That's not IBE: Reply to Park

Abstract

Park (2017; 2018; 2019) argues that Bas van Fraassen (1980) uses inference to the best explanation (IBE) to defend his contextual theory of explanation. If Park is right, then van Fraassen is in trouble because he rejects IBE as a rational rule of inference. In this reply, I argue that van Fraassen does not use IBE in defending the contextual theory of explanation. I distinguish between several conceptions of IBE: heuristic IBE, objective Bayesian IBE, and ampliative IBE. I argue that van Fraassen holds the ampliative conception of IBE and that his rejection of IBE concerns only ampliative IBE. I also argue that van Fraassen's defense of the contextual theory of explanation, at best, can be interpreted as an instance of heuristic IBE, but not ampliative IBE. Therefore, I argue, Park's criticism of van Fraassen misfires.

Keywords: Contextual Theory of Explanation; Inference to the Best Explanation; Bas van Fraassen

## 1. Introduction

Seungbae Park (2017; 2018; 2019) argues that Bas van Fraassen (1980: Chapter 5) uses inference to the best explanation (IBE) to defend his contextual theory of explanation. This is significant because van Fraassen (1989) argues that IBE is not a rationally compelling rule of inference. If van Fraassen rejects IBE and his argument for the contextual theory of explanation is an instance of IBE, then, on his own views, van Fraassen has not given a compelling argument for the contextual theory. Park (2018; 2019) outlines some of the disastrous implications this might have for van Fraassen, for instance, that we remain free to disbelieve his contextual theory of explanation.

Why think that van Fraassen uses IBE to defend the contextual theory of explanation? Park argues:

> Van Fraassen (1980: Chapter 5) claims that his contextual theory of scientific explanation is true on the grounds that it explains some explanatory phenomena in science, such as rejections and asymmetries, whereas the rival theories of scientific explanation cannot. (2018, p. 441)

In this paper, I challenge the claim that van Fraassen uses IBE to defend the contextual theory of explanation. I argue that van Fraassen does not use IBE to defend the contextual theory of explanation. At least, he does not use the version of IBE that he rejects.

## 2. Van Fraassen's Account of IBE

First, let's note that there are several different accounts of IBE. The following typology is taken from (Prasetya, forthcoming). On what's known as the heuristic account, for instance, IBE provides useful heuristics for ordinary epistemic agents to approximate ideal Bayesian reasoning (McGrew 2003). On the objective Bayesian account, IBE provides guidance for assigning objective prior probabilities that feature in Bayesian conditionalization (Climenhaga 2017a; 2017b).

We'll call van Fraassen's view the ampliative account. On this view, IBE is completely distinct from Bayesian conditionalization. Someone who uses ampliative IBE will perform Bayesian conditionalization as normal, then give the best explanation a probabilistic boost post-conditionalization (van Fraassen 1989). IBE, on this view, consists in the probabilistic bonus given to the best explanation after performing Bayesian conditionalization. In other words, if H is the best explanation of E, the ampliative IBE-ist's credence in H upon learning E, $Cr(H|E)$, is greater than $P(H|E)$.[1]

This is the standard interpretation of van Fraassen's view of IBE. This is why van Fraassen's most famous critique of IBE is that it makes its user liable to Dutch Books; it is quite obvious that the user of ampliative IBE is diachronically inconsistent. It may also be noted that

---

[1] We may also note that interpreting van Fraassen's account of IBE by appealing to different accounts of IBE may be anachronistic. For the most part, discussions on different accounts of IBE come after van Fraassen's (1989) critique of IBE. Indeed, some authors defend heuristic or objective Bayesian IBE, in part, because of van Fraassen's argument that ampliative IBE is diachronically inconsistent. See, for instance, (Kvanvig 1994; Psillos 1996; Ladyman et al. 1997; Okasha 2000).

many defenders of IBE consider this a bad interpretation of IBE (Kvanvig 1994; Okasha 2000). Though, of course, others defend this interpretation of IBE (Douven 2013; Douven and Schupbach 2015).

