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Is Helen Longino's Contextual Empiricism a Feminist Philosophy of Science?

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RESUMEN

En este artículo defiendo que la teoría contextual empiricista de Helen Longino es una filosofía de la ciencia feminista. Las *standpoint theorists* Intemann (2005) y Kourany (2009), (2012) arguyen que el aspecto contextual de la teoría de Longino introduce un elemento de relativismo que compromete las aspiraciones feministas de la teoría. Contra esto, defiendo que el hecho de que cualquier teoría científica, siempre que se comprometa con los cuatro criterios propuestos por Longino, pueda entrar en la práctica científica no es una debilidad del contextualismo empiricista sino la razón por la cual es preferible a las *standpoint theories*.

PALABRAS CLAVE: *empiricismo contextual, standpoint theories, filosofía de la ciencia feminista.*

ABSTRACT

In this paper I defend that Helen Longino's Contextual Empiricism is a feminist philosophy of science. Standpoint theorists Intemann (2005) and Kourany (2009), (2012) have argued that the contextualist aspect of Longino's view introduces a threat of relativism that undermines the feminist aspirations of the theory. Against this, I defend that the fact that any scientific view, as long as it respects and follows Longino's four criteria, is allowed to enter the scientific arena is not a weakness of contextual empiricism but the reason it should be preferred to standpoint theories.

KEYWORDS: *Contextual Empiricism, Standpoint Theories, Feminist Philosophy of Science.*

INTRODUCTION

The so-called received view of science considers science to be the process in which hypotheses, or facts deduced from hypotheses, are tested against empirical evidence. According to this view, scientists' interests and beliefs play no role in whether their hypotheses are confirmed or not. Many philosophers of science, such as Hanson, Quine, and Kuhn, questioned this view during the second half of the twentieth century. The key arguments against positivism are the underdetermination of the

theory by evidence; the fact that there are no pure observations, but that observations are theory laden; and holism. These arguments show that the scientist is situated socially and historically, and that the once assumed neutrality and aperspectivity of the scientist are, if possible, difficult to attain.

Feminist epistemologists and philosophers of science have taken the context-dependence of scientific practice one step further, adding a gendered dimension to the external and non-cognitive factors that determine scientific inquiry [Wylie (2006)]. However, there is no agreement on the implications of this gendered dimension. There is a spectrum of different theories, from conservative to radical. On one end of the spectrum, feminist empiricists such as Helen Longino claim that the gendered dimension reveals that some of the old examples of good science were in fact bad science, and that as philosophers of science and science practitioners we should re-establish the ideals of objectivity and aperspectivity, taking into account how gender affects scientific practice. On the other end of the spectrum, postmodernist epistemologists and philosophers of science claim that pursuing these ideals is fruitless because the situatedness of the subject cannot be avoided and, therefore, some form of relativism should be endorsed. Finally, there is a middle ground between these two extremes: standpoint theories. According to standpoint theories, science is indeed context-dependent, and gender is an important factor to consider, however this need not lead to relativism: the fact that women have a standpoint distinct from men allows them to have, in some contexts and to a certain extent, privileged epistemic access to the world.

The main goal of this paper is to defend Longino's critical contextual empiricism from the objections raised by the standpoint theorists Intemann (2005) and Kourany (2009), (2012). In the first section I will introduce Longino's contextual empiricism. In the second section I will show that in many aspects, standpoint theory converges with Longino's view, although they differ on several crucial points. Finally, in the third section I will discuss Intemann (2005) and Kourany's (2009), (2012) argument that contextual empiricism can only avoid relativism by appeal to standpoint theory. This is itself surprising, as the main objection against standpoint theory is that it collapses into relativism. I will argue that not only does contextual empiricism not entail relativism, but that it is, moreover, the best theory of feminist philosophy of science.

I. LONGINO'S CONTEXTUAL EMPIRICISM

Helen Longino has developed her view in several papers, most notably in those of 1993 and 1994, and in two books: *Science as Social Knowledge* and *The Fate of Knowledge*. Her theory is clearly empiricist, but, as I will show, she introduces a contextualist aspect in order to overcome the main objections empiricism faces.

As I have mentioned above, the underdetermination problem is one of the most prominent objections to empiricism. The fact that the very same piece of evidence can confirm opposing theories under different background assumptions poses a real problem to those (such as Longino) who argue that observations are the touchstone for theory choice. "Background assumptions are the vehicles by which social values and ideology are expressed in inquiry and become subtly inscribed in theories, hypotheses, and models defining research programs" [Longino, (1993), p. 99]. Moreover, what evidence is considered relevant to assess a certain hypothesis also depends on background assumptions. The problem that remains is how to prevent subjective preferences from entering, often imperceptibly, these background assumptions. In other words, the issue becomes how to preserve the most valuable feature of science: objectivity. Before introducing Longino's solution, let me discuss what she means by the term objectivity. In *Science as Social Knowledge* she considers two senses in which we say that science is objective [Longino (1990), p. 62]:

