

Januar 02, 2023

Dear Reviewer,

I would like to thank you for the careful reading of my manuscript and the detailed feedback you provided. It was immensely helpful, and I hope to have addressed all your concerns satisfactorily in this revised manuscript.

Below, you will find replies to your comments. I reproduce the review in chronological order, highlight the specific recommendations and concerns, respond to each individual comment, and show with an example from the text of the revised manuscript how exactly these changes have been implemented. This is to minimize the time spent on your part going back and forth between this document and the manuscript. However, these are merely the central examples and do not reflect all the changes made. (The page numbers always refer to the revised manuscript.)

Allow me to quickly outline the main changes before I go into the details.

- A) I made now clearer from the start that the main goal is an application of *VTE* to the realism debate and not a defense of *VTE*.
- B) I present the consequences of using a partial belief model in more details.
- C) I added considerations about dialethism and paraconsistency.
- D) It is now almost 1.5 years that I submitted this paper. This is not your fault, as the editor told me that the other reviewer kept postponing the deadlines. Because of some changes in my thoughts during this time, I felt obliged to add a few minor changes. This concerns:
 - (i) I added a voluntarist aspect on various occasions as to not potential misrepresent what van Fraassen is actually claiming.
 - (ii) I now better motivate why I think that van Fraassen misses an argument for the >0.5 threshold
 - (iii) I streamlined the consequences for the anti-realist significantly by making the structure more transparent. This did not change anything on the main arguments
 - (iv) I completely rewrote the abstract as to reflect the changed manuscript.

Comment 0

The paper is interesting, but there are a few things that need addressing as follows:

Reply 0

Thank you very much for finding this paper interesting! I hope in what follows I can address your concerns.

Comment 1

The disconnect between epistemology and POS is overstated. The rhetorical stuff in the introduction should be tempered.

Reply 1

I removed now all mentions about “drifting apart”, or the sentiments of philosophers of science and epistemologies to the respective other discipline. I replaced that by a neutral sentence stating the attempted project of the paper as follows:

Revision 1

“The goal of the paper is to bridge a gap between epistemology and philosophy of science by applying a currently widely discussed epistemological framework, i.e., teleological epistemology, to the scientific realism debate.” (1)

Comment 2

The case for *VTE* being the right approach to the problem is pretty weak. It should be strengthened or at least it should be more clearly acknowledged that it is not the only epistemological framework extant.

Reply 2

Thank you for this comment. I recognize now that I was not clear enough on this point. The paper was not meant as a defense of *VTE*, as this would be its own project. As such, I go for option two, to acknowledge more clearly that it is not the only epistemological framework extant. My point is simply an application of *VTE* to the realism debate. I made it now much clearer from the outset that this is all I am attempting. I also added a few sentences about the most prominent current counterproposals, and I added a few more references to defense and objections to *VTE* such that readers can have easy access to a more complete picture.

Revision 2

“Even though I will give a quick motivation for *VTE*, a full defense is not in the scope of this paper. The goal is rather to show the consequences of applying the framework to the scientific realism debate.” (2)

“I also want to say a few words about the alternatives to *VTE* to put the present paper into context. In my proposed broad sense, *VTE* is the most common value-theoretical framework in epistemology. Value-theoretical thinking was long under the surface of the discussion, as Berker (2013) recognizes. He (Berker 2013: 355, footnote) lists 63 papers from 35 epistemologist of all orientations who adhere to teleological epistemology, but mostly only implicitly, to show how widespread this view is, and this is the case even though my conception of teleological epistemology is wider than his. Already this prevalence of *VTE* warrants to investigate into its applications to epistemological issues of the scientific realism debate. The two main rival non-teleological accounts are: First, purely coherentist, subjectivist accounts of justification. Secondly, recent explicitly deontological accounts. Littlejohn (2012) referred to his account as a

deontological conception of justification but recognized later (Littlejohn 2018) that this is better understood as a form of teleological non-consequentialism. In fact, his theory has all the four features of my categorization of a teleological theory. Very recently, however, epistemologists started to develop truly deontological frameworks. Most notably, Sylvan (2020) takes Wood's (1999) interpretation of Kant – that the good is not aimed at but it is to be respected – to explicate his epistemic Kantianism. For a Kantian solution to van Fraassen's Bad Lot objection against *IBE*, see also Shaffer (2019). Both, the purely subjectivist and the explicit deontological view of justification, are currently minority positions in epistemology. Saying this is not to judge them, this is out of the scope of this paper. My concern is simply to apply the most common value-theoretical framework of epistemology, i.e., a teleological framework, to two specific issues in the scientific realism debate.” (6, 7)

Comment 3

The full belief/partial belief model choice is far more important to the central claims of the paper than is indicated at the outset of the discussion. The issues about full belief and exceeding a fixed belief threshold play a significant role in the results of the paper. The results should be addressed in the partial belief model as well to avoid the contention that the problem and its solution are merely consequences of this model selection.

