Philosophia (2022) 50:35–42
https://doi.org/10.1007/s11406-021-00366-y

Bias? Who is Bias? Comments to Dellsén

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Received: 19 February 2021 / Revised: 15 March 2021 / Accepted: 17 March 2021 /
Published online: 4 April 2021

Abstract
(Dellsén, *Philosophical Studies, 177*(12), 3661–3678, 2020) argues that a positivistic defense of science's objectivity is incoherent because bias in the generation of scientific theories (implies that the rational evaluation of theories will also be biased. Even though this is an idea easy to agree with, this approach is flawed for two different but related reasons. First, Dellsén's notion of bias does not account for many ordinary biases. Second, Dellsén's use of bias at the *community-level* is inconsistent. It shifts from individual scientists generating new theories and making decisions to scientific communities evaluating and accepting what theories are valid. This article offers a stronger response than Dellsén's about aseptic objectivity in science by providing a more adequate account of bias, where psychological and behavioral aspects of individual scientists and community-level scientific practices are considered.

Keywords Scientific knowledge · Scientific explanation · Objectivity · Bias in science · Viewpoints

1 Introduction

Finnur Dellsén (2020) challenges what he calls the Confinement Defense of science's objectivity: The idea that even though a new scientific theory can be generated from a biased context, the rational evaluation process thereafter will eliminate any bias at the final consolidated stage. This thesis was proposed by Reichenbach and Hempel, and reinforced by many logical positivists during the first half of the twentieth century. Based on a number of prior responses to this thesis (primarily Kuhn and Okruhlik), Dellsén argues that the Confinement Defense is incoherent because, as he claims, "a scientist who comes up with a theory about some phenomena has thereby gained an unusual type of evidence, viz. information about the space of theories that could be true of the phenomena" (Dellsén, 2020: 3663). Therefore, Dellsén concludes, "if there is bias in the generation of scientific theories in a given

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domain, then the rational evaluation of theories with reference to the total evidence in that domain will also be biased" (Dellsén, 2020: 3664). The implication of this claim is obvious: It does not really matter how much effort a scientist makes in distancing from a concrete interest-driven interpretation of a phenomenon or event. Since interest is always present in the data-collection or description phase (what Dellsén calls the *generation-stage*, the generation of scientific theories, or *context of discovery*), such interest carries when building explanation for the phenomenon or event (what Dellsén calls the *justification-stage*, the rational evaluation of such theories, or *context of justification*).

The conditional seems, a prior, to hold nicely, and the implication and the conclusion to which Dellsén arrives are, I think, also easy to agree with. However, some kinds of scientific knowledge come out of scientific explanation, even though one can agree that such a knowledge might be generated from bias. Furthermore, I am not quite sure what solution one can find to this problematic, given the fact that there is not another kind of scientific explanation that that of a previous bias-generation stage. The main reason is that any *generation context* we can think of can only be understood from a certain perspective (that of the scientist). Therefore, any kind of explanation that potentially comes out of the research would necessarily be grounded through such perspectival interest-based interpretation, or viewpoint (Cf. Giere, 2006; Massimi & McCoy, 2020). My corrective to Dellsén's arguments is then based on this last point, the necessary perspectivism of our (scientific) points of view.

This article, therefore, criticizes Dellsén's approach for falling short with the Confinement Defense, for two different but related reasons. On the one hand, Dellsén's notion of bias does not adequately respond to ordinary intuitions that both the lay man and the scientist have about the world. On the other hand, Dellsén's proposal is inconsistent because, even though he clearly speaks about making science at the *community-level*, his arguments about the generation-stage of theories shift to the *individual scientist-level*. It is, therefore, difficult to see who is biased when we speak about bias in science and, moreover, it is at odds with Dellsén's conclusions about scientific explanation that he considers objective. In offering a stronger criticism to the Confinement Defense of science's objectivity, one that complements Dellsén's, this paper proposes a more accurate notion of bias that covers both the psychological and behavioral aspects of the individual scientist and the community-level scientific practices.

2 The Proper Kind of Bias

One of the main concerns I have with Dellsén's approach is with his notion of bias. For him, "an agent or process has a (theoretical) bias if she/it privileges theories (hypothesis, conjectures, models) in one class over corresponding theories in a relevant contrast class" (Dellsén, 2020: 3664). One example is provided by feminist theorists, who correctly consider "science being biased against theories that challenge dominant ideologies and power structures" (Dellsén, 2020: 3662). The classical instance appeals to the well-accepted theory that the carved stones employed

by our ancestors (thought to be determinative of the natural selection pressure towards bipedalism) were hunting instruments, what established the *man-the-hunter* model in evolutionary anthropology. In this regard, a perfectly explanatory *women-the-gatherer* model was not even considered, all because of "an androcentric bias [which] privileges theories that support or emphasize masculinity and male points of view over corresponding theories that support or emphasize femininity and female points of view" (Dellsén, 2020: 3664).

