Abductivists claim that explanatory considerations (e.g., simplicity, parsimony, explanatory breadth, etc.) favor belief in the external world over skeptical hypotheses involving evil demons and brains in vats. After showing how most versions of abductivism succumb fairly easily to obvious and fatal objections, I explain how rationalist versions of abductivism can avoid these difficulties. I then discuss the most pressing challenges facing abductivist appeals to the a priori and offer suggestions on how to overcome them.

Skeptical hypotheses depict error-possibilities that are incompatible with the knowledge we ordinarily ascribe to ourselves and yet are subjectively indistinguishable from what we take our normal circumstances to be. A common response to the philosophical challenge posed by skeptical hypotheses is to argue that, while both commonsense and skeptical explanations of our sensory experiences are equally consistent with the phenomenological data—and thus cannot be distinguished on grounds of empirical adequacy—there are explanatory reasons for favoring commonsense explanations over skeptical ones. According to this ‘abductivist’ reply to skepticism, the hypothesis that our sense experiences are caused by objects having roughly the characteristics we ordinarily take them to have constitutes the best explanation of those experiences. Abductivists maintain that the explanatory superiority of this commonsense hypothesis makes belief in it epistemically justified and belief in the falsity of skeptical hypotheses justified as well.

Regrettably, most versions of abductivism fall prey to a number of serious objections. Some beg the question against the skeptic, others include viciously circular justifications of key theses, and others are supported by merely pragmatic or instrumental justifications when distinctively epistemic reasons are called for. After critically examining the family of abductivist positions and the common problems they face, I argue that the most promising way for abductivists to avoid these
difficulties is to seek \textit{a priori} justifications for their central theses. I then formulate some challenges for rationalist versions of abductivism and offer suggestions on how to overcome them.

Section I provides an overview of the central tenets of abductivism, while section II briefly surveys common reactions to the view. Sections III and IV examine familiar pitfalls abductivists have fallen into, with an eye to distinguishing the best way to formulate and defend the view. Sections IV and V consider the sort of justification abductivists must have for relying upon inference to the best explanation and ask whether that justification should be \textit{a priori}. Well-known challenges to inference to the best explanation are discussed in section VI, and recent abductivist appeals to \textit{a priori} probabilities are examined in section VII. I conclude with some reflections on the prospects for formulating a successful abductivist reply to skepticism.

I.

The abductivist reply to skepticism has enjoyed a long, if not distinguished history. Intimations of the view can be found in John Locke’s (1690/1975, bk. iv, ch. xi) claim that the involuntariness of our sensations, the apparent fact that they are caused by objects external to us, the pleasure and pain that often accompany them, and the highly ordered and integrated way they fit together provide us with a strong reason for believing in the existence of mind-independent objects.\footnote{Cf. Mackie (1976, ch. 2) and Cornman (1975, ch. 7) for abductivist interpretations of Locke’s arguments.} Twentieth-century defenders of abductivism include Bertrand Russell (1912; 1927; 1948), C. D. Broad (1925), A. J. Ayer (1956), Michael Slote (1970), J. L. Mackie (1976), Frank Jackson (1977), James Cornman (1980), Alan Goldman (1988), William Lycan (1988), Paul Moser\textsuperscript{2} (1989), Jonathan Vogel (1990; 2005), and Laurence BonJour (1998; 1999; 2003).\footnote{More recently, Moser (1993, 47) has given up the abductivist view he propounded in 1989, adopting instead a fairly skeptical view of our knowledge of reality.}

Bertrand Russell (1912, 22–23), for example, argues:

\begin{quote}
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 what-
\end{quote}
ever 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.

Russell (1912, 24–25) maintains it is rational to believe the common-sense hypothesis because it “tends to simplify and systematize our account of our experiences,” even though the abductive argument in its favor “is doubtless less strong than we could wish.” In a similar vein, A. J. Ayer (1956, 147–148) writes:

[I]n referring as we do to physical objects we are elaborating a theory with respect to the evidence of our senses…. The sceptic is indeed right in his insistence that there is a gap to be overcome, in the sense that my having just this experience is consistent with the statement’s being false… He is wrong only in inferring from this that we cannot have any justification for it. For if such a statement functions as part of a theory which accounts for our experience, it must be possible for them to justify it.

More recently, Laurence BonJour (2003, 88) has argued that we can be a priori justified in believing that the following features of our sensory experience are “systematically caused by a relatively definite world of mostly solid objects arranged in three-dimensional space”:

(1.1) The continuity that exists between the varied sensory experiences we can have of an object through one sensory modality.

(1.2) The coordination between the contents of experiences from different sensory modalities.

Russell did not always subscribe to the abductivist position. Indeed, there seems to be some truth to C. D. Broad’s (1924, §2) remark that “As we all know, Mr. Russell produces a different system of philosophy every few years, and Dr. Moore never produces one at all.” Two years after the abductivist arguments in The Problems of Philosophy were published, Russell (1914, lec. 3) outlined a theory in which physical objects are represented as logical constructions rather than real entities whose existence is abductively inferred. However, Russell (1914, 103) continues to treat belief in other minds as justified in something like an abductive fashion, as when he writes, “The hypothesis that other people have minds must, I think, be allowed to be not susceptible of any very strong support from the analogical argument. At the same time, it is a hypothesis which systematizes a vast body of facts and never leads to any consequences which there is reason to think false. There is therefore nothing to be said against its truth, and good reason to use it as a working hypothesis.” Later Russell (1927, lec. 7) returned more explicitly to his earlier view and seemed to maintain it in his (1948). Cf. Eames (1969), Sainsbury (1979, ch. 6) and Baldwin (2003) for discussion of the development of Russell’s theory of knowledge.
(1.3) The regular, repeatable and unified sensory experiences we have of different objects as we move through space.

(1.4) That features of our sensory experiences are correlated in just the way we would expect them to be if some of the things we experience were the causes of other things we experience.

(1.5) That families of sensory experiences and their relations to each other seem to change over time in ways that intuitively reflect changes in both the experienced objects and the movements of observers.

BonJour (2003, 92) claims we can see a priori that the most likely explanation of these facts is that our sensory experiences are caused by a realm of three-dimensional objects having roughly the shapes, spatial relations and causal properties that are reflected in our sensory experiences. BonJour (2003, 94–95) maintains that the explanatory superiority of the “quasi-commonsensical hypothesis about the external world” renders it more likely to be true than any skeptical hypothesis involving “Berkeley’s God, Descartes’s demon, or the computer that feeds electrical impulses to a brain-in-a-vat.”

According to Gilbert Harman (1965, 89), every inference to the best explanation (hereafter ‘IBE’) has the following form:

In making an inference to the best explanation one infers, from the fact that a certain hypothesis would explain the evidence, to the truth of that hypothesis. In general, there will be several hypotheses which might explain the evidence, so one must be able to reject all such alternative hypotheses before one is warranted in making the inference. Thus one infers, from the premise that a given hypothesis would provide a “better” explanation for the evidence than would any other hypothesis, to the conclusion that the given hypothesis is true.