Reply 3

Thank you for pointing me to the importance of spelling out my claims in terms of a partial belief model more precisely. I did this now on various points in the paper. First, I moved my introduction to the partial belief model and the Lockean Thesis to the end of the introduction. This allowed me to expand on it further already at this point. I actually do not adhere to a fixed belief threshold but a variable threshold. I spell this now out in the introduction. In the result section, the partial belief model becomes especially relevant in my discussion of scientific realism. Here are the two biggest additions (but there are some smaller ones throughout the paper as well).

Revision 3

“Note that current epistemologists differentiate between two (sometimes competing) veritist frameworks: one with full belief, the other with degrees of belief (i.e., credences). Van Fraassen originally framed his Bad Lot objection in terms of full beliefs, and I mostly want to focus on such a framework here. Later, van Fraassen also considered the use of credence and subjective probabilities, but he still sees the value of the notion of ‘belief’ in his constructive empiricism as follows: “First of all, it seems to me that there is a good place within the epistemic enterprise for having one picture of which you just say “that is the way things are”” (van Fraassen 2001: 165).

This is how I understand a system of full belief – as a description about what one thinks that things are. Of course, this characterization does not exclude more fine-grained notions, such that I can be (or should be) more confident in some of my full beliefs than in others. Note further, that various epistemologists propose

bridge principles between full beliefs and credences. This is associated with the Lockean Thesis, claiming that I ought to believe that p iff I have high credences in p .

The Lockean Thesis is contentious, and it is not in the scope of the paper to fully navigate through its legitimacy, but I want to give some specifications in order to understand some of my later remarks concerning a credence framework better. One main problem for Lockeans is to provide a non-arbitrary credence threshold for belief obligations. Here, I am sympathetic to Dorst's (2017) view of a variable threshold. He argues that the magnitudes of the values of true and false belief determine the threshold, and this threshold varies with context and proposition in question. I am sympathetic to this view because it naturally pairs with *VTE*. First, it incorporates the two-sided truth-goal as the basis for the threshold. Second, it acknowledges that epistemic reasons alone cannot inform balancing, so there is no fixed threshold. And third, it has a natural solution for balancing the truth-goal on contextual grounds. It also solves many classical problems of Lockeans, such as Lottery Paradoxes." (S. 5, 6)

Comment 4

It should be emphasized that when the choice of the best of a bad lot is an epistemically weak theory it is still the best available truth proxy. The most probable theory is still better than its competitors and if it is probably at least approximately true, then it must enjoy some degree of empirical/explanatory success.

Reply 4

Thank you for the comment, I made this now clearer, especially in the following section:

Revision 4

"It is correct that the most probable theory in a bad lot of theories is still epistemically superior to its competitors. It must enjoy some degree of empirical/explanatory success (otherwise it would not be the most probable theory)." (S. 14)

Comment 5

The author should look at M. Shaffer's recent papers on IBE, the Lockean Thesis and on factivity, as they are related to this work in important ways: "Foley's Threshold View of Belief and the Safety Condition on Knowledge," *Metaphilosophy* 49: 589-594 (2018), "The Availability Heuristic and Inference to the Best Explanation," *Logos & Episteme* 10: 409-432 (2019), "Van Fraassen's Best of a Bad Lot Objection, IBE and Rationality," *Logique et Analyse* 255: 267-272 (2021[a]) and "Can Knowledge Really be Non-factive?" *Logos & Episteme* 12: 215-226 (2021[b]).

Reply 5

Thank you for the suggested literature. This was very helpful! I incorporated now a discussion of the points I thought are of immediate relevance to my paper. This concerns especially:

- (i) The Problem for Lockeans with Knowledge ascriptions (Shaffer 2018)
- (ii) A reference to the Kantian solution to the Bad Lot (Shaffer 2019)
- (iii) The problem with approximate truth for the realist as related to the concept of ‘knowledge’ (Shaffer 2021b)

Revision 5(i)