3. Does van Fraassen use Ampliative IBE to Defend the Contextual Theory?
The implications for Park's argument should be clear. Park needs to establish that van Fraassen has employed a form of inference that van Fraassen considers impotent. What van Fraassen considers impotent is ampliative IBE—the boosting of one's confidence in H beyond P(H|E), upon learning E and nothing stronger. To my knowledge, van Fraassen has not said anything in any of his works which implies that heuristic IBE is impotent.

Now we revisit van Fraassen's defense of the contextual theory. Let CT be the contextual theory. Let E be the body of evidence that we observe practices of rejection and asymmetries in scientific explanation. Here is the heuristic interpretation of van Fraassen's defense of CT.

(1) CT explains E. That is, P(E|CT) is high.
(2) CT's rivals fail to explain E. That is, P(E|~CT) is low and less than P(E|CT).
(3) Therefore, P(CT|E) > P(CT).
(4) For all A and B, Cr(A|B) should be approximately equal to P(A|B).
(5) Therefore, Cr(CT|E) should be approximately equal to P(CT|E), and greater than Cr(CT).

Here, we may interpret ~CT as a disjunction of the alternatives to the contextual theory of explanation. In van Fraassen's argument, he explores Hempel's account of explanation and Salmon's account of explanation as the rivals to his account. So, P(E|~CT) may be ascertained by considering the likelihood of there being rejections and asymmetries in our explanatory practices, given that either Hempel's account or Salmon's account of explanation is true.

As stated, (3) mathematically follows from (1) and (2)[2], (4) follows from heuristic IBE, and (5) logically follows from (3) and (4). Note, also, that we may reinterpret van Fraassen's argument to include a suppressed premise that CT's initial probability is roughly equal to the initial probabilities of each of its rivals. In which case we may reconstruct the conclusion to say that CT's posterior probability is higher than the posterior probabilities of each of its rivals.

Crucially, if the heuristic interpretation is a faithful interpretation of van Fraassen's defense of CT, then he has not used IBE. Or, more accurately, van Fraassen has not used ampliative IBE, which is the kind of IBE that he rejects. Thus, if the heuristic interpretation is correct, van Fraassen has not used a form of inference that he rejects, and Park's argument fails.

To show that van Fraassen has used a form of inference that he rejects, Park needs to defend the ampliative interpretation. For the ampliative interpretation, instead of (4) and (5), we need:

(6) CT is the best explanation of E.

---

[2] (1) and (2) entails that $P(E|CT) > P(E|\sim CT)$ and (3) is true if and only if $P(E|CT) > P(E)$. $P(E) = P(E|CT)P(CT) + P(E|\sim CT)P(\sim CT)$. Since $P(E|CT) > P(E|\sim CT)$, it follows that $P(E) < P(E|CT)P(CT) + P(E|CT)P(\sim CT)$. So, $P(E) < P(E|CT)(P(CT) + P(\sim CT))$. So, $P(E) < P(E|CT)(1)$. So, (3) follows from (1) and (2).

(7) For all A and B, where A is the best explanation of B, Cr(A|B) should be greater than P(A|B).

(8) Therefore, Cr(CT|E) should be greater than P(CT|E).

On this interpretation, (6) provides the premise for ampliative IBE, (7) notes that ampliative IBE compels boosting one's credence in the best hypothesis beyond conditionalization, and (8) logically follows (6) and (7).

Of course, someone can consistently reject the ampliative interpretation of van Fraassen's argument but accept the heuristic interpretation. Indeed, since van Fraassen only rejects ampliative IBE, nothing prevents him from endorsing heuristic IBE. For Park's argument to work, the ampliative interpretation must be true and the heuristic interpretation false. In short, van Fraassen's argument for CT must be such that he endorses boosting one's credence in CT beyond P(CT|E). If not, then van Fraassen has not endorsed an instance of an argument pattern that he rejects.

## 4. Why Favor the Heuristic Interpretation?

In this section, I want to provide several reasons why we should favor the heuristic interpretation over the ampliative interpretation of van Fraassen's defense of the contextual theory.

The first reason is the principle of charity. In general, we should opt for the most charitable interpretation of a philosopher's work in the absence of significant opposing evidence. We know that ampliative IBE is not a compelling form of inference on van Fraassen's view, and to charge a philosopher of employing a form of inference that he himself rejects is a serious matter. So, in the absence of significant evidence, we should avoid interpreting van Fraassen as using ampliative IBE. At least, if the text is ambiguous between the heuristic interpretation and the ampliative interpretation, we should favor the heuristic interpretation on account of its being more charitable.

