Kevin McCain and Ted Poston (eds.), *Best Explanations: New Essays on Inference to the Best Explanation.* Oxford: Oxford University Press, 2018, Pp. 302. ISBN 978-0-19-874690-4.

1.   Introduction

This much-anticipated volume, edited by Kevin McCain and Ted Poston, comprises sixteen new essays by epistemologists and philosophers of science about the nature, epistemic status, and potential applications of "inference to the best explanation" (IBE). Also discussed under the heading of "abduction" or "explanatory reasoning", IBE is a form of non-demonstrative inference according to which a hypothesis H can be rationally justified by showing how well H would, if true, explain some set of facts; that H would explain these facts better than its competitors is taken to justify belief that H is true. Typically, H's "explanatory goodness" is said to depend on how well H does with respect to certain explanatory virtues, e.g. *simplicity*, *unification*, *coherence*, etc.

A wide variety of audiences will find this volume to be of interest. According to Douven (2011), our use of IBE in everyday life is extremely common, being "so routine and automatic that it easily goes unnoticed", and so the traditional epistemologist, it seems, should care about IBE. In addition, it is often maintained that prominent historical cases of exemplary scientific reasoning should be regarded as instances of IBE (e.g. Thagard 1978; Lipton 2004), and so the philosopher of science, it seems, should also care about IBE. Finally, it's becoming increasingly common in meta-philosophical discussions to defend IBE as an indispensable tool for philosophical theorizing (e.g. Williamson 2016; Biggs and Wilson 2017), and so perhaps every philosopher should care about IBE! But for those especially motivated to refute one of the various forms of skepticism on offer, e.g. external world skepticism, the problem of other minds, etc., this volume will be of particular interest, as one might also appeal to IBE to meet such skeptical challenges.

The collection is divided up into five parts—"Part I. Inference to the Best Explanation"; "Part II. The Fundamentality of Inference to the Best Explanation"; "Part III. Justifying Inference to the Best Explanation"; "Part IV. Inference to the Best Explanation and Skepticism"; and "Part V. Applications of Inference to the Best Explanation." Despite the division of the essays into distinct sections, it is worth noting that the boundaries are rather fluid. Some essays found in one section are directly relevant to essays found in another, e.g. those attempts to justify

IBE in Part II are clearly relevant to whether IBE succeeds as a response to the external world skeptic. In light of the venue of this critical notice and the fact that many of the essays consider multiple questions about the nature of IBE, I will focus primarily on the essays that comprise Part IV, bringing into discussion other chapters whenever those are relevant.

2. The IBE Response to Skepticism and Skepticism about IBE

2a. James Beebe's "Does Skepticism Presuppose Explanationism?"

In his contribution, James Beebe is primarily concerned with critiquing the way in which skeptical challenges are typically formulated. The traditional way of raising skeptical challenges consists in what Beebe calls the "quasi-logical approach" (175), arguably the most important commitment of which is the following: if some skeptical hypothesis SK undermines some subject S's knowledge-claim that p, then SK and p must be logically incompatible. While this condition holds of many skeptical challenges, as Beebe convincingly argues, dreaming skeptical hypotheses do not fit this mold. It is logically possible to be standing up and also to be dreaming that one is standing up. Since dreaming skeptical hypotheses count as skeptical challenges, the quasi-logical approach is mistaken. Instead, Beebe defends an alternative "explanationist approach" to skeptical challenges, according to which a skeptical hypothesis SK must: i) explain S's evidence for p, ii) explain how S can believe that p on the basis of the evidence without knowing that p, and iii) provide an explanation that competes with available commonsense explanations of "S's belief on which S knows that p" (183). Accordingly, in order for S to know that p, S must be able to rule out any SK known by S to satisfy conditions (i-iii).