If we let ‘the real world hypothesis’ (hereafter ‘RWH’) denote the hypothesis that our sensory experiences are caused by objects having roughly the characteristics we commonsensically take them to have and ‘SKi’ any radical skeptical hypothesis about our sensory experience, the common core of abductivist replies to skepticism can be represented as follows:

(2.1) $O$ (a description of our sensory experiences).

(2.2) Of the set of available and competing explanations (including $RWH$ and $SK_1, SK_2, \ldots, SK_n$) capable of explaining $O$, $RWH$ is the best according to the correct criteria for choosing among potential explanations.
Therefore, in all probability, RWH is true.

Commonly invoked explanatory criteria include the following:

(3.1) **Ontological Simplicity I:** Other things being equal, a theory that postulates the existence of fewer entities should be preferred to a theory that postulates more.

(3.2) **Ontological Simplicity II:** Other things being equal, a theory that postulates the existence of fewer kinds of entities should be preferred to a theory that postulates more.

(3.3) **Explanatory Simplicity I:** Other things being equal, a theory whose structure is more elegant or straightforward should be preferred to a theory that is less elegant or straightforward.

(3.4) **Explanatory Simplicity II:** Other things being equal, a theory that raises fewer further explanatory questions should be preferred to a theory that raises more.\(^5\)

(3.5) Explanatory Simplicity III: Other things being equal, a theory that posits fewer primitive explanatory notions should be preferred to one that posits more.\(^6\)

(3.6) **Psychological Simplicity:** Other things being equal, a theory that presents an easier to understand relation between explanans and explanandum should be preferred to a theory that presents a less easy to understand relation.\(^7\)

(3.7) **Explanatory Breadth:** Other things being equal, a theory that explains a wider range of phenomena should be preferred to a theory that explains a narrower range.\(^8\)

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\(^5\) Due to Harman (1992, 202). Lycan (1988, 118) characterizes the relevant virtue in terms of the “failure to give rise to embarrassing and difficult questions.” In a similar vein, Mackie (1976, 66) suggests that a theory that eliminates more unexplained coincidences should be preferred to a theory that eliminates fewer.

\(^6\) Due to Lycan (2002, 415).

\(^7\) Due to Harman (1992, 203).

\(^8\) Theoretical unification can be seen as a special sort of explanatory breadth, where a theory brings together domains previously taken to be disparate. Thagard (1978, 83) also suggests that explanatory breadth (or ‘consilience,’ as he calls it) has a dynamic aspect. If a theory can explain a wider range and variety of facts now than when it was first proposed, that is a mark in its favor. Thagard suggests that successful prediction is often an indication of dynamic consilience.
(3.8) *Explanatory Depth*: Other things being equal, a theory that provides a more illuminating explanation of the relevant data should be preferred to a theory that provides a less illuminating explanation.

(3.9) *Coherence with Background Knowledge*: Other things being equal, a theory that fits better with other widely accepted theories and background knowledge should be preferred to a theory that fits less well.

(3.10) *Intrinsic Plausibility*: Other things being equal, a theory that is more intrinsically plausible should be preferred to a theory that less intrinsically plausible.

(3.11) *Avoidance of Ad Hoc Elements*: Other things being equal, a theory that has fewer *ad hoc* elements should be preferred to a theory that has more.\(^9\)

(3.12) *Fecundity*: Other things being equal, a theory that gives rise to more novel predictions and/or further explanations should be preferred to a theory that either blocks or leads to fewer predictions and explanations.

(3.13) *Conservatism*: Other things being equal, a theory that results in a smaller change in one’s overall view should be preferred to a theory that results in a larger change.

(3.14) *Modesty*: Other things being equal, a theory that is implied by but does not imply another theory should be preferred to the stronger theory.\(^{10}\)

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\(^9\) ‘*Ad hoc*’ has been defined in a variety of ways. Vogel (1993, 242) suggests that an hypothesis is *ad hoc* if it is “too closely linked with the explanandum” or when “the distance between explanans and explanandum” is too small. In other writing Vogel (1990, 659) suggested that \(A\) is an *ad hoc* explanation of \(B\) if \(A\) is not independently testable and does not figure in the explanation of something other than \(B\). RWH, however, does not seem to be any less *ad hoc* than any skeptical hypothesis according to this criterion. RWH cannot be independently tested because there can be no direct empirical evidence for the view that does not immediately beg the question against the skeptic; and RWH is certainly not capable of explaining a wide variety of phenomena.

\(^{10}\) Due to Quine and Ullian (1978, 68). Moser (1989, 98) takes modesty to be a vice instead of a virtue.
(3.15) *Testability:* Other things being equal, a theory that has more readily testable consequences should be preferred to one that has fewer such consequences.

The explanatory virtues cited in these criteria are matters of degree and must be balanced against one another. Because it is possible for distinct criteria to issue conflicting assessments of a theory—e.g., increased explanatory power might be gained at the expense of decreased simplicity—abductivists ideally should have a set of metacriteria for harmonizing the various virtues. Abductivists maintain that theories that satisfy these criteria (or satisfy more of them or satisfy them to greater degrees) are objectively more likely to be true than competing theories that do not satisfy them (or satisfy fewer of them or satisfy them to lesser degrees).

Central to abductivism is a commitment to the following theses:

(A1) Belief in the falsity of skeptical hypotheses can be epistemically justified via IBE.

(A2) Belief in the falsity of skeptical hypotheses can only be epistemically justified via IBE.

(A3) Showing that belief in the falsity of skeptical hypotheses is epistemically justified can only be achieved via IBE.

Although some epistemologists carefully distinguish between the projects of showing how our external world beliefs are justified and responding to skepticism, for the abductivist these projects are basically one and the same. Thus, the abductivist is committed to the following duals of (A1) through (A3):

(A4) Belief in RWH can be epistemically justified via IBE.

(A5) Belief in RWH can only be epistemically justified via IBE.

(A6) Showing that belief in RWH is epistemically justified can only be achieved via IBE.\(^{11}\)

\(^{11}\) (A4) through (A6) may invite the common objection that epistemic internalist theories like abductivism place too heavy an epistemic burden on ordinary subjects, but I will not dwell upon that criticism here. BonJour (2003, 95–96) admits that “it does not seem plausible to claim that anything very closely approximating [the abductivist response] is in the minds of ordinary people when they make claims about the physical world.” As a result, BonJour (2003, 95–96) concludes that, while the abductivist reply can provide the reflective scholar with some degree of justification, the external world beliefs of ordinary subjects will not be justified to any significant degree at all.
The best way to understand how abductivists take explanatory considerations to undermine the threat of skepticism is to examine skeptical arguments that employ underdetermination principles such as the following:

(UPP) If S’s evidence for believing that \( p \) does not favor \( p \) over some hypothesis \( q \) which \( S \) knows to be incompatible with \( p \), then \( S \)’s evidence does not justify \( S \) in believing \( p \). (adapted from Pritchard 2005, 39)