Of course, sometimes philosophers do make mistakes such as using inference forms that they claim to reject, and sometimes their work leaves no room for other interpretations of their arguments. I think, however, this is not applicable in our context. The text seems, at best, ambiguous on whether something like the heuristic interpretation or something like the ampliative interpretation is correct.

Next, we should be careful when interpreting van Fraassen's claims about the contextual theory's explanatory power. After all, van Fraassen admits that explanatory power is a good-making feature of a theory. That is, explanatory power counts as a reason to accept a theory. What he denies is that explanatory power is a reason to *believe* a theory. So, van Fraassen may claim that the contextual theory's ability to explain certain phenomena is a virtue, so long as he does not consider it an epistemic virtue.

Now, we discuss the textual evidence. If we look carefully at the texts where van Fraassen defends the contextual theory, we'll notice that he rarely uses the term "explanation" and "explains" in appraising it. He uses other terms, such as, "accommodates," "accounts for," and "saves." Here are several direct quotes from van Fraassen (emphasis mine).

(A) To be successful, a theory of explanation must *accommodate*, and *account for*, both rejections and asymmetries. (van Fraassen 1980, p. 112)

(B) The main problems of the philosophical theory of explanation are to *account for* legitimate rejections of explanation requests, and for the asymmetries of explanation. These problems are successfully solved, in my opinion, by the theory of why-questions as developed so far. (van Fraassen 1980, p. 146)

(C) One virtue I would claim for a pragmatic account is that it succeeds more readily and simply in "*saving*" these human phenomena. (van Fraassen 1985, p. 641)

We should note that there is one passage where van Fraassen claims that the contextual theory is explanatory. In discussing a particular example of the rejection of explanation request involving paresis, van Fraassen claims:

(D) These reflections have great intuitive force. The distinction made is clearly crucial to the paresis example and *explains* the sense of ambiguity and tension felt in earlier discussion of such examples. (van Fraassen 1980, p. 128)[3]

(A), (B), and (D) are passages from *The Scientific Image,* from the chapter where van Fraassen defends the contextual theory. (C) is from an article where van Fraassen compares his favored pragmatic account of explanation to Wesley Salmon's account of explanation. What can we learn from these passages?

In ordinary language, the terms "explain," "accommodate," "account for," and "save" are often interchangeable. This lends plausibility to Park's interpretation that van Fraassen defends the contextual theory by appealing to its capability to explain rejections and asymmetries. However, there's good reason to think that van Fraassen does not treat these terms as synonyms throughout his work. If I'm right, then we cannot simply replace the relevant terms he uses in the first three quotes above with "explains" and assume that we've given a faithful interpretation.

For instance, van Fraassen uses the phrase "saves the phenomena" to describe empirically adequate theories. He claims, "a theory is empirically adequate exactly if what it says about observable things and events in this world is true—exactly if it 'saves the phenomena'" (van Fraassen 1980, 12). Additionally, van Fraassen (1980) consistently distinguishes between an empirically adequate theory and an explanatory theory.[4] Indeed, he criticizes Hempel's and Salmon's accounts of explanation for equivocating the two.

(E) Let me add a more general criticism. It would seem that if either Hempel's or Salmon's approach was correct, then there would not really be more to explanatory power than empirical adequacy and empirical strength. (1980, 108)

---

[3] I thank Park for pointing me to this passage.
[4] See also (Prasetya 2021) for more on this interpretation of van Fraassen's argument for the contextual theory.

(E) suggests that, when interpreting van Fraassen's work, there is a significant difference between a theory that saves the phenomena and a theory that explains the phenomena. (E) casts doubt on Park's reading of the text, on which van Fraassen's claims that the contextual theory accommodates, accounts for, or saves certain phenomena are interpreted as claims that the contextual theory explains these phenomena.

So, here is my proposal. (C) favors the heuristic interpretation over the ampliative interpretation, because van Fraassen uses the word "saves." (C) suggests that the relationship between the contextual theory and the human phenomena of explaining is, at least, analogous to the relationship between an empirically adequate theory and observed phenomena. (A) and (B) are, at best, ambiguous—it's not clear whether "accommodates" and "accounts for" should be interpreted to mean "explains" or "saves."