As Dellsén (2020: 3664, footnote 5) correctly says, his own notion of bias is more *operational* that "Antony's [(1993)] *empiricist* definition of bias as "possession of belief or interest prior to investigation"." More than empiricist, Antony's notion of bias is *psychological*, since what matters in generation-bias is that the observer/scientist has a certain mental state as a pre-conception regarding the observed/discovered phenomena. Dellsén correctly points out that Antony's notion is incompatible with implicit biases, since they depend on non-doxastic states. However, these might be perfectly sound from an interest-like interpretation since the only thing that the observer must be is, perhaps, in agreement with an attitude toward a certain interest. Perhaps this interest is present as part of the context and the common ground (something equivalent to what Dellsén calls *contextual values*), and not necessarily in conscious possession of any epistemic state. Therefore, individuals (and processes) can exhibit bias without necessarily having any awareness or knowledge of it, simply because they are within a framework that generates biases.[1]

This definition of bias based on the notion of point of view is, of course, also better that Dellsén's *operational* definition: "One in which bias can be identified in terms of the agent's dispositions to behave in certain ways rather than her belief or interest" (Dellsén, 2020: 3664, footnote 5). While in the psychological definition an individual could change or pretend to adopt a viewpoint from a generation-bias (say, for practical or pragmatic reasons), it is difficult to see how one can change or pretend to do so with the operational definition because viewpoint adoption literally coincides with its possession conditions (Cf. Colomina-Almiñana, 2018; Hautamäki, 2020; Liz, 2014; Vázquez & Liz, 2015).

Think of the previous distinction between *psychological* and *operational* bias as follows. On the one hand, bias can be explained by the propositional attitudes model. This model assumes that a subject, a set of contents, and a set of relations between the subject and that content constitute the internal structure that generates a rational explanation of the phenomena as part of a broader point of view. On the other hand, we can analyze points of view in terms of location and access. When one follows this second approach, the internal structure is not directly addressed, and the emphasized features of the generation-bias are related to the intended function. Therefore, the justification stage reveals such a function, and is

[1] One reviewer suggests that we can call this type of bias *not-awareness-bias cognitive bias*. The reason is that, if one is not aware of the fact that you can only see from a viewpoint, one cannot see its limitations either. I would add to this, as I specifically do in Section 3, that the same possession of a viewpoint structurally implies the limitation of seeing its limits. Nevertheless, as the reviewer points out and I consider later, critical dialogue in the scientific community is necessary to alleviate this, mostly because some kind of perspective pluralism seems also a requirement to account for science objectivity.

understood as a means of looking at and interpreting the world from within such viewpoint.

The obvious advantage of the behaviorist analysis is that if one explains biases as dispositions (a certain tendency that everyone who adopts the same explanatory frame would share), cases of discrepancy can simply be understood as two different incompatible explanations of the same phenomena. In other words, the justification frame would be like adopting a metric standard, which enables absolute responses in order to accomplish certain tasks by referring to authoritative marks. Nonetheless, the obvious problem is that the adoption of a viewpoint supposes that there is no such thing as a bias grounding the justification of the framework (or at least being blinded about the existence of such bias). The operational definition, therefore, nullifies other contradictory explanations, since only from within that viewpoint would the explanation make sense. This is, obviously, incompatible with Dellsén's proposal, whose key argument is that the scientist becomes aware of a new piece of evidence that re-structures the space of theories when she discovers a new theory. This, of course, is a *non-sequitur* for Dellsén's conclusion that "philosophical discussions of scientific objectivity should not ignore biases" (2020: 3675). It turns out that Dellsén's proposal is, after all, incomplete.

I complete his operational/behavioral notion of bias with what actually works in the abovementioned psychological definition. As we saw before, when considered under an epistemic lens, the definition is flawed because it cannot make sense of implicit biases, given the fact that these affect our decision-making at an unconscious level. Nevertheless, when understood through the propositional attitudes model, the only condition required is for the concrete individual to be in agreement with a normativity, even though it is not explicitly or consciously endorsed, perhaps as belonging to the common ground shared by all the individuals of a community. Think of Urmson's scenario (1968: 102). There is a heavy drought in a certain territory, and as a consequence farming suffers. From the farmers' viewpoint one may agree that there is an objective need for rain, which would cause the farmers' desire for rain, besides other personal interest farmers may have, such as an individual desire to go fishing, which would be ruined by the rain. In other words, there seems to be a bigger, general interest driving everyone's actions and grounding everyone's non-doxastic states when considered through a general point of view, which clashes with any subjective interests or beliefs one individual may have.

