounting for the facts of our own life, than the common-sense hypothesis that there really are objects independent of us, whose action on us causes our sensations.<sup>6</sup>

Russell seems to have put his finger on something the skeptic has overlooked: namely, that the common sense hypotheses that a thinker is inclined to accept on the basis of her experiences needn't be explanatorily *underdetermined* by those experiences, *even if* the experiences would have the same perceivable qualities even if the common sense hypothesis were false. This is because features such as simplicity can tip the scales for one hypothesis (the common sense hypothesis) over alternative hypotheses the obtaining of which would be experientially indistinguishable to a thinker.

Is the common sense hypothesis really simpler, though? Here is an idea to the contrary. The common sense hypothesis imports with it a complex back story, one that includes, say, extraordinary fine tuning of the universe needed to enable objects of common sense to have ever come in to existence; even more, the microlevel explanation of ordinary objects involves many unknowns at the quantum level. But the hypothesis that you are looking right now not at a chair but at *mere* sense data – not accompanied by any chair – can be made simple, at least in the imagination, where we may stipulate the deceptive source of sense data as a single act of a deceiver, or as a computer program that is, at its most basic level, simple 1s and 0s.<sup>7</sup>

---

<sup>4</sup>See, e.g., Cohen 1998; Brueckner 1994; Pritchard 2016.

<sup>5</sup>(Russell 1912) Note that Russell, shortly after his 1912 *The Problems of Philosophy*, revised his thinking on this matter, shifting to a very different view of the nature of perception. See Russell (1914).

<sup>6</sup>(Russell 1912, Ch. 2)

<sup>7</sup>For some related discussion here, see Vogel (1990, 662–63).

Russell has an answer to all of this. The common sense hypothesis is simpler in a way that can be appreciated straightforwardly. He writes:

The way in which simplicity comes in from supposing that there really are physical objects is easily seen. If the cat appears at one moment in one part of the room, and at another in another part, it is natural to suppose that it has moved from the one to the other, passing over a series of intermediate positions. But if it is merely a set of sense-data, it cannot have ever been in any place where I did not see it; thus we shall have to suppose that it did not exist at all while I was not looking, but suddenly sprang into being in a new place. If the cat exists whether I see it or not, we can understand from our own experience how it gets hungry between one meal and the next; but if it does not exist when I am not seeing it, it seems odd that appetite should grow during non-existence as fast as during existence. And if the cat consists only of sense-data, it cannot be hungry, since no hunger but my own can be a sense-datum to me. Thus the behaviour of the sense-data which represent the cat to me, though it seems quite natural when regarded as an expression of hunger, becomes utterly inexplicable when regarded as mere movements and changes of patches of colour, which are as incapable of hunger as a triangle is of playing football.<sup>8</sup>

For Russell, then, much of what we seem to see is such that the common sense hypothesis would be a *simpler* explanation of it than alternative skeptical hypotheses<sup>9</sup>, which would leave key features of our experiences unexplained.<sup>10</sup>

Simplicity is an example of an explanatory virtue. Other such virtues include fecundity, neatness, testability, etc.<sup>11</sup>

One needn't tie her anchor to simplicity, as Russell did. The indirect realist has a story for why the inference from appearance to reality is a good inference so long as there are one or more explanatory considerations that would justify an abductive inference to the common sense hypothesis over skeptical alternatives.

2. Now let's consider two very different rationales for why this abductive strategy of the indirect realist *might* seem epistemologically objectionable, especially when it is used in a context where the sceptic is requesting our justification.

a. On how solid ground is the abductive inference itself? If abductive inference is *generally* a good inference, then the question in a particular case is just whether it exhibits the features of a generally good inference. But what if the skeptic then goes on to challenge this, or at least, to request justification for abductive inference of the sort that the indirect realist adverts to?

*This* would be a request for a justification of a basic inference rule. Is the indirect realist entitled to ignore such a request, to take this conditional *<If the indirect realist's inference is a paradigmatic abductive inference, then it is a good inference>* as in need of no further defense? This might not be clear. Consider, here, as David Enoch and Joshua Schechter put it:

---

<sup>8</sup>(Russell 1912, Ch. 2)

<sup>9</sup>See also BonJour (2009) For discussion, see Lyons (2016). Cf., for criticism, Alston (2018)

<sup>10</sup>For my purposes I am granting the abductivist the claim that simplicity can provide (pro tanto, defeasible) epistemic grounds for favoring one hypothesis over another. This concession isn't without some contention; see, for example, Dasser, Hoyningen-Huene, and Kummer (1990).

<sup>11</sup>(Lycan 2002). For a more comprehensive listing, see Beebe (2009).

There are many different possible belief-forming methods that could be employed as basic. Some, such as MP [modus ponens], IBE, and relying on perception, we presumably are justified in employing. Others, such as affirming the Consequent, Inference to the Third Worst Explanation, and relying on wishful thinking, we presumably would be unjustified in employing. *It is highly implausible that it is merely a brute fact that we are justified in employing certain methods as basic and not others.* It is much more plausible that there is a principled distinction between the two classes . . . relevant to justification, one that presents [MP, IBE, etc.] in a rationally positive light.<sup>12</sup>

If the skeptic's request is reasonable, then it looks difficult to meet. Suppose you then *do* attempt to justify the claim that abductive inference is epistemically good. As the worry goes, this cannot be done in a non-circular way.<sup>13</sup> On the one hand, such a justification might be *premise circular* provided one in any way cites this rule, or a rule that entails it<sup>14</sup>, an argument aimed to justify it. If not premise circular, the argument might seem unavoidably *rule circular* in so far as one would unavoidably *follow* an abductive rule even if not explicitly citing it in one's reasoning.<sup>15</sup>

b. The above challenge is epistemologically important, but it's hardly decisive against the indirect realist. Firstly, the challenge of justifying abductive inference is applicable well beyond any indirect realist strategy, applicable to *any* attempt to justify basic inference rules. Secondly, the challenge might on closer inspection be misplaced, *in so far as* the request is interpreted as a request to non-circularly justify basic inference rules; as this thinking goes, if it is impossible to justify a given rule, R, without in any way relying on R on one's reasoning, then it is a mistake to think that it is objectionable for one's epistemology that one cannot do this.<sup>16</sup> Thirdly, it might be that rule circular justifications of inference rules are *good* justifications, even if they are incapable of rationally persuading skeptics who antecedently doubt these rules.<sup>17</sup>

c. Here, though, is a consideration that should be more concerning for the indirect realist. It might be that *even if* abductive inference is generally good, it faces a special problem when applied in the particular case where the indirect realist is relying on it.