According to skeptical arguments based upon (UPP), my sensory experiences and thus my empirical evidence would not be any different from what they actually are if I were a brain-in-a-vat or the victim of an evil demon’s deception. As a result, my evidence for believing RWH cannot favor RWH over any of the skeptical hypotheses I know to be incompatible with RWH, and my evidence cannot justify me in believing RWH. Abductivists contend that in such alleged cases of underdetermination explanatory considerations can carry the day. They claim we are rationally justified in preferring RWH to its skeptical alternatives because RWH fares better with respect to the explanatory criteria than do competing skeptical hypotheses. RWH, they argue, is simpler, more illuminating, less ad hoc, etc., than its skeptical alternatives and thus that the choice between RWH and skeptical hypotheses is not underdetermined after all. Abductivists can be understood either as accepting (UPP) while maintaining that explanatory considerations are properly construed as evidential or as insisting that (UPP) should be modified so that theory choices are undetermined only when neither evidential nor explanatory considerations favor one hypothesis over another. ¹²

Abductivism is not equivalent to any of the forms of explanationism that dot the philosophical landscape. In epistemology ‘explanationism’ often denotes the view that all reasoning (or at least all ampliative reasoning) is justified by explanatory considerations. ¹³ This thesis is sometimes expressed as the view that all forms of inference ultimately reduce to inference to the best explanation. However, one can fail to be an explanationist in this sense and yet be an abductivist in the sense described above. Explanationism is also sometimes equated with certain “explanatory coherence” theories of justification that one can again fail to endorse without failing to endorse abductivism. In the philosophy of


¹³ Explanationists in this sense include Lycan (1988) and Harman (1965; 1986). Lipton (2004) defends a closely related view. Those who are explanationists in these senses are almost always abductivists as well, but the converse does not hold.
science, ‘explanationism’ typically denotes a certain kind of defense of scientific realism, the view that science aims to produce and succeeds in producing claims about both the observable and the unobservable aspects of the world that are at least approximately true.\textsuperscript{14} In particular, ‘explanationism’ in this sense denotes the view that the truth of scientific realism provides the best explanation of the success of science.\textsuperscript{15} Less commonly, it can also refer to the view that explanatory factors can successfully adjudicate between competing empirically equivalent scientific theories.\textsuperscript{16}

II.

Despite the modest popularity abductivism has enjoyed throughout philosophy as a whole, it has found relative few adherents among epistemologists who specialize in the study of skepticism. Perhaps the most common initial reaction to abductivism is that it is far from clear that RWH satisfies the explanatory criteria better than competing skeptical hypotheses. If, for instance, a skeptical hypothesis postulates the existence of only a supercomputer, a vat and a few brains, that hypothesis would seem to be ontologically simpler than RWH. Such a hypothesis can also clearly explain the ultimate causes of a wide range of sensory phenomena. Abductivists counter such claims by arguing that, while skeptical hypotheses may be simpler in one or another respect, they are less simple in other important respects.\textsuperscript{17} Unfortu-

\textsuperscript{14} This particular formulation of scientific realism is due to Votsis (2004, ch. 1, §3).


\textsuperscript{16} Explanationists in this sense include McMullin (1984) and Lipton (2004).

\textsuperscript{17} Vogel (1990, 660), for example, notes that the basic evil demon hypothesis includes no explanation of why the demon wants to give us just the sorts of experiences we in fact have. Vogel argues that neglecting to include such an explanation will leave an evil demon hypothesis explanatorily impoverished, whereas adding such an explanation would make it \textit{ad hoc}. While some abductivists (e.g., Goldman 1988) charge that skeptical hypotheses are burdened with more unexplained explainers than RWH, other abductivists (e.g., Vogel 1990) dispute this claim. Jackson (1977, 144) offers the following argument against the view that rivals to RWH, such as Berkeley’s God hypothesis, are simpler than RWH:

\textbf{[II] If we understand the God hypothesis as asserting that God proceeds according to some plan (as Berkeley certainly did), the hypothesis will no longer be simpler than that of the external world. The problem of our knowledge of the external world is just being replaced by the problem of our knowledge of God’s plan. Spelling out God’s plan will be just as complicated a business as spelling out our conception of the external world.}

However, establishing that skeptical hypotheses are no simpler than RWH does not get the abductivist completely out of the woods. If RWH is not itself simpler than skeptical hypotheses, the choice between RWH and any given skeptical hypothesis will be underdetermined, and the skeptic’s argument will succeed.
nately, none of the arguments proffered in these skirmishes appears to have the decisive potential needed to bring about a satisfactory resolution of the debate.

There is, however, one recent argument that claims to have such potential. Ram Neta (2004) argues that RWH is utterly lacking in explanatory merit because it fails to offer any explanation at all of our sensory experiences. If correct, Neta’s arguments would clearly undermine the central claims of abductionism. Since Neta (2004, 307) acknowledges that “there may be many ways to explain the same effect” because “we can ask many different questions about the same effect,” we must ask what explanatory question(s) he thinks RWH is unable to answer. In a footnote Neta (2004, 321–322, n. 24) tells us that RWH can be understood as answering any of the following questions:

(4.1) Why is there anything that has the property of being unable to be different from how it appears (i.e., why does subjectivity exist)?

(4.2) Why do the qualitative features of our sensory experiences fall within the range they do rather than within some other range?

(4.3) Why do particular subjective facts obtain just when they do (e.g., why does coffee taste like this rather than like pizza)?

Above I described RWH as the hypothesis that our sense experiences are caused by objects having roughly the characteristics we commonly take them to have. It seems relatively clear that RWH, so construed, has nothing to say about the issues raised in (4.1), (4.2), and (4.3). RWH does not tell us why subjectivity exists in the world, why normal humans see in color, or why coffee tastes like coffee. Neta concludes that because RWH does not answer questions (4.1), (4.2), and (4.3), it is thoroughly unexplanatory.

Another possibility of course is that RWH is designed to answer questions other than the ones Neta proposes. Indeed, RWH seems to provide rather plausible answers to the following explanatory questions:

(4.4) What sorts of objects or events are the distal causes of our ordinary sensory experiences?
Why is there continuity between the various visual sensory experiences we can have of (what appears to be) a single object?  

Why is there coordination between our visual, auditory, tactile, gustatory and olfactory sensory experiences?

Why are features of our sensory experiences correlated in just the way we would expect them to be if some of the things we experience were the causes of other things we experience?

RWH’s answer to (4.4) is that events involving physical objects of the sort we commonsensically take there to be (as opposed to, say, electrochemical impulses from an evil scientist’s supercomputer) are causally responsible for our sensory experiences. RWH also underwrites commonsensical answers to (4.5) through (4.7). When one considers (i) that RWH and its various formulations are not couched in anything like the same terms as (4.1), (4.2), or (4.3); (ii) that abductivists and their opponents have for many years agreed that RWH and its skeptical competitors offer conflicting explanations of the same phenomena; (iii) that skeptical hypotheses involving evil demons and brains in vats also do not answer the questions raised in (4.1), (4.2) and (4.3); but (iv) that skeptical hypotheses involving evil demons and brains in vats do provide answers to (4.4) through (4.7), it becomes overwhelmingly plausible to believe that Neta has misidentified the explanatory questions RWH is designed to answer. Consequently, I will henceforth assume that RWH does provide some explanation of our sensory experiences and will proceed to examine how well it accomplishes this task.

III.

