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Reactionary responses to the Bad Lot Objection

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A B S T R A C T

As it is standardly conceived, Inference to the Best Explanation (IBE) is a form of ampliative inference in which one infers a hypothesis because it provides a better potential explanation of one's evidence than any other available, competing explanatory hypothesis. Bas van Fraassen famously objected to IBE thus formulated that we may have no reason to think that any of the available, competing explanatory hypotheses are true. While revisionary responses to the Bad Lot Objection concede that IBE needs to be reformulated in light of this problem, reactionary responses argue that the Bad Lot Objection is fallacious, incoherent, or misguided. This paper shows that the most influential reactionary responses to the Bad Lot Objection do nothing to undermine the original objection. This strongly suggests that proponents of IBE should focus their efforts on revisionary responses, i.e. on finding a more sophisticated characterization of IBE for which the Bad Lot Objection loses its bite.

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1. Introduction

As it is standardly conceived, *Inference to the Best Explanation* (IBE) is a form of ampliative inference in which one infers a hypothesis because it provides a better potential explanation of one's evidence than any other available, competing explanatory hypothesis. Bas van Fraassen (1989: pp. 142–143) famously objected to IBE thus formulated that we may have no reason to think that any of the available, competing explanatory hypotheses are true. The hypotheses one has so far generated (i.e. made available) may all be false, in which case the true explanation would be provided by a hypothesis outside of the set of available hypotheses. In that case, IBE would lead us to a false conclusion, no matter how good we are at finding the best explanatory hypothesis among the available competitors. This *Bad Lot Objection* is often considered to be one of the main threats to IBE as an cogent form of ampliative inference; as such, it has shaped much of the debate about IBE in the last few decades.[1]

Responses to the Bad Lot Objection fall into two broad categories. On the one hand, van Fraassen's objection has prompted some philosophers to find a more sophisticated characterization of IBE for which the objection does not arise. Such a *revisionary response* can be achieved in various ways — by adding some further conditions on the applicability of IBE (e.g. by adding the restriction that the best explanation must also meet some minimal requirements of explanatory goodness); by weakening the form of the conclusion (e.g. by replacing truth *simpliciter* with approximate truth, probable truth, or probable approximate truth); or indeed by re-conceiving of IBE as playing merely an auxiliary role in some other epistemological framework (e.g. probabilistic or 'Bayesian' epistemology).[2] On the other hand, some philosophers have responded to the Bad Lot Objection by attacking van Fraassen's argument directly — arguing that van Fraassen has not identified a reason to revise or reformulate our original definition of IBE. These *reactionary responses* are the topic of this paper.

I will discuss what I consider to be the three most prominent responses of this kind — two responses due to the most influential proponent of IBE, Peter Lipton (1993; 2004: pp. 151–163), and a more recent response from a leading member of a new generation

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[1] The objection is also known as the *Argument from Underconsideration* (see, e.g., Lipton, 1993, 2004; Wray, 2008; Khalifa, 2010). A related issue is the *Problem of Unconceived Alternatives* (PUA; see Sklar, 1981; Stanford, 2006; Wray, 2011) — a problem for scientific realism motivated by a historical induction similar to the famous *Pessimistic Meta-Induction* (Poincaré, 1952; Laudan, 1981; Carrier, 1991). I will not be directly discussing PUA here, since (i) my focus here is on the purely epistemological issue of how to conceive of IBE rather than its application in the scientific realism debate, and (ii) PUA has been discussed at length elsewhere (see, e.g., Chakravartty, 2008; Magnus, 2010; Devitt, 2011; Egg, 2016; Dellsén, 2016b).

[2] Indeed, van Fraassen (1989: pp. 145–170) famously considers such a role for IBE at length within a Bayesian framework, although he ends up rejecting that IBE can play even this more modest role. Other authors have been more optimistic, either because they reject van Fraassen's argument (e.g., Douven, 1999, 2013) or because they reject van Fraassen's conception of how to locate IBE in a Bayesian framework (e.g., Henderson, 2014; Okasha, 2000; Weisberg, 2009).

of IBE-advocates, Jonah Schupbach (2014).[3] Lipton's first argument is that the Bad Lot Objection can always be avoided since any comparative evaluation of available competing explanatory hypotheses can be made to collapse into an absolute evaluation of those hypotheses. In his second argument, Lipton argues that the Bad Lot Objection is incoherent because the assumption that we can find the best explanatory hypotheses in a given set entails that we are generally disposed to have made the true theory available. Finally, Schupbach's argument is that the Bad Lot Objection is simply misguided in that it faults IBE for failing to guarantee that 'good material content' is brought to the inferential table, whereas the mark of a cogent inference form is that it reliably *preserves* good material content; Schupbach's idea is that it is not the fault of IBE *per se* — understood as an inference form — that it should be possible to include only false hypotheses in the set of available, competing explanatory hypotheses from which an IBE is made.

In the bulk of this paper — sections 2, 3, and 4 — I discuss these reactionary responses to the Bad Lot Objection one by one, arguing that none of the responses undermines the objection. Although my conclusions in this paper are almost entirely negative, I will end each section with a somewhat more positive diagnosis of why these reactionary responses were destined to fail. Furthermore, my arguments strongly suggests that proponents of IBE would do well to focus their efforts on revisionary responses (rather than reactionary responses), i.e. on finding a more sophisticated characterization of IBE for which the Bad Lot Objection loses its bite. In the conclusion (section 5), I suggest that proponents of IBE have a great deal of work to do in this regard, and briefly discuss how a 'Peircean' conception of IBE avoids the Bad Lot Objection in an elegant way.