Here Sosa has raised two challenges. The first concerns how exactly to interpret the strategy; is it meant to vindicate that (on indirect realism) we *do* or merely *could* know, through abductive inference, what we take ourselves to know?

Suppose (a) that we restrict ourselves to data just about the qualitative character of our own sensory experience, and (b) that we view belief in a commonsensical external world as a theory postulated to explain the course of our experience. What exactly is the proposal? Is it proposed that when ordinarily we accept the presence of a hand before us, we do know, and know on the basis of an abductive inference; or is it proposed rather that in such circumstances we have resources that would enable us to know if only we used those resources to make effective abductive arguments? The second, more modest, proposal

---

<sup>12</sup>(Enoch and Schechter 2008, 557–58)

<sup>13</sup>Or, as another line of thought might go, perhaps this is trivially so, because the conditions for giving an adequate justification are precluded by the very idea of basicness. See Enoch and Schechter (2008, 551)

<sup>14</sup>For discussion of the close connection between abduction and induction, see Fumerton (1980).

<sup>15</sup>For discussions of rule circularity, see Boghossian (2001).

<sup>16</sup>For discussion on this point, see Sosa (2009, 195). Cf., however, Beebe (2009) some press back here. According to Beebe, a premise in a wider argument against explanationist responses to radical skepticism is that we are justified in using IBE only if we can provide an a priori justification of IBE. For a response to Beebe, see McCain (2019).

<sup>17</sup>(Boghossian 2001)

is too modest, since it leaves our ordinary perceptual beliefs in a position like that of a theorem accepted through a guess or a blunder, one that we do have the resources to prove after much hard thought, but one that we have not come close to proving at the time when we are just guessing or blundering.<sup>18</sup>

Suppose for the sake of argument that what Sosa is calling the ‘modest proposal’ is not too modest to be objectionable.<sup>19</sup> Assume even that what he describes as the stronger interpretation is credible, in that maybe we are always in fact reasoning through abductive inference, even if only implicit or subconsciously so.

Even on those assumptions, there is another argument that challenges both the strong and modest proposals, even *were* it not too modest to be objectionable. Here’s Sosa:

Could we form a rich enough set of beliefs purely about the qualitative character of our sensory experience, one rich enough to permit abductive inferences yielding our commonsense view of external reality? This seems doubtful when we consider (a) that such pure data beliefs could not already presuppose the external reality to be inferred, and (b) that the postulated commonsense “theory” of external reality must presumably meet constraints on abductive inference: e.g., that the postulated theory be empirically testable and also simpler and less ad hoc than alternatives (e.g., Berkeley’s). These requirements plausibly imply that our data must go beyond detached observations, and include some acceptable correlations. *Yet these correlations are unavailable if we restrict ourselves to beliefs about the character of our experience.* Most especially are they unavailable, and most especially is the postulated inference implausible, when our database is restricted, as it is by G. E. Moore, to introspectively known facts of one’s own then present subjective experience, and to directly recalled facts of one’s own earlier experience. (If deprived of the epistemic resources of testimony and of retentive memory—except insofar as such resources can be validated by reason-cum-introspection, which is not very far if at all—then there is precious little we can any longer see ourselves as knowing, thus deprived.)<sup>20</sup>

On the above reasoning, any attempt to vindicate indirect realism by appeal to abductive inference from the qualitative character of our experiences to the world faces an internal tension. The better one does to satisfy either desideratum (a) or (b), the worse one does to satisfy the other. Restrict what the indirect realist purports needs to be explained (the qualitative character of our experience) *enough that it does not presuppose* a common sense reality to be inferred<sup>21</sup>, and it looks like we lack a rich enough set of beliefs to permit abductive inference to a commonsense view of external reality. Enrich the beliefs (about the qualitative character of sensory experiences) in a way that would permit such an inference, but only by illicitly presupposing the external reality to be inferred.

---

<sup>18</sup>(Sosa 2009, 179).

<sup>19</sup>A separate point, which I set aside for now, is whether – beyond what Sosa has suggested – the first objection is meant to concede propositional justification while denying doxastic justification.

<sup>20</sup>(Sosa 2009, 179–80) Cf., Sellars (1963).

<sup>21</sup>I am following Sosa’s in using ‘presuppose’ to characterise a restriction on the indirect realist’s strategy. But this choice of terms is worth clarifying, in light of the indirect realist’s aims. Merely having beliefs about such a reality is neither necessary nor sufficient for illicitly presupposing, for abductive purposes. Presupposing here, as I am understanding Sosa’s dilemma, involves assuming things about the data point to be explained (*viz.*, the qualitative character of our experiences) that can’t be justified from behind the Cartesian veil of perception. Put another way: since the indirect realist is restricting *what it is* that they are taking the hypothesis of a commonsense reality to earn abductive credentials through its capacity to best explain, they are not entitled to *assume* (in their characterization of that data point) elements of that same hypothesis already obtain.

d. Sosa’s second, structural problem deepens when we consider just how easy it is to presuppose, even if inadvertently so, the external reality to be inferred, when characterizing what it is about our experiences a common sense reality would qualify as a candidate (better so than alternatives) to explain. We can distinguish some different levels here, differentiated by what is presupposed. We at least must not presuppose correlations. But the situation is perhaps worse. A case for a higher level of restriction here maintains that the assumption of a commonsense reality is at least to some extent presupposed when we even limit ourselves, not to even testimony or retentive memory, but only to introspection. Introspection that does not involve any presupposition of an external reality is limited.<sup>22</sup> But perhaps even a further level is needed – one might introspect in a way that takes for granted at least *something* about the subject of the introspector, the subject of the introspection. The further in this direction we go (we will return to this), restricting further and further so as to not presuppose a commonsense reality, the more difficult it would seem to establish a rich enough set of beliefs to permit abductive inference to a commonsense view of external reality.