Within the same scenario one might also look at the Hollywood producer's interest in rain. Even though the drought conditions are the same and still bad for farming, the Hollywood producer's interest is different. According to such viewpoint, the Hollywood producer does not want rain because it will mess with her movie production. How can this be? Is it not the lack of rain a bigger, objective reason causing in everyone the desire for rain? The question is now: Is it possible for both interests, which cannot be interpreted as mere individual psychological states, the farmers' and the Hollywood producer's, to be in agreement at some point? Is it possible to have some kind of reconciliation between both points of view? By introducing the idea that evaluations are only made from within points of view, one can explain why disagreements are rationally resolvable in some cases but not in others. Only when

there is a shared point of view, can disputes and disagreements be settled. From different points of view though, disputes and disagreement are always irreconcilable.

Explanatory frames (evaluation or justification stages, or even point of views) are distinguished from one another precisely by their rules of relevance.[2] Whether a reason would count or not in determining a point of view would depend on the world-view itself from which the evaluation is made. Evaluations then are only possible when made from within points of view. Hence, the point of view itself must provide the criteria for identifying reasons for or against such evaluations. An evaluation may be true if and only if it is rationally warranted from within the appropriate point of view. In other words, when it fits into the appropriate *space of reasons*, which means that it may perfectly be false from within another point of view. In this way, the farmers' judgment is true only from within their own point of view (the point of view of farming, of course, not any individual farmer's point of view), and the producer's judgment is true only as evaluated from her point of view (the point of view of movies production, not any individual producer's point of view). Hence, both points of view would be compatible only when considered from within their distinct perspectives, but both are rationally incompatible if considered as a whole. If one looks at them from within their respective points of view, they will be determined by different rules of evaluation, and more likely expose different truth conditions.

In science, nevertheless, things are not always so dramatic. One successful and more positive way to see scientific knowledge and advancement is by considering science as a multi-perspectival effort (Cf. Coliva & Pedersen, 2017). From this view then, the need for solving disagreements and finding shared points of views opens up and, as I demonstrate in the next section, pushes for critical dialogue within the scientific community.

3 Individual vs. Community-level Bias and the Objectivity of Science

Dellsén makes clear that his proposal is concerned with *community-level* biases. After all, as he correctly mentions, when we speak of science, we must take into account the institutional viewpoint of science and not any individual scientist's interests and beliefs. Nevertheless, it is important to remember that, first, even though scientific explanation has pretensions of objectivity and generality, individual scientists propose hypothesis and generate theories as well as justify and evaluate them. Second, the individual scientist normally cannot escape her contextual values and, hence, objectivity may be at risk. In Dellsén's own words, "due to some contextual value, scientists are more (or less) likely to develop alternatives to [a certain theory] T than they would otherwise be, e.g. if T challenges prevalent gender stereotypes" (2020: 3672), for instance.

Furthermore, Dellsén's proposal is based on the key argument that is the individual scientist who somehow becomes aware of some new piece of information (due to her bias) at the generation-stage (or right after) so that it can be addressed in

[2] (Colomina-Almiñana, 2018) proves points of view's internal structure as logically coherent, consistent, and complete. This note improves this view by incorporating the requirement of relevancy.

the justification-stage, even though the evaluation of such new evidence, as Dellsén correctly says, would not eliminate any bias carried over from the generation-stage, even though scientific knowledge is never objective. This is a surprising claim. If this is correct, then Dellsén's notion of community-level bias is inconsistent with his own proposal, for two reasons. First, Dellsén shifts back and forth from individual scientist-level to community-level when offering his alternate explanation of (biased) scientific knowledge. Second, Dellsén's proposal of scientific knowledge is at odds with his own requirements for objectivity.

Dellsén's distinction between *generation-bias* and *competitor-generation-bias* reinforces my criticism because it makes clearer that Dellsén's proposal shifts from community to individual-level when convenient. We only have to remember that it was R.A. Fischer's external values the source for opposition to the causal link between smoking and the development of lung cancer, that it was Darwin's observations what influenced evolutionary biologists' preference for adaptationist explanations, and that it was Einstein's interpretation of time as a fourth spatial dimension what grounded his challenge to Lorentz's ether theory.