In an effort to isolate the most defensible formulation of abductivism, I will survey some of the more common pitfalls that have plagued extant versions of the view. One pitfall involves incorporating question-begging assumptions into the descriptions abductivists provide of the features of our sensory experiences RWH is supposed to explain. Abductivists beg the central question at issue with the skeptic if they appeal to anything they allegedly know about the external world in such descriptions. C. D. Broad (1925, 196–198) appears to beg the
question in this fashion when he claims that some of the data to be explained by RWH include the fact that each time he looks in a certain direction he undergoes sensory experiences of roughly the same sort and that when he moves from one location to another, his sensory experiences undergo a continuous sort of change. In a discussion of Broad, William Alston (1999, 227) argues:

More crucially, the patterns in experience cited as the *explananda* involve suppositions about the physical environment we could only know about through perception, thus introducing a circularity in the argument.

Alston claims that this sort of question-begging is endemic to any abductivist reply to skepticism. Michael Williams (1999, 49) agrees, arguing that when abductivists claim their sensory experiences have a kind of coherence that can be explained by RWH, they must appeal to “regularities in how external things appear under relevantly similar conditions of perception.” Yet since these experiential circumstances are states of the external world, Williams (1999, 49) claims abductivists will always beg the question against the skeptic.

Many abductivists, however, have recognized and sought to avoid the sort of impropriety Alston and Williams describe. Russell (1912, 21–22; 1927, ch. 18), for example, explicitly maintains at several points that his abductivist response to skepticism cannot appeal to anything he thinks he knows about the external world.19 Speaking for all abductivists, he writes:

We must therefore, if possible, find, in our own purely private experiences, characteristics which show, or tend to show, that there are in

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19 Russell (1912, 21) criticized the following view:

The first answer that naturally occurs to one is that, although different people may see the table slightly differently, still they all see more or less similar things when they look at the table, and the variations in what they see follow the laws of perspective and reflection of light, so that it is easy to arrive at a permanent object underlying all the different people’s sense-data.

In response to this suggestion Russell (1912, 21–22) writes:

Now in so far as the above considerations depend upon supposing that there are other people besides ourselves, they beg the very question at issue.... Thus, when we are trying to show that there must be objects independent of our own sense-data, we cannot appeal to the testimony of other people, since this testimony itself consists of sense-data, and does not reveal other people's experiences unless our own sense-data are signs of things existing independently of us.
the world things other than ourselves and our private experiences.
(Russell 1912, 22)

Bonjour (2003) also goes to great lengths to describe the features of our sensory experience mentioned in (1.1) through (1.5) in purely phenomenological or sense-datum terms that do not assume the existence of the external world. Thus, although Alston and Williams correctly point out that some abductivists have not satisfied a plausible restriction on abductivist replies to skepticism, it does not appear to be an unavoidable problem for the view.20

Alan Goldman (1988, 192) has argued that even if it could be shown that descriptions of our sensory experiences must make essential reference to “locations and movements in physical space,” this would not necessarily mean that abductivists must beg the question against the skeptic:

[A]ll it demonstrates is the necessity for realist language for describing and classifying appearances. It does not show that such language refers to objects beyond these ways of appearing. That certain concepts are required for us does not show that they are instantiated in the ways we take them to be.

The fact that describing one’s sensory experience may require one to use the language of objects and locations does not entail that there actually are physical objects and locations—much less that those objects and locations are of the sort we ordinarily take them to be. Abductivists who openly acknowledge this fact while using “realist” language can then seemingly avoid the charge of begging the question against the skeptic.

Some abductivists fall into other pitfalls when they attempt to provide reasons for thinking RWH is more likely to be true than its skeptical competitors. Locke (1690/1975, bk. iv, ch. xi, §4), for example, appears to beg the question when he offers the following reason:

’Tis plain, those Perceptions are produced in us by exteriour Causes affecting our Senses: Because those that want the Organs of any Sense, never can have the Ideas belonging to that Sense produced in their Minds.

Jonathan Bennett (1971, 66) complains that Locke’s argument “has a premiss about sense-organs, including those of other people” but that

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20 Slote (1970, 18, n. 1) acknowledges that the only non-question-begging premises he can employ in his response to skepticism are experiential ones “that entail that I am conscious or aware in some way or other, but that do not entail the existence of physical entities or of conscious beings other than myself.”
“sense-organs are among the ‘things without us’ whose reality is in question.” RWH cannot be defended by any considerations that presuppose the truth of our beliefs about the external world.  

Other abductivist replies run aground by offering merely pragmatic or instrumental defenses of the merits of RWH when epistemic defenses are required. Because epistemological skepticism is the thesis that we lack epistemically justified beliefs about the external world, any response to this thesis that tries to show that our external world beliefs are merely pragmatically, instrumentally or otherwise nonepistemically justified will fail to address the central skeptical challenge. Michael Slote (1970, 66, 67), for example, argues that skeptical hypotheses are explanatorily inferior to RWH because they are “inquiry-limiting hypotheses”—i.e., hypotheses whose “acceptance ensure[s] the impossibility of one’s gaining certain sorts of warranted true explanations of the nature and behaviour of things for as long as one continues to accept” them. Slote (1970, 66, 67) maintains that because believing a skeptical hypothesis “ensures the frustration of

\[ \text{Some have suggested that Harman’s (1973, 22) reply to skepticism flouts this plausible restriction when he claims: } \]

\[ [A] \text{ person is to infer the most coherent explanatory account that makes the least change in his antecedent beliefs... Part of the reason for accepting this theory of inference is that it provides an answer to radical skepticism. We are justified in continuing to believe something unless we have a special reason to change our minds. The hypotheses the skeptic discusses are not equally reasonable, since only one of them is already believed.} \]

The alleged problem with using Harman’s theory of inference as part of a response to radical skepticism is that his theory is premised on the assumption that skepticism is false. In order to formulate a correct theory of inference, Harman (1973, 16) advises and pursues the following strategy:

\[ \text{You are to use the fact that you accept a hypothesis as a sign that the hypothesis is simpler and more plausible than alternatives. The fact that you accept a hypothesis about other minds, as opposed to the inverted-spectrum hypothesis, shows that this usual hypothesis is simpler, less } \text{ad hoc}, \text{ and more plausible. The suggestion is that, if we study this and other hypotheses we accept, we might begin to learn something about what makes a hypothesis better for us, i.e., better. Similarly with knowledge of the external world. That you accept the hypothesis of the external world shows that it is reasonable to accept it.} \]

Although Harman is sometimes numbered among the abductivists (cf. Neta 2004), he clearly rejects (A2)—the principle that belief in the falsity of skeptical hypotheses can only be epistemically justified via IBE. If Harman were to maintain that anti-skeptical beliefs must be inferentially justified and yet were to build the falsity of skepticism into his theory of justified inference, he would obviously beg the question against the skeptic. However, since Harman rejects (A2), he should not be interpreted as offering a question-begging abductivist reply to skepticism. As I am interpreting the view, he does not offer an abductivist reply at all.

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certain explanatory goals of science”—including the goal of “obtaining of more and more explanations of whatever exists”—we are justified in rejecting it. If Slote is not begging the question by assuming outright that all skeptical hypotheses are false, the most that his argument provides is an instrumental reason to disbelieve skeptical hypotheses. It tells us that if we don’t want our goals as seekers of explanations to be frustrated, then we should not believe any skeptical hypothesis. But showing that believing skeptical hypotheses would get in the way of obtaining certain goals does not provide us with an epistemic reason for believing those hypotheses are false. Showing that believing in the nonexistence of God would thwart one’s religious or spiritual goals does not provide one with reason to believe that God exists.