3. Jonathan Vogel thinks that (i) the kind of pessimism we’ve just been led to has gone too far; and further that (ii) abductive strategies for reaching the common sense hypothesis from the starting point of our sensory experiences have more in the tank than has been appreciated by those who have put such strategies forward.

a. As he sees it, the poverty of the various kinds of explanations a skeptic might offer for sensory data “is *immediately apparent* – they come across as contrived or unduly indirect – and this is a reason why we reject skepticism as a doctrine.<sup>23</sup>” But Vogel makes an important concession to the skeptic; he concedes that typical attempts to rely on the explanatory virtues such as simplicity and explanatory power don’t actually prop up the common sense hypothesis over skeptical alternatives, when it comes to explaining our perceptual experiences.

The problem, as Vogel sees it, is that *if* such virtues (explanatory power, simplicity) are supposed to pick out *structural* features of the common sense hypothesis (as opposed to its specific ontological commitments – e.g., physical objects vs. computer representations<sup>24</sup>) over the skeptical hypothesis, the skeptical hypothesis is not *really* worse off; and this is so even if the hypothesis itself is an “outlandish suggestion.<sup>25</sup>” Take, for example, the computer simulation skeptical hypothesis.<sup>26</sup> If the real world hypothesis can explain a lower-level phenomenon by a higher-level regularity, the computer simulation hypothesis should be able to do the very same, differing just in *what entities* bear the relevant causal-explanatory relations to each other.<sup>27</sup> After all, the explanatory structure of the skeptical hypothesis is meant to ‘duplicate’ the explanatory structure of the real world hypothesis; this much is built in to the hypothesis.<sup>28</sup> An appreciation of this point should lead us to see why Russell’s appeal to simplicity (1d) in an abductive strategy is misguided; it regards simplicity as a *structural*

---

<sup>22</sup>That is, a Cartesian inventory of one’s mind restricted to those beliefs that do not in any way presuppose an external world will be a small subset of the wider Cartesian inventory of one’s mind.

<sup>23</sup>(Vogel 1990, 666, my italics)

<sup>24</sup>I am following Vogel here in distinguishing structural features of a hypothesis contrastively with ontological posits.

<sup>25</sup>(Vogel 1990, 661)

<sup>26</sup>Note that, in discussing computer simulations for our purpose here in connection with scepticism, I am taking for granted (in a way both Vogel and Sosa do) a – put simply, distinction between the ‘virtual and the real’ that has been disputed in recent work by Chalmers – see, e.g., his *Reality+* (2022), which has a more permissive view of the ontology of virtual worlds.

<sup>27</sup>(Vogel 1990, 662–63).

<sup>28</sup>For my own purposes, I am inclined to grant Vogel this assumption, as my central quibbles lie elsewhere. However, see Schurz (2020).

feature of the common sense hypothesis's explanation of a perceptual experience. This underestimates the skeptic's hand.

b. Using 'RWH' = real world hypothesis and "CSH" = computer skeptical hypothesis (viz., that your experiences are the result of a computer program generating simulations), Vogel offers an example where both RWH and CSH are candidate explainers of a paradigmatic perceptual experience, and RWH beats out CSH *even if* we grant that theoretical virtues like simplicity and explanatory power apply equally to the structural features of both the RWH and CSH hypotheses. To get Vogel's example up and running, just suppose you see what looks like a hyacinth beside your doorway.

according to the RWH, *there is* a hyacinth beside your doorway. For each RWH object, there has to be a CSH counterpart, which we can imagine to be the piece of the computer disk which stores the information about the object to be simulated. So, the CSH would have it that there is a piece of the disk holding a file about a hyacinth beside your door, specifically. Moreover, wherever the RWH assigns a certain property to the hyacinth, the CSH must ascribe a corresponding, but different property to the hyacinth's CSH analog. According to the RWH, the hyacinth has a particular location, namely, that of being beside your door. The hyacinth counterpart will have some parallel feature, which we might call a "pseudo location." The pseudo location of the hyacinth counterpart is just that physical property in virtue of which the counterpart simulates being located near your door.<sup>29</sup>

In sum, then, RWH and CSH, despite being structurally isomorphic as explanations of the hyacinth appearance, differ in this key respect: what the RWH explains it does so by reference to *genuine locations*; what the CSH explains it does so by reference to *pseudo locations*.

*This* difference between the two explanations is claimed to be decisive, on Vogel's view, once we consider that (on the RWH) the (genuine) locations ascribed to any two objects at a time are invariably different locations; thus, the CSH will invariably ascribe different pseudo locations to things it posits.

But *how* does the CSH explain this difference in pseudo locations? It's here where Vogel thinks CSH must inevitably pay a price: either simplicity or explanatory power.

imagine that the way things work in the CSH computer is that each object's pseudo location is the physical realization of having coordinates (x,y,z) written in its file. There will have to be some explicit principle within the CSH that no two objects are to be assigned the same pseudo location, i.e., that no two objects are to have the same coordinates written in their files. Otherwise, the fact that no two objects have the same pseudo location remains unexplained. Of course, the CSH would include within it the necessary truth that two physical objects cannot occupy the same genuine location in space, but this is of no help to the CSH in explaining why two of its objects cannot have the same pseudo location. To achieve this, it would appear that the CSH has to add an extra empirical regularity, to which no regularity in the RWH corresponds. Such an addition will make the CSH inferior to the RWH on simplicity grounds, however.<sup>30</sup>

At the crux, then, of the problem for CSH is that (i) retaining structural isomorphism with RWH requires that no two objects occupy the same location (for CSH, this is a pseudo location); but (ii) since it's not any kind of necessary truth that two objects don't occupy the same pseudo location

---

<sup>29</sup>(Vogel 1990, 664)

<sup>30</sup>(Vogel 1990, 664).