After laying out the explanationist approach to skeptical challenges, Beebe goes on to argue in technical detail for its merits. To do so, he attempts to show that the explanationist approach can explain the skeptical force of dreaming hypotheses without entailing the implausibly demanding KK principle (i.e. the claim that if S knows that p, then S knows that S knows that p)—something which the quasi-logical approach fails to do. In the end, Beebe concludes with a general defense of the viability of the explanationist response to skepticism. Given the failure of the quasi-logical approach, it seems that one must appeal to some form of explanationism in order to make sense of the normative force of skeptical challenges in a complete and unified way. For this reason, "skepticism presupposes explanationism", and so on

Beebe's view, a *wholesale* suspicion of the IBE response to skepticism is impossible for those who wish to take the problem of skepticism seriously.

2b. *Ruth Weintraub's "Skepticism about Inference to the Best Explanation"*

Of course, even if Beebe is right, one might still want to consider directly the question of whether IBE is indeed a justified mode of inference. In the next contribution to Part IV, Ruth Weintraub addresses this question. But before engaging with the skeptic of IBE, Weintraub first defends the position that IBE has an ineliminable place in our cognitive lives. Against the view long defended by Richard Fumerton—and once more in his contribution in Part II ("Reasoning to the Best Explanation")—Weintraub argues that IBE cannot be reduced to a form of simple induction. This is primarily because IBE is often employed to defend the existence of unobservable entities, especially novel ones. A simple inductive argument (e.g. one of the form "The majority of observed Fs are Gs; therefore, all Fs are Gs") can never have as its conclusion that some unobservable entity (e.g. quarks, electrons, blackholes, or even beliefs or desires) exists. Thus, induction can't play the epistemological role that IBE appears to play. As further ammunition for Weintraub's anti-eliminativism about IBE, one might also appeal to the final essay of the volume by Elizabeth Fricker ("Inference to the Best Explanation and the Receipt of Testimony: Testimonial Reductionism Vindicated"), which defends at length the view that simple induction cannot make sense of human language acquisition or testimonial justification—both of which are best explicated by appeal to explanatory reasoning. However, for a novel and sophisticated defense of the reductionist position, one should turn to the contribution by Khalifa, Millson, & Risjord, ("Inference to the Best Explanation: Fundamentalism's Failures").

After having argued for the indispensability of IBE in our inferential practices, Weintraub then evaluates five skeptical arguments against IBE, the first two of which consist of traditional arguments against induction slightly reworked so as to apply to IBE. The first argument takes its inspiration from Berkeley's critique of materialism, and attempts to undermine the rationality of IBE by pointing out that there is no necessary connection between the premises of an IBE argument and the conclusion. The second argument consists of a variant of the epistemic regress problem: if an inference rule must be justifiably believed to be reliable on the basis of another inference rule in order to be justifiably deployed, then one is ultimately left with a justificatory

chain that is a) infinite, b) circular, or c) terminal, all of which are illegitimate, thus undermining the rationality of IBE.

Clearly, the first of these two arguments should be less worrisome to explanationists than the second. The first argument flatly denies the very possibility of non-demonstrative reasoning, but as Weintraub points out, the obvious response to this argument is simply to adopt fallibilism about justification. Along with every other non-deductive inference rule, IBE does not deductively guarantee its conclusion, but that seems hardly a good reason to reject IBE. The skeptic needs to provide some independent grounds for rejecting the very idea of non-deductive reasoning; otherwise, the first argument simply begs the question against the explanationist.

As regards to the second argument, although Weintraub does not seek to rebut it, she does point out some classic strategies that might be employed by the explanationist. For example, one might reject the epistemological internalism presupposed by the argument, requiring only that an inference method, in actual fact, reliably lead to true beliefs sufficiently often. Indeed, in his defense of IBE, Psillos (1999) adopts precisely this externalist reliabilist strategy. Alternatively, one might retain epistemological internalism and instead argue that at least one of the three possible structures of justificatory chains is legitimate. Of the three options, Weintraub devotes the most space to the possibility that a set of inference rules might form a circular chain of justification, having little sympathy for the infinitist strategy or the idea that IBE might be the terminating link in a justificatory chain (although see Hasan's contribution in Part III, "In Defense of Rationalism about Abductive Inference", for a defense of the view that IBE is justified on *a priori* grounds).