(D) is the only passage in which van Fraassen appeals to the contextual theory's explanatory power. However, nothing in (D) nor in the context of the passage, suggests that van Fraassen is doing anything more than noting that the contextual theory has the virtue of explanatory power. In short, there's no evidence that van Fraassen is treating explanatory power as an epistemic virtue rather than a merely pragmatic virtue. So, (D) seems ambiguous, at best. Again, given that van Fraassen (1977; 1980; 1989) consistently argues that explanatory power is not an epistemic virtue, we should not easily conclude that he uses explanatory power as an epistemic virtue based on a passage like (D).

## 5. Conclusion

Park attempts to show that van Fraassen's rejection of IBE cripples his defense of the contextual theory. I've argued, however, that van Fraassen rejects a particular account of IBE: the ampliative account. I've also argued that there's not enough evidence to show that van Fraassen uses ampliative IBE to support the contextual theory. It's better to interpret van Fraassen's argument for the contextual theory as an instance of heuristic IBE, i.e., a Bayesian argument. However, since van Fraassen does not reject Bayesianism, his argument for the contextual theory is not undermined by his rejection of ampliative IBE.

# References

Climenhaga, Nevin. 2017a. 'How Explanation Guides Confirmation'. *Philosophy of Science* 84 (2): 359–68.

———. 2017b. 'Inference to the Best Explanation Made Incoherent'. *Journal of Philosophy* 114 (5): 251–73.

Douven, Igor. 2013. 'Inference to the Best Explanation, Dutch Books, and Inaccuracy Minimisation'. *The Philosophical Quarterly* 63 (252): 428–44.

Douven, Igor, and Jonah N. Schupbach. 2015. 'Probabilistic Alternatives to Bayesianism: The Case of Explanationism'. *Frontiers in Psychology* 6 (459).

Kvanvig, Jonathan L. 1994. 'A Critique of van Fraassen's Voluntaristic Epistemology'. *Synthese* 98 (2): 325–48.

Ladyman, James, Igor Douven, Leon Horsten, and Bas van Fraassen. 1997. 'A Defence of van Fraassen's Critique of Abductive Inference'. *The Philosophical Quarterly* 47 (188): 305–21.

McGrew, Timothy. 2003. 'Confirmation, Heuristics, and Explanatory Reasoning'. *British Journal for the Philosophy of Science* 54: 553–537.

Okasha, Samir. 2000. 'Van Fraassen's Critique of Inference to the Best Explanation'. *Studies in History and Philosophy of Science* 31 (4): 691–710.

Park, Seungbae. 2017. 'Defense of Epistemic Reciprocalism'. *Filosofija. Sociologija* 28 (1): 56–64.

———. 2018. 'In Defense of the Epistemic Imperative'. *Axiomathes* 28 (4): 435–46. https://doi.org/10.1007/s10516-018-9371-9.

———. 2019. 'The Disastrous Implications of the "English" View of Rationality in a Social World'. *Social Epistemology* 33 (1): 88–99.

Prasetya, Yunus. 2021. 'Inference to the Best Explanation and van Fraassen's Contextual Theory of Explanation: Reply to Park'. *Axiomathes*. https://doi.org/10.1007/s10516-020-09528-1.

Prasetya, Yunus. Forthcoming. 'Which Models of Scientific Explanation are (In)Compatible with IBE?' *The British Journal for the Philosophy of Science.* https://doi.org/10.1086/715203.

Psillos, Stathis. 1996. 'On van Fraassen's Critique of Abductive Reasoning'. *The Philosophical Quarterly* 46 (182): 31–47. https://doi.org/10.2307/2956303.

Van Fraassen, Bas. 1977. 'The Pragmatics of Explanation'. *American Philosophical Quarterly* 14 (2): 143–50.

———. 1980. *The Scientific Image*. Oxford: Oxford University Press.

———. 1985. 'Salmon on Explanation'. *The Journal of Philosophy* 82 (11): 639–51.

———. 1989. *Laws and Symmetry*. Oxford University Press.