(even if it *is* a necessary truth that two objections don't occupy the same genuine location), (iii) some further explanation is needed (some extra empirical regularity, one that RWH needn't posit). But this extra 'add on' then makes CSH less simple than RWH, favoring RWH. *Remove* the add on to retain isomorphic simplicity with RWH, at the price of leaving the matter of why two pseudo-location aren't mutually exclusive unexplained, again favoring RWH.

4. Vogel's argument offers a key advantage over other explanationist responses to skepticism, those which depend at some point on claimed difference in the structural features of RWH and CSH. Unfortunately, his strategy faces an intractable problem.

a. It might *seem* that the weak spot of Vogel's is that even if we grant RWH *decisively* beats out CSH (either via appeal to simplicity or explanatory) power, it is equally clear that the victory is a *highly marginal* one – in a way that, as critics of IBE such as van Fraassen will point out, may be too marginal to *justify belief*. For Vogel, after all, RWH is really only simpler than CSH (or, wins out in explanatory depth, *vis-à-vis* CSH) by *a single posited regularity*; a close contest! But, as van Fraassen puts it:

To believe is at least to consider more likely to be true, than not. So to believe the best explanation requires more than an evaluation of the given hypothesis. It requires a step beyond the comparative judgment that this hypothesis is better than its actual rivals...For me to take it that the best of set X will be more likely to be true than not, requires a prior belief that the truth is already more likely to be found in X, than not.<sup>31</sup>

This is effectively, as van Fraassen puts it, a 'best of a bad lot' objection. Transposed as a direct challenge to Vogel's position, the worry is that for all Vogel has shown, by justifying RWH as he has (as a marginally better explanation than CSH), it might be that RWH is simply a bit better than a bad explanation; this is not a merit that befits *epistemic justification* for believing RWH.

The above challenge does not have quite the teeth against Vogel that it might seem to.<sup>32</sup> This is for three reasons: first, note that the scope of van Fraassen's challenge is abductive reasoning *generally*, viz., whether abductive inference can *ever* justify any belief. As William Alston<sup>33</sup> and Kevin McCain<sup>34</sup> have pointed out, this is effectively a challenge to a very strong kind of 'explanationism' that proponents of abductive inference needn't accept. One would effectively resist the core principle behind van Fraassen's objection, after all, if one demonstrated that abductive inference – as a reasoning type – *can* justify beliefs (what Lycan calls 'weak explanationism') and that in the case of direct interest, that it at least *defeasibly* does so. Secondly, one might also challenge whether 'bad lot'-style reasoning is applicable in this particular case. It is one thing if one's explanation is in fact better than (bad) competitor explanations, another if one's explanation is not, or whether the matter (of the status of the alternatives beaten out) is indeterminate. Remember that, *ex hypothesi*, the version of CSH Vogel is describing is at least structurally isomorphic to the RWH explanation of a given perceptual experience, differing only in that the former posits an additional regularity. With this in mind, we might think CSH in fact is not a bad alternative explanation in so far as it is merely *one regularly away from RWH*, and RWH is (we may assume) a good explanation. Thirdly, van Fraassen's challenge will be dismissed as *irrelevant* by strong defenders of abduction as an inference rule that, as Lycan puts it,

---

<sup>31</sup>(Van Fraassen 1989, 143); cf., McCain 2019, 40–41.

<sup>32</sup>Note that this is not to say that van Fraassen's objection lacks teeth against any kind of abductivist anti-sceptical reply.

<sup>33</sup>(Alston 2018).

<sup>34</sup>(McCain 2019).



*fundamental* in its status, such that, as Lycan puts it, “there is no more fundamental connection to truth toward which explanatory coherence is a means.”

The above three considerations, taken together, leave the *initial* van-Fraassen-style reasoning for rejecting Vogel’s argument looking shaky.

b. The elephant in the room, as I see it, is Sosa’s ‘double-edged’ dilemma. Let’s now revisit this, in connection with Vogel’s argument that RWH better explains a given perceptual experience (e.g., of a hyacinth by a doorway) than CSH, on grounds of *either* simplicity or explanatory power. Let’s grant Vogel, *ex ante*, that abductive inference, generally, is good – viz., that it is a type of reasoning that at least offers defeasible justification for hypotheses – viz., justification that can in principle be defeated by other considerations. Thus, let’s not quibble – as research in this area often does<sup>35</sup> – about whether the inference from sensory experience to RWH is good only if one can first justify IBE itself.

Given this assumption, what, then, *could* be the problem be for Vogel’s abductivist strategy? Haven’t we already seen that CSH *does* have to posit an additional regularity, one that makes it more complicated (compromising simplicity), or *without so positing it*, compromises its explanatory depth?

It seems so. But this might have been too hasty. Remember the dilemma facing the abductivist-cum-indirect realist: *Restrict* what the needs to be explained (namely, for any indirect realist strategy, the qualitative character of our experience) *enough that it does not presuppose* the common sense reality to be inferred, and it looks like we lack a rich enough set of beliefs to permit abductive inference to RWH over CSH. Alternatively, *enrich* what needs explained in a way that would permit such an inference, but only at the cost of presupposing the external reality to be inferred.<sup>36</sup>

I want to now show that this dilemma has a direct bearing on Vogel’s argument specifically. In order to avoid an illicit presupposition about what is to be inferred (namely the external world), abductivists such as Vogel must not appeal to *anything known about the external world in such a description of what it is being inferred from*.