IV.

Although many philosophers believe the explanatory criteria invoked by abductivists are merely “pragmatic”—i.e., that their satisfaction is not an indicator of truth—abductivists cannot plausibly follow this route. The satisfaction of the explanatory criteria cannot provide us with an epistemic reason to believe RWH is true if those criteria are not themselves truth-linked. Because the success of the abductivist response to skepticism depends upon the epistemic goodness of abductive inference, many abductivists have offered defenses of this form of inference. Unfortunately, however, most of these defenses have been miserable failures.

Goldman (1988), for example, offers a blatantly circular justification of IBE. Beginning from the conviction that “all epistemically interesting connections between beliefs and the world that ultimately verifies or falsifies them are contingent,” Goldman (1988, 7) maintains that all forms of a priori reasoning will fail to respect the contingency of this connection and the logical independence of physical reality from our thought and talk. In place of an a priori justification, Goldman recommends an “inductive” one that appeals to the survival advantage conferred on those creatures who reason in this way. Goldman (1988, 296ff.) argues that we can use IBE to justify our belief in the truth of evolutionary theory. On this basis we can construct evolutionary accounts of how the human capacity to use IBE was selected for and how it has contributed to the survival of the human species. Then we take the explanatory coherence of such theories to provide support for the truth-conduciveness of IBE. Thus, Goldman uses IBE to infer the truth of RWH, and then justifies IBE using theories premised on the truth of RWH.
Goldman (1988, 12) openly acknowledges the circularity of his defense:

The grand argument will be circular, as must be all justifications of ultimate justificatory or validating principles, but I hope not viciously so. (To seek moral or pragmatic justification for epistemic principles is to change the subject.)

Goldman (1988, 304) contends that circularity is inevitable because every principle must be justified by other principles or beliefs and yet “ultimately basic epistemic principles cannot be validated by appeal to more basic principles.” Although Goldman (1988, 198) suggests that his argument at least has the virtue of forming a large rather than a small circle, few have found large circles of justificatory reasoning to be any more palatable than small ones.22

Other abductivists provide merely pragmatic or instrumental defenses of IBE. James Cornman (1980), for example, offers a pragmatic vindication of IBE that is similar to Reichenbach’s pragmatic vindication of induction. Cornman (1980, 15) contends that IBE is “consistent with appreciably more pretheoretical, commonly and firmly accepted beliefs of mankind than any rival that is otherwise as reasonable as it is.” Cornman (1980, 10) argues that possession of the virtue of conservatism means that IBE provides a better way to achieve the “worthwhile and important” goal of “making effective, efficient, and… moral decisions to guide us through life” than any procedure that fails to be as conservative. Because of its usefulness in helping us achieve certain practical goals, Cornman maintains it is reasonable for us to use IBE.

Radical skepticism, however, presents a deep and serious challenge to our “pretheoretical, commonly and firmly accepted beliefs.” By assuming that any theory that preserves these entrenched beliefs will be more likely to be true than one that does not, Cornman begs the question against the skeptic. Furthermore, Cornman’s appeal to IBE’s ability to help us satisfy a “worthwhile and important” practical goal is something that fails to provide epistemic support for this form of inference. If Cornman had appealed to the goal of obtaining true beliefs and avoiding false ones, his instrumental reasoning might have been acceptable. But the practical goal Cornman appeals to is not distinctly truth-linked in any way. So, when Cornman claims to have shown it is “reasonable” to adopt the abductivist’s inferential strategies, he cannot mean “epistemically reasonable.”

22 Harman (1986, 33), of course, being a notable exception to the widespread aversion to circles of any size.
Faced with the difficulty of defending the epistemic merits of IBE and the explanatory criteria, some abductivists have simply denied there is any good reason to believe IBE-based beliefs are epistemically justified. Russell (1927, 132–133), for example, writes:

But there is no very good ground for supposing that a simple law is more likely to be true than a complicated law, though there is good ground for assuming a simple law in scientific practice, as a working hypothesis, if it explains the facts as well as another which is less simple. Belief in the existence of things outside my own biography [i.e., outside my private world of sense-data] exists antecedently to evidence, and can only be destroyed, if at all, by a long course of philosophical doubt. For purposes of science, it is justified practically by the simplification which it introduces into the laws of physics. But from the standpoint of theoretical logic it must be regarded as a prejudice, not as a well-grounded theory. With this proviso, I propose to continue yielding to the prejudice.

Russell makes two major concessions in this passage. One is that there is no good epistemic reason to suppose there is an essential connection between the theoretical virtue of simplicity and truth. The other is that there is no good epistemic reason to believe RWH is true. No abductivist response that includes both of these concessions can plausibly be construed as an answer to the central epistemological challenge presented by radical skepticism. Indeed, it appears to be a statement of skepticism itself.

Like Russell, Lycan (1988) defends an abductivist response to skepticism that denies that the abductivist’s use of or belief in the correctness of the explanatory criteria is epistemically justified. Lycan (1988, 166) writes, “Conservatism as a canon of theory-preference has no justification in the epistemological sense, but neither have simplicity, testability, fruitfulness, and the other explanatory virtues.” Lycan (2002, 424) not only claims that these virtues are actually lacking in justification but that “there is nothing that could justify them.” He contends:

On pain of circularity or regress, we know that some epistemic methods or procedures (whether explanatory methods or others) are going to be fundamental; so if a theorist is claiming to have discovered some such fundamental epistemic method, it is a fortiori inappropriate to respond by demanding a justification of it, in the sense of a deduction of it from some more fundamental principle—indeed, it is contradictory. (Lycan 1988, 135)

Lycan maintains there are only three options concerning the justification of fundamental epistemic methods: circular reasoning, an infinite
regress of justification, and an unjustified stopping point. Since the first two are clearly unacceptable, he opts for the third.

However, it is rather well-known that there are four rather than three basic responses to the problem of epistemic regress. The fourth option appeals to a justified regress stopper—a foundational belief or principle that does not receive its justification from any other belief or principle but which is nonetheless justified. As I will argue below, the most plausible candidate for a fourth option in the present case is an a priori justified basic belief in the correctness and truth-conduciveness of one’s explanatory criteria. Like many other abductivists, however, Lycan (1988, 120ff.) rejects any appeal to a priori epistemic or inferential principles.