Before we begin, it is worth pointing out that although the Bad Lot Objection is often presented as a special problem for scientific realists — who often rely on IBE as the cornerstone of their epistemology (see, e.g., Psillos, 1999) — it's clear that many anti-realists should be equally concerned with van Fraassen's objection (including, arguably, van Fraassen himself).[4] After all, the objection, if sound, would undermine the epistemic merits of IBE quite generally, regardless of whether it is being applied to observable everyday objects, or the theoretical posits of contemporary science. Indeed, the Bad Lot Objection is relevant to philosophical argumentation itself, which is increasingly (though often implicitly) based on employing IBE, complete with arguments that one's favorite philosophical theory should be accepted because it provides a better explanation than its currently available competitors.[5] If the Bad Lot Objection cannot be dismissed, this piece of philosophical methodology may have to be reconsidered.

2. Does comparative evaluation collapse into absolute evaluation?

The first of Lipton's two arguments against the Bad Lot Objection aims to show that the comparative evaluations in which a hypothesis is taken to provide a better explanation than some other hypotheses collapses into an absolute (i.e. non-comparative) evaluation of each of the hypotheses involved in the comparison. Lipton

starts by pointing out that we can always choose a set of available explanatory hypotheses that includes exactly two hypotheses, viz. the hypothesis we are concerned with, call it H_i, and its negation, not-H_i. When we compare H_i and not-H_i, e.g. by determining that H_i provides a better explanation than not-H_i, we are in effect absolutely evaluating H_i. So if IBE enables us to comparatively evaluate H_i and not-H_i, then it also enables us to absolutely evaluate H_i. Note that this would not require us to consider the various more specific explanatory hypotheses with which H_i competes, which is the difficulty that the Bad Lot Objection exploits. Lipton's initial idea, then, is that the possibility of considering hypotheses and their negations means that IBE can sidestep the Bad Lot Objection altogether.

Lipton recognizes that his opponent has a natural reply to this maneuver, viz. to argue that comparisons of mere contradictories (e.g. H_i and not-H_i) are generally not feasible — that the comparisons with which IBE operates must generally be comparisons of more specific hypotheses that, while contraries to one another, are not mere contradictories. Let me elaborate on this briefly. For concreteness, consider the following run-of-the-mill example due to Jonathan Weisberg:

> Suppose you come home one day to find the front door open and the lock broken. Furniture is overturned, the contents of the shelves are on the floor, and valuables are missing. One explanation is that someone broke in and stole your belongings, making a mess in the hurried process. (Weisberg, 2009: pp. 129—130)

Call the explanation proposed in the last sentence *the break-in hypothesis*. Now consider the *negation* of this hypothesis — *the no-break-in hypothesis* — which simply claims that *it is not the case* that someone broke in, stole your belongings, and made a mess. Now, notice that this latter hypothesis provides no potential explanation at all of the various facts explained by the break-in hypothesis, e.g why the lock is broken and furniture is overturned. Indeed, given that the no-break-in hypothesis says only that one specific explanation for the state if your home is false, it is hard to see how it could possibly explain any of the facts explained by the break-in hypothesis at all.[6] Thus, in so far as it makes sense to compare the explanatory qualities of the break-in hypothesis and its negation, IBE would trivially favor the former over the latter in virtue of the latter's inability to provide *any* explanation of the relevant facts. (If this doesn't already strike you as absurd, notice that, by the same token, *any* hypothesis that provides a potential explanation of these facts would be trivially favored by IBE when compared with its negation.) In sum, then, the idea of producing absolute evaluations by forcing comparative evaluations of contradictories is itself susceptible to a problem that is at least as serious (and arguably more so) than the original Bad Lot Objection, viz. that IBE would generally seem to favor any explanatory hypothesis over its negation due to the fact that the latter will often not provide any explanation of the relevant facts at all.[7]

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[3] I am only aware of two other reactionary responses to the Bad Lot Objection — due to Psillos (1996) and Iranzo (2001) respectively. Both responses are closely related to Lipton's second response (discussed in section 3 below).

[4] For a debate about whether van Fraassen's (1980) *Constructive Empiricism* is implicitly committed to a version of IBE (and is thus susceptible to the Bad Lot Objection in some form), see Psillos (1996), Ladyman, Douven, Horsten, and van Fraassen (1997), and Psillos (1997).

[5] Not that there is any lack of *explicit* appeals to IBE in philosophical reasoning. For some recent examples, see Neta (2004), Williamson (2007), Sider (2008), Beebe (2009), and Paul (2012).

[6] It is important to see that it is not open to Lipton here to claim that the no-break-in hypothesis could be compared with the break-in hypothesis in terms of how well various specific alternatives to the latter that jointly constitute the former (in the sense of being conjuncts in a long conjunction that is equivalent to it). After all, that would already require these various more specific alternatives to have been generated, which is what the Bad Lot Objection holds that we generally cannot do.

[7] It is worth noting that the proponent of the Bad Lot Objection can concede that there may be are some cases in both a hypothesis and its negation provide (potential) explanations of the relevant facts, so that IBE does indeed provide comparisons of contradictories in those cases. After all, the Bad Lot Objection need not be seen as applicable absolutely *all* instances of IBE; it would suffice if it went through for a relatively large and/or salient class of IBEs — viz. those for which the negation of an explanatory hypothesis is too uninformative to provide a potential explanation of the relevant facts. Although I cannot myself think of a plausible example of this sort, I do invite others to try.