Arguably, though, Vogel must do that, despite suggesting otherwise. Consider this key passage:

Since we make reference to the locations of objects in giving various everyday explanations, location properties are part of the explanatory apparatus of the RWH. Now, we find that the (genuine) locations ascribed to any two objects at a time are invariably different. We do not need any empirical law or regularity to explain this; it is a necessary truth pertaining to the nature of physical objects that there cannot be two such objects at the same place at the same time.<sup>37</sup>

But the picture here is more complicated. Contrary to what Vogel says, we simply *don’t* know as a matter of *necessity* that the genuine locations ascribed to any two objects at a time are *invariably*

---

<sup>35</sup>For an a helpful overview of some of these arguments, see Beebe (2009, §4).

<sup>36</sup>Note that this dilemma poses a problem for other strategies for appealing, as Vogel does, to the geometry of the commonsense hypothesis. Suppose, as a referee suggests, that Vogel were to reason as follows: Why do sense data of flat objects not appear to roll as to sense data of spheres? Answer: given commonsense, sense data of flat objects are flat and (enter extended explanation) flat objects don’t roll. To find this kind of IBE strategy for RWH compelling, we need to already have a notion of what flatness, roundness, and rolling are - *not just as visual patterns, but as properties of objects in space*. We need to understand what it means for a surface to be flat or curved, and how this affects its behaviour when in motion. But once again, it's unclear how we could acquire these robust spatial concepts merely by observing patterns in our sense data, without any prior acquaintance with the external world.

<sup>37</sup>(Vogel 1990, 664).

different. At most, we know this through real-world science, where – at least here in the real world – objects that are candidates for locations are made of particles which are – at the microphysical level – either fermions or bosons. We (now) know, through experimental evidence confirming Pauli’s Exclusion Principle, that no two fermions (e.g., electrons) can occupy the same location at the same time.<sup>38</sup> The principle is an *empirical* principle about the real world, not a necessary truth. Regarding *invariably*: if ‘objects’ as this term features in the regularity Vogel takes to be necessary is wide enough to include not only fermions but also bosons, then it is contestable not only whether the regularity is a necessary truth, but whether it is *true*, given that the exclusion principle is inapplicable to bosons. And what we know now about both fermions and bosons, we didn’t know prior to the rise of quantum mechanics in the 1920s (incidentally, around the same rough such thinkers as Russell, Moore, and C.D. Broad were attempting early abductivist defenses of indirect realism in response to the skeptic).<sup>39</sup>

One might press back here. The observation that what we know about object location in the real world smuggles in (to the extent that we know it at all) our empirical science of the real world, seems to be a very specific, minor point. In one sense, yes. In another it is not. Vogel’s entire argument, after all, rests on this particular piece of knowledge being necessary. Take this away from Vogel, and by his own lights, RWH no longer beats CSH.<sup>40</sup>

## 5. Foundationalism

The indirect realist strategy of Russell and Moore looks increasingly unviable, much more promising the idea that perceptual knowledge is *non-inferential*. The most popular position in mainstream epistemology is given by *foundationalism*.

a. Just as *experience* features in the indirect realist’s story of perceptual knowledge (as that which a world with the objects of common sense explains), so it features in the foundationalist’s story, not as *what is explained*, but instead as a *regress stopper*. For proponents of the ‘myth of the given’, a perceptual experience plays a ‘regress-stopping’ role by *presenting itself to a thinker* in a special way, one whereby it is directly (non-inferentially<sup>41</sup>) believed be present.

---

<sup>38</sup>Though, the *wave functions* of electrons can overlap.

<sup>39</sup>A separate strand of argument against Vogel’s necessity claim (regarding genuine locations and object exclusion) appeals to cases of overlapping objects (e.g., statue/clay cases) with different persistence conditions. See here Thomson (1998).

<sup>40</sup>But couldn’t a proponent of Vogel’s object location argument advance a simpler version of the argument which takes as a datum to be explained by the RWH just the *mere appearance that objects always occupy different locations or times*? Couldn’t the strategy at least in this way avoid the charge of presupposing the RWH and still get the result that commonsense reality of the RWH best explains this appearance? Notice that even this argument presupposes a conceptual grasp of objects, locations, and overlap that arguably can’t be derived from appearances alone. To reason abductively from the apparent non-overlap of objects to the conclusion that objects in fact never overlap, we need to already have a notion of what objects and locations are, and what it would mean for them to overlap. But how can we acquire these concepts merely from the flow of sense data, without any prior acquaintance with the external world? Sense data may present us with patterns of qualitative similarity and difference, but it’s far from clear that this suffices for understanding the idea of objects occupying unique regions of space. Grasping the very notion of ‘overlap’ in a material rather than purely visual sense seems to require some prior familiarity with the behaviour of physical objects. So while (this variation of) Vogel’s argument doesn’t explicitly appeal to full-blown external world knowledge, it still relies on a conceptual framework that is difficult to justify from behind the Cartesian veil. The appearance of non-overlap alone doesn’t yield the concept of non-overlap; some prior understanding of objects and locations must be in place to even formulate the hypothesis that objects never completely coincide. Insofar as this understanding outstrips what can be gleaned from mere sense data, Vogel’s strategy (articulated in this amended way) still runs afoul of the dilemma facing indirect realism. Thanks to a referee for suggesting elaboration on this point.

<sup>41</sup>That is, not inferentially supported by a familiar, general-purpose inferential pattern.

Foundationalists needn't accept such 'givenness'. Here is a different story of how experience bears on the justification of a foundational perceptual belief: by *appropriately causing that belief*.<sup>42</sup>

b. But has abduction left the scene *entirely* when it comes to perceptual knowledge? If our perceptual experiences aren't explained by an inferred external world, but rather, feature in perceptual knowledge as *mere regress stoppers* (by presentation to a thinker, or by appropriately causing her perceptual belief), then it looks as though abductive inference is simply *irrelevant* to our perceptual knowledge. This might be difficult to swallow, especially if one is impressed by the idea that abduction is often, even if not always, a truth-conducive reasoning pattern.<sup>43</sup> Why should such reasoning be inapplicable *wholesale* to a species of knowledge – perceptual knowledge – that is among our most basic and widespread?