With regard to the circularity strategy, one might think that perhaps IBE is justified by appealing to IBE itself: maybe the best explanation of the success of IBE is that IBE is a justified inference rule. Or alternatively, perhaps IBE can be justified by appeal to induction, and then induction is justified on the basis of its own past success. Weintraub goes on to raise two standing challenges to the circularity strategy. The first challenge is that rule circular arguments are "insufficiently discriminating" (197)—one can very well construct a rule-circular argument for "counter-induction" (i.e. "All observed As are Bs; therefore, the next A will *not* be a B"), by pointing out that many instances of counter-induction have *not* been successful. The second challenge is that we cannot justify IBE by way of induction because we cannot check to see if IBE has been successful, as IBE is used to infer the existence of unobservable entities.

Of particular relevance to the success of the circularity strategy considered by Weintraub is the contribution by Carter & Prichard (C&P) in Part II ("Inference to the Best Explanation and Epistemic Circularity"). There C&P helpfully distinguish between "narrow rule-circularity", whereby one uses an inference rule to justify that very inference rule, and "wide rule-circularity", whereby one uses an inference rule X to justify another inference rule Y, where both X and Y are part of the same "epistemic framework". According to C&P, whereas arguments that manifest narrow rule-circularity always have a "defective justificatory structure", arguments that manifest wide rule-circularity need not necessarily be defective in this way, although some wide rule-circular arguments are nevertheless "dialectically ineffective" (144). An argument for the legitimacy of IBE that employs explanatory reasoning is an instance of narrow rule-circularity, and thus intrinsically defective, but an argument for IBE that employs induction is not obviously intrinsically defective. As it happens though, C&P agree with Weintraub that there are serious challenges for the project to justifying IBE by way of induction, but for distinct reasons. As C&P suggest, such an argument, though wide rule-circular, will nevertheless prove dialectically ineffective, primarily because explanatory considerations, in their view, "play at least an implicit role in inductive inferences" (147)—a view shared by McCain and Poston in their chapter ("The Evidential Impact of Explanatory Considerations").

The next three arguments that Weintraub considers are familiar arguments against IBE. The third argument is van Fraassen's (1989) famous "Bad Lot" objection, according to which we are not licensed to believe that the best available explanation of the phenomena is true because we have no reason to think that the true theory is included in the list of explanations under consideration. The fourth argument, another which is due to van Fraassen (1989), is a variant of the Bad Lot objection, and states that IBE is unreliable because, given how large the space of possible explanations is, it is *a priori* highly probable that there are unconsidered explanations that are equally good or better than the currently favored explanation. Finally, the fifth argument against IBE—the "argument from unconceived alternatives" due to Stanford (2006)—claims that based on the historical record, we have good inductive reason to believe that there are always rival theories, unconceived by present scientists, which explain our available evidence equally well as the best available explanation. All three arguments, if sound, would undercut the rationality of employing IBE.

Of these last three arguments Weintraub devotes the most space to the Bad Lot objection, reviewing some traditional responses, and suggesting again that an appeal to epistemological externalism might serve as another possible response. As regards the fourth and fifth argument, Weintraub's treatment is rather brief. However, she makes the important point that, unlike the first two arguments, these last three arguments targeting only IBE "have no inductive analogues" (201). For this reason, Weintraub concludes that if such arguments cannot be refuted, then IBE may be more susceptible to skeptical attack than enumerative induction.