Lycan’s abductivist response to skepticism breaks down when he denies that the explanatory virtues have any epistemic justification. The abductivist cannot maintain that RWH is epistemically justified because it satisfies criteria we are not epistemically justified in using or believing to be correct. The seriousness of the problem is highlighted when Lycan (1988, 156) admits he “may be wrong in thinking that [his] favorite explanatory virtues constitute that [absolutely fundamental] set of methods.” If abductivists want to show the skeptic that our beliefs about the external world are justified because they satisfy certain criteria abductivists believe to be correct but could easily be mistaken about, it is not “contradictory”—as Lycan alleges—to ask why they think the criteria to which they appeal are correct. Indeed, it is eminently reasonable. 23

23 It has been suggested to me that abductivists could follow Field (2000) in maintaining that basic epistemic rules are ‘default reasonable,’ where this means that we do not (and indeed could not) possess a justification for following these rules but where it is nevertheless reasonable for us to rely upon them. However, if (as Field maintains) default reasonableness is not a species of epistemic justification, it is not clear how it is supposed to help the abductivist respond to the skeptical challenge to the epistemic justification of our external world beliefs. If someone challenges the epistemic justification a theist has for believing in God, this challenge cannot be met by arguing that the theist has various nonepistemic reasons for trusting the authority of the Scriptures and then contending that the Scriptures can be used to defend the epistemic justification of belief in God. Similarly, no nonepistemic defense of IBE can help the abductivist defend the epistemic justification of any of our beliefs. Furthermore, Field’s (2000, 120–121) central argument for the default reasonableness of epistemic rules explicitly involves the setting aside of skeptical worries:

So if justifications are assumed to be non-circular, and if we exclude the totally sceptical possibility that no methodology for forming and revising beliefs is reasonable, then some methodologies must be reasonable without justification: they must be ‘default reasonable.’

One cannot fashion a successful response to skepticism if one builds in a dismissal of the skeptical challenge at crucial junctures.
V.

Abductivists, then, must be justified in relying upon IBE and the associated explanatory criteria, and whatever justification they possess must satisfy at least the following constraints:

(5.1) The justification must be epistemic.

(5.2) The justification cannot be circular.

(5.3) The justification cannot be transmitted from any justified belief about the external world, since the justification of this entire class of beliefs is called into question by the skeptic.

(5.4) The justification must be capable of underwriting inferences from beliefs about our sensory experiences to beliefs about the external world.

Some abductivists believe that only an a priori form of justification can satisfy these criteria. In a discussion of Locke, Bennett (1971, 69) argues that the “essential error in Locke’s theory of reality” is “his setting the entire range of facts about sensory states over against the entire range of facts about the objective realm and then looking for empirical links between them.” Looking for empirical links, Bennett maintains, will always result in begging the question against the skeptic. If the abductivist needs a link between experience and reality and the link cannot be empirical, it seems the link (if there is one) must be a priori.\textsuperscript{24}

\textsuperscript{24} In spite of the fact that pursuing a rationalist line seems to allow abductivists a fairly obviously way to avoid begging the question against the skeptic, many abductivists have been reluctant to claim their beliefs about the virtues of various explanatory hypotheses are justified a priori. J. L. Mackie (1976, 62), for instance, recognizes that what is needed to bridge the “logical gap between ideas and reality, or between how we see things and how they are” is an explanatory hypothesis such as RWH, and he takes for granted that any such explanation will invoke nomologically necessary laws about what causes what. He also recognizes that any attempt to provide an empirical justification for belief in these causal laws will beg the question against the skeptic. However, Mackie (1976, 62) denies that causal laws can be justified a priori.

Causal laws are not merely not analytic, logical truths, they are not known or knowable a priori in any other way either. There is no method by which, from the mere inspection of an effect on its own, we can say from what sort of cause it must have arisen. So to justify an inference from an effect to a cause, we need a synthetic, a posteriori, causal law.

Thus, Mackie’s background beliefs create a dilemma for him concerning the justification of these laws: if they cannot be justified a priori, how can they be justified a posteriori without begging the question against the skeptic?
Accordingly, Russell (1948) maintained that certain ‘postulates of scientific inference’ must be knowable \textit{a priori} in order for us to have any knowledge of the external world.\textsuperscript{25} Without synthetic \textit{a priori} knowledge of such contingent truths, Russell (1948, 524) famously quipped, “science is moonshine.”\textsuperscript{26} Unfortunately, however, the principles Russell suggested have never struck many philosophers as (i) plausible, (ii) something we could know \textit{a priori} even if they were true, or (iii) able to provide sufficient support for inferences to the external world. The contemporary abductivist who is most explicit about the \textit{a priori} nature of his reasoning is BonJour (1985; 1998; 1999; 2003). According to BonJour, abductivists can be \textit{a priori} justified in believing each of the following propositions:

(6.1) \textit{RWH} is the best explanation of our sensory experience.

(6.2) \textit{RWH} satisfies the explanatory criteria better than its skeptical rivals.

(6.3) Explanatory criteria such as simplicity and intrinsic plausibility are correct.

(6.4) The explanatory criteria are truth-linked.

(6.5) Other things being equal, it is justifiable to infer that an explanation is true, on the basis of the fact that it is the best explanation of the relevant phenomena.

BonJour believes that if one is \textit{a priori} justified in believing (6.1) through (6.5), one can be justified in believing \textit{RWH}. Call BonJour’s view ‘rationalist abductivism.’

\textsuperscript{25} Russell’s principles include the following: (i) there is often great similarity between temporally proximate events; (ii) because causal relations are governed by causal laws, observations of some elements in a causal chain provide evidence for conclusions about other elements; (iii) there is no action at a distance; (iv) when a number of structurally similar complex events are ranged about a center in regions not widely separated, it is usually the case that all belong to causal chains having their origins in an event of the same structure at the center; and (v) if one type of event is known to cause an event of another type, then the presence of either the former or the latter type of event can be inferred from the presence of the other.

\textsuperscript{26} Slote (1970, 67, 100) bases his abductivist response to skepticism on the following principles of rationality, which he claims to be knowable \textit{a priori}:

\textit{Principle of Unlimited Inquiry}: It is scientifically unreasonable to accept what one sees or has reason to believe is an inquiry-limiting explanation of a certain phenomenon, other things being equal.

\textit{Principle of Illusion and Evidence}: If one is rationally justified in believing a specific causal claim, one must have evidential support for this claim that one is rationally justified in trusting; hence, one must not be rationally justified in believing that all of one’s sensory and memory experiences are illusory.
Abductivists who wish to go the \textit{a priori} route must face the challenge that practically everyone who works on abductive inference believes that such inferences are justified empirically and that the theoretical virtues are broadly empirical and contingent marks of truth.\textsuperscript{27} Rationalist abductivists must also formulate and defend—in the face of strong opposition—a conception of probability according to which statements of probability are necessary and can be known \textit{a priori}. Finally, they must also find a way to handle formidable challenges to IBE that have been raised in recent years. The latter two challenges will be addressed in the following two sections.

VI.