## 6. Abduction, perceptual knowledge, and reflection

a. Consider this bit of analogical reasoning. Indirect realism, we've suggested, faces insurmountable problems, from which it looks like *non-inferential* perceptual knowledge must be countenanced. But what room is there for *coherence*, then, in a theory of perceptual knowledge, if such knowledge is non-inferential? Coherence, after all – like abduction – is surely closely tied to truth.<sup>44</sup> Is a view on which perceptual knowledge is non-inferential at risk *also* of marginalizing coherence, and entirely so?

Leaving coherence out of a story of perceptual knowledge would be especially grievous if, as the coherentist insists, *only* considerations of coherence can bear on whether one's true perceptual belief aspires to perceptual knowledge.

b. The (doxastic) coherentist, I will assume, is mistaken about this: their view leaves *experience* playing no epistemically significant role in perceptual knowledge.<sup>45</sup> Here not only the foundationalist (who goes in for non-inferential perceptual knowledge) but also the indirect realist, who takes such knowledge to be inferential, has an advantage. Both give experience pride of place in a theory of perceptual knowledge. *Even so*, as the thought goes: a theory of perceptual knowledge should at least in principle give *coherence* some place (as opposed to *total* marginalization.)

The analogy can now be made clearer: just as perceptual knowledge is not merely a matter of truth plus coherence (for reasons just noted), coherence nonetheless should not be completely marginalized in a theory of perceptual knowledge, as the idea that perceptual knowledge is non-inferential threatens to do, at least on the surface. By parity of reasoning: just as perceptual knowledge is not merely true perceptual belief abductively inferred from our perceptual experiences, abduction *nonetheless should not be completely marginalized in a theory of perceptual knowledge*.

---

<sup>42</sup>(Sosa 1997a, 89).

<sup>43</sup>Recall here Lycan's suggestion that "... there is no more fundamental connection to truth [than abduction] toward which explanatory coherence is a means," (Lycan 2012, 12).

<sup>44</sup>(BonJour 1985, 97-99; see also for an influential coherentist account of epistemic justification, Davidson (1986).

<sup>45</sup>A referee points out that this situation is potentially more complicated for the variation on coherentism defended by Michael Williams (1980). This kind of view permits the possibility that our knowledge of the external world and our beliefs about sense data might be mutually supporting, each providing justification for the other within a coherent overall framework. It seems that even this kind of a holistic coherentist approach faces a version of the same challenge; if we grant that beliefs about external world and our knowledge of sense data are mutually supporting (where neither has priority), we still need to explain how this coherent system as a whole gets off the ground without presupposing what is being explained. Perhaps more importantly, though, simply by resisting epistemic priority to sense data, it's not clear that this kind of strategy is 'usable' by the indirect realist, even if the previous issue were overcome. What goes for Williams' (non-doxastic) view above, I take it, goes also for other non-doxastic versions of coherentism such that defended in Poston (2014), which gives experiences and beliefs a role to play in coherence.

c. There is a way to save abduction in a theory of perceptual knowledge, and it is the same way to save coherence. It involves accepting the simple idea that perceptual knowledge can be *improved* upon – this is an idea that is central to perspectivist or *bi-level epistemology*.<sup>46</sup>

d. Let's first briefly consider the place of coherence in perspectivist epistemology. We'll see that a twist on this reasoning can be made to apply, *mutatis mutandis*, to abduction. We will do this all while leaving indirect realism behind.

Key to perspectivist epistemology, the most prominent version of which is *bi-level virtue epistemology* – is the distinction between first-order and second-order knowledge, or as Sosa terms this distinction, *animal* and *reflective* knowledge:

[...] animal knowledge does not require that the knower have an epistemic perspective on his belief, a perspective from which he endorses the source of that belief, from which he can see that source as reliably truth-conducive. Reflective knowledge does by contrast require such a perspective.<sup>47</sup>

Perceptual knowledge, like any knowledge, can be either *animal* or *reflective*, where only the latter kind requires that one know that the source of her belief is reliably truth conducive. The former, *animal knowledge* requires just that the correctness of one's belief manifest a reliable (i.e., truth conducive) belief-forming disposition, and regardless of whether one has any kind of competent grip of one's own perceptual abilities and their limits.

While animal knowledge doesn't owe anything to coherence, *reflective knowledge* does; this is because coherence among one's beliefs can furnish one with a more comprehensive grasp of the truth of the perceptually based propositions one believes than one would be in the market for without such coherence, which includes, as Sosa characterizes this:

the logical, probabilistic, and explanatory relations among one's first-order beliefs, but also coherence between these beliefs and one's sensory and other experiences, as well as comprehensive coherence between first-order experiences, beliefs, and other mental states, on one side, and on the other beliefs about first-order states.<sup>48</sup>

For the bi-level epistemologist, then, the above kind of (broad) coherence is something that – when we in fact *do* perceptually know (at the animal level) – can help us to *improve* the quality of that knowledge; through such broad coherence, we can then *vindicate* that first-order knowledge against challenges, appreciating not only that the perceptually formed proposition is true, but that the apprehension of that truth manifested ability. This is the case *even though* one's initially possessing perceptual knowledge isn't metaphysically explained by any coherent body of beliefs in one's command.

e. The door is open to now see how an analogous point very plausibly goes for abductive reasoning, within a theory of perceptual knowledge. *Reflective* perceptual knowledge that *p* requires not only that one endorse *p* (and do so via a reliable competence), but also that one *knowledgably* endorse something *further*, viz., the source of one's belief that *p* as reliably truth-conducive, as one that not easily would have led to a false belief in the case at hand. The quality of *this* endorsement is enriched by coherence when, through such coherence, one is better situated to place one's first-level knowledge

---

<sup>46</sup>For an early expression of this view, see Sosa (1991); see also Sosa (1997b) for discussion of the role of coherence, specifically, in bi-level virtue epistemology.

<sup>47</sup>(Sosa 2009, 135).

<sup>48</sup>(Sosa 2009, 192).

in epistemic perspective.