“There is another group of objections to Lockeanism ingrained in the analysis of knowledge ascriptions (see especially Shaffer 2018). Plausibly, Lockeans are committed to the following view: Knowing that *p* implies that one’s degree of rational credence must meet or exceed some threshold. However, it is easy to construct cases where one’s degree of rational credence in some *p* is extremely high, *p* is true, but *p* is false in a nearby world. In such cases, believing that *p* is not safe. Given that knowledge implies safety, the threshold view of knowledge must be false. One potential path to go here is the following. If I can be at least sometimes permitted or obligated to believe that *p*, while my belief in *p* is not safe, then I can be obligated to believe without having knowledge. Such a view is only problematic if I were to think that one should only believe what one knows (cf. Williamson 2002, Littlejohn 2012). This only touches the problems with knowledge and a threshold view, and I will have to come back to it later when I talk about approximate truth, but other than that, I will mostly focus on norms of belief here and leave the analysis of knowledge behind”. (S. 6)

Revision 5(ii)

“For a Kantian solution to van Fraassen’s *Bad Lot* objection against *IBE*, see also Shaffer (2019).” (S. 7)

Revision 5(iii)

“There is another worry lingering in the background. If we can only infer approximate truth, but knowledge requires full truth, then we can never have knowledge about unobservables. These poses serious problems to all accounts of scientific realism that are spelled out in terms of knowledge. An example is Boyd’s (1983) own view. Recently Buckwalter and Turri (2020) developed an account of knowledge with approximate true. This view, however, might have quite unattractive consequences (see Shaffer 2021b). One way to get around these problems with approximate truth for the scientific realist is to replace approximate truth in terms of full truths of only parts of a theory, as is advocated by Musgrave (2007).” (S. 14, footnote 12)

Comment 6

The defense of LI does not address the possibility of adopting an epistemology based on dialethism and paraconsistency. This is a radical, but important alternative to the view defended in the paper.

Comment 6

Thank you for pointing me to this important alternative. This is indeed something that needs to be addressing. I was not sure how far I should go in addressing this point as there would be a lot to say.

Consistent with the goal of the paper of applying VTE, I focused in the revision on the relation of Dialethism to VTE.

Revision 6

“One view that straightforwardly necessitate a violation of LI is Dialethism (Priest/Routley/Norman 1989) – the view that there are Dialetheia, i.e., that for some propositions p , p and $\neg p$ is true. Given VTE, for such propositions believing that p and believing that $\neg p$ will maximize value. This implies a violation of LI. Dialethism is usually motivated by various logical paradoxes. But even if Dialethism is false, various paradoxes point towards a violation of LI that seem to be motivated by VTE. One such case is the Preface Paradox (Makinson 1965). [...] Similar is Harman’s Paradox (Harman 1986: 158): You infer that of all your beliefs some will most likely be inconsistent, but you do not know which. It might not be reasonable to abandon a large number of your beliefs just to be consistent. Again, this violates LI. Such reasoning is plausibly motivated by VTE: If you had to give up a large set of true beliefs just to avoid one or a few inconsistencies (and with it believe a few falsehoods) you would tilt the balancing of the truth goal unreasonably heavily in favor of error-avoidance. Thus, it might be epistemically better to keep those beliefs. Note that this VTE-based motivation for violating LI is not based on Dialethism. This shows that even if Dialetheism is false, VTE can motivate violating LI. This, however, necessitates paraconsistency. The logical consequence relation $\vdash$ cannot allow for Explosivity, i.e., a contradiction cannot entail everything. A paraconsistent logic that at least denies Explosivity, allows a violation of LI without being committed to believing everything.

Still, even if we grant for all such cases that violating LI is permissible, in order to avoid for all propositions p , $Fv(p) > Tv(p)$ an even more radical violation of LI is necessary. LI had to be violated in all cases of equally balanced evidence between the truth of some proposition and its negation. However, this is just a much too common occurrence, be it in everyday life or in science. Holding all those contradictory beliefs cannot be reasonable and goes way beyond paradoxical cases such as the Preface Paradox. It can also not be motivated by Dialethism, since Dialethism is usually a response to logical paradoxes and not to contingent epistemic situations. After all, it would be very curious why for all propositions p , for which it happens that the evidence is equally balanced, it also happens that p and $\neg p$ is true. As such, it cannot be that for all propositions p , $Tv(p) \geq Fv(p)$. This argument is a reductio of such a balancing. Then, the only option is that for all propositions p , $Fv(p) > Tv(p)$.” (S. 9, 10)

Final Remarks

Thank you very much for your help and time in making this manuscript better. I hope that this revised manuscript is now appropriate for the *Journal for General Philosophy of Science*, though if you believe that further revisions are needed, I will gladly continue improving this manuscript.