A powerful set of objections to IBE has recently been lodged by Arthur Fine (1984) and Bas van Fraassen (1980; 1989).\textsuperscript{28} Fine (1984, 85) criti-

\begin{itemize}
\item For a sampling of the relevant literature, cf. Boyd (1984; 2002), Lycan (1988), Sober (1988), and Psillos (1999; 2000). Sober (1988, 64), e.g., writes, “Appeal to simplicity is a surrogate for stating an empirical background theory.” If substantive empirical theories are smuggled into philosophical debate under the guise of appeals to simplicity, abductivists will beg the question against the skeptic because these background theories will inevitably be based upon putative knowledge of the external world. Boyd (2002, §3.4) argues against the possibility of \textit{a priori} defenses of the epistemic relevance of explanatory considerations by maintaining that our intuitions about the explanatory merits of various theories are shaped by our training and experience. If our intuitions are grounded in experience, they will not be \textit{a priori}; and if our training assumes the truth of RWH—as it almost certainly will—the intuitions that result will tacitly beg the question against the skeptic.
\item Two commonly cited passages from van Fraassen’s work that are critical of IBE include the following:

There are specifically human concerns, a function of our interests and pleasures, which make some theories more valuable and appealing to us than others. Values of this sort, however, provide reasons for using a theory, or contemplating it, whether or not we think it true, and cannot rationally guide our epistemic attitudes and decisions. For example, if it matters more to us to have one sort of question answered rather than another, that is no reason to think that a theory which answers more of the first sort of question is more likely to be true. (Van Fraassen, 1980, 87)

Briefly, then, the answer is that the other virtues claimed for a theory are pragmatic virtues. In so far as they go beyond consistency, empirical adequacy, and empirical strength, they do not concern the relation between the theory and the world, but rather the use and usefulness of the theory; they provide reasons to prefer the theory independently of questions of truth. (Van Fraassen, 1980, 88)

However, what these passages offer is more of a challenge to the proponent of IBE than any argument that IBE is defective. For this reason, I will concentrate on the more challenging arguments against IBE that appear in van Fraassen’s later work. For reasons of space and technicality, however, I will not examine van Fraassen’s (1989, ch. 7) diachronic Dutch Book argument against IBE. Cf. Douven (1999) and Lipton (2004, ch. 7) for detailed discussion of this argument.
\end{itemize}
cizes scientific realists who use IBE in defense of their view because, he claims, they violate the following principle:

(7.1) Metatheoretic arguments must satisfy more stringent requirements than those placed on the arguments used by the theory in question.

While I doubt both the cogency and the clarity of this general principle, there does seem to be a weaker dialectical principle that abductivists may violate, viz.:

(7.2) In the context of a debate about the epistemic credentials of a particular belief source one should not appeal to a belief source whose credentials are far more widely in dispute than the source one seeks to defend.

Abductivists defend the epistemic credentials of perceptual knowledge by appealing to IBE. Yet the credentials of perception as a source of belief about the external world seem to be far less questionable than those of IBE. Abductive reasoning is neither well understood nor well regarded. And while hard-nosed skeptics do not try to avoid relying upon perception in their daily lives, committed critics of IBE do try to avoid basing beliefs upon abductive inference. Although this objection is far from being decisive, there is something unsatisfying about defending RWH—which no one really doubts—by using IBE—which many strongly doubt.

One of van Fraassen’s (1989, 143) best known arguments against IBE is the Argument from the Bad Lot:

We can watch no contest of the theories we have so painfully struggled to formulate, with those no one has proposed. So our selection may well be the best of a bad lot. 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 hypotheses. 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.

Since there seems to be no good reason to believe “we are by nature predisposed to hit on the right range of hypotheses,” van Fraassen

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29 Cf. van Fraassen (1989, ch. 7) for an account of how to update one’s beliefs without using IBE.
(1989, 143) concludes we are not justified in believing the required extra premise.

Stathis Psillos (1996, 38) replies to the Argument from the Bad Lot by arguing that theory choice does not occur in a ‘knowledge-vacuum.’ Psillos contends that scientists only bother to formulate explanatory theories they have good reason to think are true, and they rely upon background knowledge to narrow the range of hypotheses considered as potential explanations of the data. However plausible this line of thinking may be in its original context (viz., the debate about scientific realism), it cannot be used in the present debate between abductivists and skeptics. Whether we have any knowledge of the external world is precisely what is at issue with the skeptic. So, one cannot appeal to one’s alleged background knowledge of the external world in order to support either RWH or IBE. Because any empirical consideration will beg the question, it seems that only a priori considerations have any hope of saving the abductivist. If, as rationalist abductivists contend, a priori insight enables us to see not only that a given hypothesis is the best of a given lot but also that it is a priori more likely to be true than not, this can provide reason to believe an hypothesis is not a member of an entirely bad lot.

Another of van Fraassen’s (1989, 146) arguments against IBE is the Argument from Indifference:

I believe, and so do you, that there are many theories, perhaps never yet formulated but in accordance with all evidence so far, which explain at least as well as the best we have now. Since these theories can disagree in so many ways about statements that go beyond our evidence to date, it is clear that most of them by far must be false. I know nothing about our best explanation, relevant to its truth-value, except that it belongs to this class. So I must treat it as a random member of this class, most of which is false. Hence it must seem very improbable to me that it is true.

It is common for proponents of IBE to object that we do know more about our best available explanations than that they belong to classes of mostly false explanations. Such objections, however, cannot appeal to empirical background knowledge without begging the question against the skeptic. If an hypothesis’ a priori probability can be discerned by rational insight, then perhaps it will be possible to offer a

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30 Abductivism cannot plausibly be defended by insisting that we must choose among the hypotheses that are available. As van Fraassen (1989, 144-145) notes, “Circumstances may force us to action on the best alternative open to us. They cannot force us to believe that it is, ipso facto, a good alternative.” Forced choice reveals little about the epistemic merits of available choices.
non-question-begging defense of the claim that theory choices do not occur in a state of epistemic indifference.

VII.

It is time to take a closer look at the ways in which rationalist abductivists rely upon \textit{a priori} probabilities in defense of their view. Although abductivists believe RWH is more likely to be true than each of its skeptical competitors, they acknowledge that the following claims are true:

(8.1) It is both metaphysically and epistemically possible that RWH is false.

(8.2) It is both metaphysically and epistemically possible that we inhabit a world where simpler (deeper, broader, less \textit{ad hoc}, etc.) explanations are true less often than more complex (shallower, narrower, more \textit{ad hoc}, etc.) explanations.

If we inhabit the sort of world mentioned in (8.2), the truth frequency of “best” explanations will be lower than the truth frequency of “worse” explanations. Abductivists, however, want to insist that—even if we inhabited a world where IBE is highly unreliable—RWH would still be more probable than its skeptical competitors and we would still be justified in believing it was true. It seems, therefore, that abductivists require a conception of probability on which probabilities remain the same across possible worlds.

Goldman (1988) and BonJour (1985; 1998; 2003) have each proposed conceptions of probability, according to which probabilities are measures of limiting frequencies across sets of possible worlds. Let ‘modal frequentism’ denote any such view. Goldman (1988, 26), for example, writes:

[T]he probability of a proposition’s being true is measured by the number of close or accessible possible worlds in which it is true (or by the ratio of those in which it is true to those in which it is false).

BonJour’s (1998, 208–209) most explicit endorsement of modal frequentism is found in his abductivist solution to the problem of induction\textsuperscript{31}:

Thus the relevant claim would be that it is true in all possible worlds that there is likely to be a non-chance explanation for the truth of a

\textsuperscript{31} Cf. Beebe (2008) for critical discussion of BonJour’s abductivist solution to the problem of induction.
Thus, according to BonJour’s version of modal frequentism, the following claims are necessarily true, if true at all:

(9.1) The probability of RWH on $O$ (a description of our sensory experiences) is high.

(9.2) The probability of $SK_i$ (a radical skeptical hypothesis about our sensory experience) on $O$ is low.