2c. Susanna Rinard's "External World Skepticism and Inference to the Best Explanation"
The last contribution in Part IV by Susanna Rinard engages the most with the details of the IBE response to skepticism. Rinard considers three problems for explanationists, the last of which is what she takes to be the "central flaw in IBE responses to skepticism" (203). In Rinard's formulation of the skeptical challenge—which is an instance of Beebe's so-called "quasi-logical approach"—the skeptic relies on the key premise that our sensory experience of how the external world appears does not evidentially discriminate between "the real-world hypothesis" (RWH) and "the brain-in-a-vat hypothesis" (BVH). However, it is precisely the premise that RWH and BVH are equally supported by the evidence that the IBE response to skepticism denies. According to one popular version of this response—what Rinard calls "the Continuity View"— RWH is the better explanation of our sensory experience because RWH best explains the "continuity and regularities" of our sensory experience *over time*.

The first problem that Rinard raises is that the skeptic might deny we have justified beliefs about the past—e.g., perhaps we all have false memories of the past implanted in us—in which case the Continuity View begs the question against the skeptic. As a response on behalf of the explanationist, Rinard considers slight variations on the Continuity View, which seem to fare better. Helpfully, she distinguishes between the continuity of experience *over time* and continuity of experience *at a single time*. The skeptic might deny that we have justified beliefs about the continuity and regularity of our past experiences, but the skeptic cannot deny that our present experience, regarded as a single time-slice, exhibits remarkable continuities and regularities. In addition, the skeptic cannot deny that it at least *seems* as though we have had past experiences that are strikingly continuous with our present experience. Perhaps, Rinard suggests, RWH is the

best explanation of such synchronic continuities and the fact that it seems as though our experience exhibits diachronic continuities.

The second problem for the IBE response to skepticism that Rinard raises is that, even if it is granted that explanatoriness is truth-indicative, it is not clear that RWH is the best explanation of our sensory experience. Almost invariably, *simplicity* or *parsimony* is upheld as an explanatory virtue, and what's more it is not uncommon to regard the apparent simplicity of RWH, when compared to hypotheses like BVH, as a reason to prefer RWH. However, Rinard points out the intriguing possibility that an even simpler explanation is available, namely some alternative idealist explanation. Whereas RWH posits a new realm of physical objects to account for the regularities of experience, and therewith governing laws of nature to account for the regularities manifested by physical objects, the idealist takes the realm of experience as basic, and posits "laws of experience" to account for the continuities and regularities of the experiential realm. According to Rinard, the idealist alternative is "both quantitatively and qualitatively ontologically simpler" (208), positing both fewer things and fewer kinds of things. Moreover, the idealist alternative has the further advantage of being "nomologically simpler", doing away with the need for laws connecting the goings-on in the physical realm to the goings-on in the experiential realm. In this contest between commonsense realism and idealism, much in the end turns on what exactly simplicity consists in and which kinds of simplicity are epistemically relevant. If Lewis (1973: 87) is right and only *qualitative* parsimony matters, then the gap between RWH and the idealist alternative closes considerably. Even so, Rinard shows that the possibility of idealism poses a serious obstacle to a fully successful explanationist defense of commonsense realism.

The last and most important problem for the IBE response to skepticism challenges the assumption hitherto granted, that explanatory goodness tracks truth. Rinard's argument here relies heavily on a version of the principle of indifference (POI). According to Rinard's version of the POI: "If P is a finite natural partition over the space of epistemic possibilities (i.e. possibilities compatible with what you know with certainty), then you should assign an equal credence to each cell of P" (210). So, for instance, if all one knows is that a ball in an urn is either red, blue, or green, then, according to the POI, one's degree of belief in each possibility ought to be 1/3. After formulating and motivating her version of the POI by appeal to a number of examples, Rinard applies the principle to the question of external world skepticism. To be

sure, it is difficult to come up with a natural partition, one of whose members is RWH and the rest of which are of all the possible skeptical hypotheses. Still, the crucial point, argues Rinard, is that "there are more ways for the world to be such that my experiences are non-veridical than veridical", and that therefore, one ought to be "more confident that things are *not* the way they seem than that they are" (213).