But without having attained some command of the logical, probabilistic, and *explanatory* relations among one's first-order beliefs (and beliefs about first order states), one will typically lack this kind of coherence. *Induction, deduction, and abduction are critical to achieving any such coherent picture.*<sup>49</sup>

Let us take but one example here, which concerns one's beliefs *about* one's perceptual faculties. Even though (on the kind bi-level picture under consideration) there is a kind of knowledge one can gain just by implicitly trusting perceptual faculties, gaining knowledge *by* exercising them in circumstances appropriate to their exercise, and even without any beliefs about them, one will often enough at some point arrive at a *view* of these faculties. On the assumption that one has (through the exercise of perceptual faculties over time) acquired a stock of animal perceptual knowledge, knowledge that coheres with one's sensory and other experiences, a thinker is now in a position to arrive via abduction at a positive view of their perceptual faculties. The *reliability* of those faculties, after all, best explains the body of knowledge they've acquired, knowledge that coheres with their sensory and other experiences.

Abductive inference then, like other kinds of inferences, can contribute to the placing of one's first-level knowledge in epistemic perspective, and in a way that (like coherence more generally) can *improve* the quality perceptual knowledge antecedently attained through the exercise of competence.

## 7. Objections and replies

There are several objections to the above line we might anticipate.

- (i) *Objection*: "But isn't this last move circular? After all, by inferring via abduction the reliability of perceptual faculties, one is relying on those very faculties to come to have a positive view of them." *Reply*: Remember here what was *conceded* (in 1.b) to the indirect realist – faced with the worry that abduction *itself* might not be something the indirect realist could provide a justification for without in some way relying on abduction. It was conceded that it would be more than uncharitable, a *mistake*, to think that it is objectionable for the indirect realist's epistemology (or anyone else's) that they cannot do what shouldn't ever have been realistically expected – viz., the provision of a *non-circular* justification of basic belief forming methods, one that permits no *reliance* whatsoever on the method about which one arrives at a positive view. What applies in the case of justifying abduction as reliable without relying on abduction applies *mutatis mutandis* in the case of justifying perception as reliable without relying on perception. Absent some reason to think such non-circular justification should be realistically expected, and rightly so, and on the basis of a principled reason adherence to which does not already assure skepticism, the above worry should be set aside.
- (ii) *Objection*: "Let's set aside then circularity. There is surely still a problem, which concerns what one is entitled to infer via abduction *from* what one starts with on the view defended here. Even if the role of abduction in perceptual knowledge is not to make possible such knowledge

---

<sup>49</sup>It is worth noting that the claim being made here about the place of abduction in reflective knowledge, on the bi-level virtue epistemology picture, is not that abduction is always and everywhere needed to move from animal to reflective knowledge. Rather, the key point is that this picture, with its emphasis on the role of broad coherence in reflective knowledge and the importance of abduction in attaining this coherence, does not marginalize abduction in an account of perceptual knowledge in the way that brute externalist accounts might seem to do. In this way, the bi-level approach offers a way to countenance how abduction can improve the quality of perceptual knowledge even if not essential to all perceptual knowledge. At the same time, this approach allows that in some cases we might move from animal to reflective knowledge through other means, such as by gaining a view of the reliability of one's perceptual faculties using just perception, introspection, and deduction.

initially, but to (like coherence) *improve* its quality once one already has it – viz., by contributing to the placing of one’s perceptual knowledge in an epistemic perspective from which she can appreciate it as reliably sourced – it’s unclear how the hypothesis that perception is reliable actually beats out alternative skeptical hypotheses, such as that hypothesis that perception only *seems* reliable, but that one is (perhaps) recently envatted.” *Reply*: It is crucial that we remember the key difference between (a) what the *indirect realist* is restricted to and what she cannot presuppose under a description of what is to be explained. Here, the answer was *sense data*, with no accompanying information about the real world smuggled in; and (b) what one is restricted to on the view under consideration, and what she cannot presuppose, under a description of what is to be explained; here it is not *mere* sense data, but one’s (first-order) perceptual knowledge; with this starting point, one can draw from an already rich starting set of beliefs (and knowledge), from which the reliability hypothesis will win out over skeptical alternatives – and this is so *even if* the real world hypothesis doesn’t win out over skeptical alternatives when one begins *only* with sense data.

## SUMMARY

1. *Indirect realism*. (a) The indirect realist holds that perceptual knowledge of the external world is based on abductive inference from information about our experience; (b-c) a skeptical challenge to this strategy maintains that the external world doesn’t beat out skeptical competitors because things would seem just the same on both hypotheses; (d) but here indirect realists such as Russell advert to explanatory virtues of the real world hypothesis, highlighting in particular *simplicity*.
2. *Two initial epistemological objections to the indirect realist’s epistemological strategy*. (a) One might challenge the indirect realist’s strategy by requesting a justification for abductive inference itself; (b) but this challenge is not decisive; (c) a much more serious challenge takes the form of a dilemma: restrict what the indirect realist purports to explain *enough that it does not presuppose* a common sense reality to be inferred, and it looks like we lack a rich enough set of beliefs to permit abductive inference to a commonsense view of external reality; (d) the dilemma deepens when we consider just how much the indirect realist must restrict her explanandum so as to not presuppose a commonsense reality.
3. *Vogel’s indirect realist strategy*. (a) Vogel concedes that the explanatory *structure* of the skeptical hypothesis will duplicate the explanatory structure of the real world hypothesis; (b) even so, the *content* of the real world hypothesis wins out, ultimately, because it posits one fewer regularity than the best skeptical alternative, which must ultimately (on substance, not structure) sacrifice *either* explanatory power or simplicity.
4. *Where Vogel’s strategy goes astray*. (a) It might seem that Vogel’s argument falls prey to (a variation of) van Fraassen’s ‘best of a bad lot’ objection; (b) however, it does not; (c) but Vogel’s strategy can’t escape the dilemma outlined in 2(c), and this problem turns out to be intractable.
5. *Foundationalism*. If perceptual knowledge is isn’t mediated by inference, then it is *non-inferential*, a view embraced by foundationalists. But by moving in this direction, it looks like abduction must be marginalized *wholesale* in a theory of perceptual knowledge.
6. *Abduction, perceptual knowledge, and reflection*. (a) Consider by way of analogy: even if it’s false that *only* considerations of coherence can bear on whether one’s true perceptual belief aspires to perceptual knowledge, it would seem problematic to say coherence is *entirely orthogonal* to perceptual knowledge; (b) but hasn’t our reasoning to this point generated just this kind of