These examples reinforce the idea that there is always some individual scientist challenging the established viewpoint when we witness a scientific change, and not acquiring new evidence. That individual scientist gains awareness not of her own bias, but actually new knowledge of the fact that there are some limitations (bias) regarding what can be explained from/within such viewpoint. And this because the internal constitutive conditions of the viewpoint under consideration (the old paradigm, if preferred). Therefore, awareness of new evidence does not open the logical space of scientific theories but demonstrates its limitations. Why? Because a scientist's individual awareness does not (and can never) modify the space of reasons but only show that such a viewpoint is limited to explain the set of phenomena at hand and, therefore, push her to generate/discover a different space of reasons (viewpoint) from where a proper explanation can be obtained. This is what we have when somebody builds a new scientific theory: That individual does not open the space of reasons, but breaks it down by proposing a new framework of interpretation for the set of phenomena under consideration.

4 Conclusion

This article has defined (theoretical) bias as the internal structural limitation of a scientific point of view. The reason why we needed an improved definition is that a proper notion of bias, one that offers a realistic approach to how theories are generated and evaluated, should consider both the psychological and the behavioral aspects of the individual scientist doing science and the community-level validating scientific practices. By doing this, we recognize bias within points of view that generate such theories. By definition, hence, the points of view that generate scientific explanation are partial and always offer a perspectival account of the world. In other words, (theoretical) bias is nothing else and nothing more than the inability

of seeing explanatory limitations within the point of view, possibly blinded by the internal possession conditions of the viewpoint itself.

This notion of bias, then, overcomes the difficulties than both the psychological and the behavioral definitions separately posed. Unlike the psychological notion, which could not respond to implicit biases, this paper argues for a notion of bias not as any doxastic or mental state that individuals possess but only as the set of propositional and non-propositional attitudes belonging to the common ground that individuals inhabit and agree with. Therefore, scientists do not need to have any concrete doxastic state but simply be allocated in a certain space (of reasons) to be biased, without necessary awareness. Unlike the behavioral notion of bias, which could not explain how new evidence opens the logical space of reasons, this article proves that biases cannot be overcome within the same explanatory framework. Therefore, scientists who are presented with new evidence discover the limitations of the explanatory viewpoint they are situated and are, therefore, obligated to generate a new explanatory framework for interpreting phenomena. Against the positivistic Confinement Defense, this article has demonstrated now that objectivity in science is not possible if thought in the old monolithic fashion, since knowledge only comes from a perspective and, by definition, this implies that it would always be biased.

Nevertheless, this does not mean that we must reject scientific knowledge, or deny the objectivity of science. As stated before, under viewpoint theory both truth and rationality depend upon perspectives. The points of view one scientific community adopts will determine what is objectively accepted. Therefore, science objectivity and perspectivism are not incompatible. In fact, as an anonymous reviewer reminded me, there are two different ways that perspectivism can be objective. On the one hand, all what is invariant under changes of points of view is objective. This way, all is true or rational from the relevant points of view. On the other hand, when a point of view is recognized or adopted by the scientific community, such viewpoint is established as objective in the community, and everything from it is objective for that community.

To have a scientific revolution then, evidence about the explanatory limitations of a certain viewpoint must be discovered. Of course, this may be employed for the wrong, as we have seen. Therefore, as this article argues, to contain the negative effects of such biases we must act at both levels, the individual scientist and the community level. On the one hand, promoting diversity within the scientific community will, of course, have an impact on the amount of methodological approaches individual scientists bring to the table since they will generate theories from their own personal perspectives. Nevertheless, to believe that individual scientists may be balanced by the biases of other individual scientists is nothing but a myth. The reason is that science, like any other institution, reproduces the same dynamics of power in the society that develops it and, therefore, certain individuals and groups within a community would always be at risk. If this is the case, as a society that desires achieving the proper diversification of its scientific communities (not only regarding gender and ethnic identities, but also about sexual, disability, linguistic, methodological, and whatever other identificatory element we are not thinking about right now), we must complement that diversity goal with educational programs that

increase the scientist's awareness of the other's identity and, more importantly, of the limitations of their own point of view.

Acknowledgments The conclusions here reached are part of the efforts of the research project RTI2018-098254-BI00: "Personal Perspectives. Concepts and Applications", Programa Estatal de I+D+i orientada a los retos de la sociedad, Ministerio de Ciencia, Innovación y Universidades, Gobierno de España. I thank Nicole M. Guidotti-Hernández, Antti Hautamäki, Manolo Liz, and the anonymous reviewers of this journal for their comments to an earlier version of this paper.

Declarations

Conflicts of Interest N/A

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