As a result, even if RWH is the best explanation of our sensory experience, by being more explanatorily virtuous than its rivals, we "should not be more confident that it's true than false—and so, these explanatory virtues are not guides to truth" (214). It is worth noting then, that Rinard's main argument—which has affinities with the fourth argument considered by Weintraub—if sound, undermines the reliability of IBE in general. Ultimately, Rinard concludes that the skeptic is correct: our beliefs about the external world cannot be justified on the basis of our available evidence. In Rinard's view, the proper response to the skeptical challenge is to maintain that our beliefs about the external world are justified on pragmatic and moral grounds (although this conclusion might sound dismal to explanationists, see the contribution by Misak "Peirce and Ramsey: Truth Pragmatism, and Inference to the Best Explanation", for a thoroughly pragmatist account of IBE).

Despite Rinard's admirable defense of the much-maligned POI, it is my suspicion that even explanationists who accept the POI will have much to object to in Rinard's argument. For one thing, some might simply reject the POI, a possibility Rinard readily acknowledge (203). Typically, those who reject the POI do so because often there seems to be many equally good ways to divide up the space of possibilities, which threatens to deliver contradictory verdicts regarding the probability of a single proposition (Sober 2002). In an attempt to avoid such problems, Rinard insists that any partition of the space of possibilities must be "natural", and moreover, if there are multiple natural partitions available in a given case, then the POI should not be applied. However, recently some philosophers have argued that the best way to determine the appropriate, or "natural", partition of the space of possibilities is precisely by appealing to explanatory factors (Weisberg 2009; Huemer 2009). For example, Huemer argues that the POI must be applied to the partition that is at the "most explanatorily basic level" (2009: 355). Thus, it might be the case that the POI presupposes explanationism, in which case one cannot coherently appeal to the POI to undermine IBE.

Finally, if one thinks that explanatory virtues, such as *simplicity*, *unification*, *coherence,* etc. can be used to determine prior probabilities (e.g. Okasha 2000; Lipton 2004; Weisberg 2009; Poston 2014), then one will not, I think, grant Rinard's application of the POI here. It is crucial to bear in mind the caveat that the POI applies to a set of alternatives "whenever one lacks reason for favoring one [alternative] over the other" (Huemer 2009: 349). In applying the POI to the partition that contains RWH and all possible skeptical hypotheses, Rinard concludes that all hypotheses in the partition should receive the same prior probability, which has the result that Pr(~RWH)>Pr(RWH). However, this application of the POI is not something that I think explanationists will grant, since they will plausibly argue that there *is* reason to favor RWH over the skeptical alternatives, namely that RWH is simpler, more unified, more coherent, etc. Because RWH is more explanatorily virtuous than the skeptical alternatives, one should not simply apply the POI to the relevant partition. Rather, one ought to assign the RWH a much higher prior probability. Unless we show independently that the explanatory virtues are not truth-tracking, or that the proposal to have the explanatory virtues constrain prior probabilities is misguided, then it is not clear that the POI is a threat to explanationism or to the IBE response to skepticism.

3.   Concluding Remarks

To conclude, it is worth remarking upon an important theme of this volume that Rinard's essay clearly highlights, that is, the increasing encroachment of formal epistemology in discussions of IBE. Of the sixteen essays included in the collection, eight (those of Douven, Schupbach, Bird, McCain & Poston, Hasan, Roche, McGrew, and Henderson respectively) feature substantial discussion of the relationship between IBE and Bayesianism, e.g. whether the two frameworks are compatible, whether the one serves as the justification of the other, etc. This is, in my view, a welcome development. It is hard to disagree with Douven's contention in his contribution, ("Inference to the Best Explanation: What Is It? And Why Should We Care?"), that traditional formulations of IBE have "none of the precision—not even remotely" of Bayesianism, IBE's chief rival (9). It stands to reason then that IBE could greatly benefit by its being considered in the light of precise, formal frameworks such as Bayesian confirmation theory—and perhaps even the reverse is true as well. This volume is sure to inspire further work on the nature and

epistemic status of IBE, which will of course bear on the ultimate success of explanationist responses to skepticism.

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