marginalization when it comes to abduction? (c) There is a way to save abduction in a theory of perceptual knowledge, and it is the same way to save coherence. It involves accepting the simple idea that perceptual knowledge can be *improved* upon – e.g., by making the transition from animal to reflective knowledge, knower gains an epistemic perspective on her belief, a perspective from which she endorses the source of that belief and can see that source as reliably truth-conducive; (d) while animal knowledge doesn't owe anything to coherence, *reflective knowledge* does; (e) *likewise*, abductive inference can contribute to the placing of one's first-level knowledge in epistemic perspective, and in a way that (like coherence more generally) can *improve* the quality perceptual knowledge antecedently attained through the exercise of competence. In this way, abduction, like coherence, has a place in a wider view of perceptual knowledge; it is just very different from the place the indirect realist would have it.<sup>50</sup>

## References

- Alston, William P. 2018. *The Reliability of Sense Perception*. Cornell University Press.
- Beebe, James R. 2009. 'The Abductivist Reply to Skepticism'. *Philosophy and Phenomenological Research* 79 (3): 605–36.
- Boghossian, Paul. 2001. 'How Are Objective Epistemic Reasons Possible?' *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 106 (1/2): 1–40.
- BonJour, Laurence. 1985. *The Structure of Empirical Knowledge*. Harvard University Press.
- . 2009. *Epistemology: Classic Problems and Contemporary Responses*. Rowman & Littlefield Publishers.
- Brueckner, Anthony. 1994. 'The Structure of the Skeptical Argument'. *Philosophy and Phenomenological Research* 54 (4): 827–35.
- Chalmers, David J. 2022. *Reality+: Virtual Worlds and the Problems of Philosophy*. Penguin UK.
- Cohen, Stewart. 1998. 'Two Kinds of Skeptical Argument'. *Philosophy and Phenomenological Research* 58 (1): 143–59.
- Dasser, Verena, Paul Hoyningen-Huene, and Hans Kummer. 1990. 'Exploring Primate Social Cognition: Some Critical Remarks<sup>1</sup>'. *Behaviour* 112 (1–2): 84–98.
- Davidson, Donald. 1986. 'A Coherence Theory of Truth and Knowledge'. 1986. <https://philpapers.org/rec/DAVA3>.
- Enoch, David, and Joshua Schechter. 2008. 'How Are Basic Belief-Forming Methods Justified?' *Philosophy and Phenomenological Research* 76 (3): 547–79.
- Fraassen, Bas C. van. 1989. *Laws and Symmetry*. Oxford University Press.
- Fumerton, Richard A. 1980. 'Induction and Reasoning to the Best Explanation'. *Philosophy of Science* 47 (4): 589–600.
- Lycan, William G. 2002. 'Explanation and Epistemology'. *The Oxford Handbook of Epistemology*, 408–33.

---

<sup>50</sup>J Adam Carter's research is supported by the Arts and Humanities Research Council's Expanding Autonomy (AH/W005077/1) and Digital Knowledge (AH/W008424/1) projects. Thanks to the editors and two referees for helpful comments, as well as to audiences at the University of Miami and the University of Cologne.

- . 2012. ‘Explanationist Rebuttals (Coherentism Defended Again)’. *The Southern Journal of Philosophy* 50 (1): 5–20.
- Lyons, Jack. 2016. ‘Epistemological Problems of Perception’. In *Stanford Encyclopedia of Philosophy*.
- McCain, Kevin. 2019. ‘In Defense of the Explanationist Response to Skepticism’. *International Journal for the Study of Skepticism* 9 (1): 38–50.
- Moore, George Edward. 1925. ‘A Defence of Common Sense’. In *Contemporary British Philosophy, Second Series*, edited by J. H. Muirhead. George Allen and Unwin.
- Poston, Ted. 2014. *Reason and Explanation*. London: Palgrave Macmillan UK.
- Pritchard, Duncan. 2016. *Epistemic Angst: Radical Skepticism and the Groundlessness of Our Believing*. Princeton University Press.
- Russell, Bertrand. 1912. *The Problems of Philosophy*. Home University Library.
- . 1914. ‘On the Nature of Acquaintance, Part III: Analysis of Experience’. *The Monist* 24 (3): 435–53.
- Schurz, Gerhard. 2020. ‘Abduction as a Method of Inductive Metaphysics’. *Grazer Philosophische Studien* 98 (1): 50–74.
- Sellars, Wilfrid. 1963. ‘Phenomenalism’. In *Science, Perception, and Reality*, 60–105. Humanities Press.
- Sosa, Ernest. 1991. *Knowledge in Perspective: Selected Essays in Epistemology*. Cambridge University Press.
- . 1997a. ‘Mythology of the Given’. *History of Philosophy Quarterly* 14 (3): 275–86.
- . 1997b. ‘Reflective Knowledge in the Best Circles’. *Journal of Philosophy* 94 (8): 410–30.
- . 2009. *Reflective Knowledge: Apt Belief and Reflective Knowledge, Volume II*. Oxford University Press.
- Thomson, Judith Jarvis. 1998. ‘The Statue and the Clay’. *Noûs* 32 (2): 149–73.
- Vogel, Jonathan. 1990. ‘Cartesian Skepticism and Inference to the Best Explanation’. *Journal of Philosophy* 87 (11): 658–66.
- Williams, Michael. 1980. ‘Coherence, Justification, and Truth’. *The Review of Metaphysics*, 243–72.