$P(\text{RWH}|O)$ is a measure of the frequency of RWH-worlds (i.e., worlds where RWH is true), within the class of $O$-worlds (i.e., worlds where $O$ is true). The value of this limiting frequency will remain the same, regardless of whether we inhabit an RWH-world, a not-RWH-world, a world where IBE is highly reliable, or a world where IBE is highly unreliable. It is the stability of these modal frequencies across possible worlds that makes them candidates for being knowable a priori.

According to Goldman’s version of modal frequentism, the only $O$-worlds relevant to the truth value of (9.1) and (9.2) are nearby or accessible $O$-worlds. However, in order to know which $O$-worlds are relevant, we must already know what sort of world we inhabit. If IBE is highly unreliable in the actual world, it may be that very few nearby $O$-worlds are RWH-worlds. If, by contrast, IBE is highly reliable, it may be true that most nearby $O$-worlds are RWH-worlds. In the present context, one cannot claim to have empirical knowledge of contingent facts about IBE’s reliability without begging the question. And since Goldman does not think the reliability of IBE can be discerned a priori, he is faced with a dilemma. His modal frequentist interpretation of (9.1) and (9.2) requires him to know what sort of world he inhabits prior to being able to tell whether (9.1) and (9.2) are true. Yet if he must already know whether IBE is reliable, he cannot very well claim that it is our ability to apprehend the truth of (9.1) and (9.2) that gives us insight into the sort
of world we most likely inhabit. Thus, Goldman’s restriction of the relevant $O$-worlds to nearby or accessible worlds presents a serious obstacle to the attempt to provide an *a priori* defense of RWH.

Because BonJour’s version of modal frequentism does not restrict relevant worlds to nearby or accessible ones, the problems facing Goldman’s version do not afflict his own. However, in a footnote to his remarks about the relative rarity of counter-inductive worlds, BonJour (1998, 209, n. 24) writes:

This way of putting the matter assumes in effect that it is possible to make sense of the relative size of classes of possible worlds, even though both those classes and the total set of possible worlds are presumably infinite. But I have no space to go into the issues surrounding this assumption and must be content here with saying that its intuitive credentials in other cases (e.g., the claim that there are twice as many positive integers as even integers) seem to me strong enough to make it reasonable to construe the difficulties as problems to be solved and not as insuperable objections.

These comments highlight the most serious challenge facing BonJour’s approach to modal frequentism. Limiting frequencies within infinite classes can only be defined relative to sequences (i.e., ordered sets) of worlds. When the reference and attribute classes are finite, the order (or lack thereof) is irrelevant because relative frequencies within finite sets can be determined by simple ratios of the cardinalities of the sets. When dealing with infinite sets, however, order becomes crucial. For example, although it is plausible to think that the relative frequency of the positive even integers within the set of all positive integers is $\frac{1}{2}$, it is only when the positive integers are taken in a particular order that this is the case. If, for example, the integers are ordered so that even numbers appear in every fourth place (i.e., 1, 3, 5, 2, 7, 9, 11, 4, 13, 15, 17, 6, ...), their relative frequency converges to $\frac{1}{4}$ rather than $\frac{1}{2}$. In fact, by suitably reordering the integers, we can make the limiting frequency of evens converge to any value between 0 and 1. The “intuitive credentials” of thinking the frequency of evens is $\frac{1}{2}$ seems to stem from the fact that there is a conventional or privileged ordering of integers, relative to which this is true.

The critical question for BonJour is which sequences of worlds are the basis for his claims about the limiting frequencies of RWH-worlds within various infinite classes of worlds. The crucial difficulty is that there is no privileged or natural ordering of worlds to which he can appeal. Yet if his claims about limiting frequencies are not relativized to any particular sequence(s) of worlds, the frequencies in question will be undefined and hence his claims about them cannot be true. BonJour
does not take any steps toward resolving this difficulty, but without a workable interpretation of probability, rationalist abductivists cannot provide any explanation of how (9.1) and (9.2) can be apprehended a priori.32

Richard Fumerton (1995, ch. 7) has argued that epistemic internalists who want to construct a successful response to skepticism must take on board a Keynesian conception of probability. According to Fumerton (1995, 198), the probabilistic connections that obtain between the propositions that constitute our evidence and the propositions inferred from that evidence should be understood as holding necessarily because of the nonrelational properties of the propositions in question.33 Like BonJour, Fumerton claims that the relevant probability relations can be known a priori, but unlike BonJour he denies these relations can be reduced to or supervene upon more fundamental facts about frequencies. Throughout most of the last century, however, the Keynesian interpretation of probability has been viewed with almost overwhelming suspicion. Many probability theorists have expressed sympathy with F. P. Ramsey’s (1926, 161) well-known remarks on the matter:

But let us now return to a more fundamental criticism of Mr. Keynes’ views, which is the obvious one that there really do not seem to be any such things as the probability relations he describes. He supposes that, at any rate in certain cases, they can be perceived; but speaking for myself I feel confident that this is not true. I do not perceive them, and if I am to be persuaded that they exist it must be by argument; moreover I shrewdly suspect that others do not perceive them either, because they are able to come to so very little agreement as to which of them relates any two given propositions.

Although Fumerton (1995, 218) maintains that the Keynesian notion of probability offers the epistemic internalist’s last hope for avoiding skepticism, he ultimately concludes:

I cannot quite bring myself to believe that I am phenomenologically acquainted with this internal relation of making probable bridging the problematic gaps.... And in the end, I strongly suspect that the proba-

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33 According to modal frequentism, probabilistic relations between propositions are based upon relations those propositions have to various worlds and the relations that obtain between sets of those worlds. Thus, the relations that obtain between these propositions will not be ‘internal’—i.e., they will hold necessarily because of the nonrelational properties of the propositions of the relata.
bility relation that philosophers do seek in order to avoid skepticism concerning inferentially justified beliefs is an illusion.

In spite of Fumerton’s pessimism and because of the serious problems that afflict modal frequentism, it seems that the rationalist abductivist’s best bet is to follow Fumerton’s initial advice and try to make some version of the Keynesian theory more palatable. If rationalist abductivists can succeed in explaining how we can have a priori justified beliefs in necessary truths about probabilistic relations between propositions, they might stand a chance of offering a successful reply to radical skepticism. Developing and defending such an interpretation of probability, however, will be no small task.

VIII.

We have seen that many abductivists have been their own worst enemies. Some have offered question-begging, circular, or nonepistemic defenses of RWH or IBE, while others have simply denied that IBE-based beliefs are justified. Our most important finding was that abductivists who reject any appeal to the a priori seem unable to avoid these pitfalls. They also appear powerless to respond to van Fraassen’s challenges to IBE. The most defensible version of abductivism was found to be BonJour’s rationalist variety, and the biggest challenge facing his view concerned the interpretation of a priori probability.34 An increasing number of epistemologists argue that no version of epistemic internalism can provide a convincing reply to skepticism. But if abductivists can formulate and defend a viable conception of a priori probability, they might be able to counter this charge. However, because it is not clear whether or not this challenge can be met, the verdict on the abductivist reply to skepticism must remain out.35

References


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34 Cf. Beebe (2007) for further discussion of BonJour’s particular version of rationalist abductivism.

35 I would like to thank audience members at the 2006 meeting of The Society for Skeptical Studies and the Department of Philosophy at the University at Buffalo for helpful comments and feedback on previous versions of this essay.