1. Scientific theories are objective because they provide true, real, and accurate descriptions of facts.
2. Scientific inquiry is objective because it follows a method that prevents arbitrariness and subjectivity when judging hypotheses

As the first claim is commonly understood to be dependent on the second, Longino's main task is to scrutinise scientific inquiry. Of course, according to empiricism, the most nonarbitrary and nonsubjective criterion to assess hypotheses is confirmation of the theory by the evidence, or in Longino's words: "experiential data are the least defeasible bases of hypothesis and theory validation" [Longino (1993), p. 98]. However, as I mention above, background assumptions are pervasive and jeopardise this claim. In order to preserve the empiricism of her theory, Longino acknowledges the underdetermination problem and introduces a contextual aspect aimed at providing constraints to background assumptions

and thus mitigating their consequences for scientific inquiry. “Without some absolute or nonarbitrary means of determining acceptable or correct background assumptions there seems no way to block the influence of subjective preferences” [Longino (1990), p. 61]. Longino aims to block the influence of subjective preferences by proposing a new understanding of scientific inquiry as a social practice rather than an individual enterprise. Objectivity, then, arises from social interactions under certain constraints. Before explaining these constraints, I shall discuss whether scientific practices, observation, and reasoning are indeed social.

According to Longino, observation is intersubjective because scientific practice requires that data is in principle repeatable and that it is verified and validated by a community of inquirers [Longino (1993), p. 101]. Less straightforward is the claim that reasoning in scientific practice is social. Longino distinguishes two moments in which reasoning takes place: (1) when assigning significance to certain evidence regarding a certain hypothesis and (2) when evaluating such hypothesis in light of the evidence. Both of these are social insofar they rely on background assumptions, and these background assumptions in turn depend on a consensus within the scientific community involved. It is crucial that although background assumptions might not be scrutinised under normal circumstances (when they are invisible), they are articulable and thus might eventually be challenged. In Longino’s own words, “although invisible, or transparent, to the members of a community holding them, these assumptions are articulable and hence in principle public” [Longino (1993), p. 101].

The fact that scientific practices are dependent on background assumptions and on the community in which the scientist is inserted is the source of contextual and historically based criticisms of empiricism. However, here also lies the solution to the problem. Given that scientific knowledge is intersubjective, Longino proposes that the condition of the possibility of objectivity is the critical interaction among scientists with different points of view. Of course, not any interaction will do the work, but only that which enables transformative criticism. Transformative criticism is the key tool to detect and avoid idiosyncratic values in background conditions. Longino (1990), pp. 76-8, identifies four criteria that should be met in order to allow for transformative criticism and thus maximise objectivity.

1. Recognised avenues for criticism: There must be publicly recognised forums for the criticism of evidence, of methods, and of

assumptions and reasoning. Moreover, effective criticism must be encouraged as much as original research.

2. Community response: Communities should uptake criticism so that it actually changes theories and beliefs over time.
3. Shared standards: There must be publicly recognised standards by which theories, hypotheses, and observational practices are evaluated and by appeal to which criticism is made relevant to the goals of the inquiring community.
4. Equality of intellectual authority: Consensus in a community must not depend on political or economic power, or on the exclusion of any of its members.

I will briefly discuss the third and the fourth conditions, because they will be crucial later on when discussing standpoint theorists' criticisms of this view. Regarding the third condition, Kuhn already proposed five allegedly cognitive virtues or features that should be used as standards for theory choice, given that observation alone does not suffice. These virtues are accuracy, consistency, simplicity, scope, and fruitfulness. Longino (1997) argues that these features may not be sufficient and, crucially, that they are not solely epistemic, but that they have social and practical grounds as well. This argument is used to show that there is no sharp divide between cognitive and non-cognitive values, that is, there is no such thing as the class of cognitive values. Therefore, Longino argues that there is room for new standards that have both cognitive and non-cognitive grounds so they can engage with feminist concerns. Longino proposes the following: novelty, ontological heterogeneity, complexity of relationship, applicability to human needs, and diffusion of power. These standards take into account feminist concerns at the level of theory choice (I discuss this claim in more detail at the end of section III). "It is the existence of standards that makes the individual members of a scientific community responsible to something besides themselves. It is the open-ended and nonconsistent nature of these standards that allows for pluralism in the sciences and for the continued presence, however subdued, of minority voices" [Longino (1990), p. 77]. In this quote, minority voices are understood only as dissenting points of view, but not necessarily powerless. One minority view that is politically or economically powerful might be sufficient to change a theory. The fourth condition then is crucial to restrain political and economic power so that they do

not influence scientific practices. Moreover, it guarantees that powerless views are valued equally, thus enhancing diversity.

Longino's theory is able to account for paradigmatic case studies where feminist insights have been able to provide better theories for certain facts. As Saul (2003) explains, cases such as the evolutionary explanation of the orgasm of women show that it is very difficult for the scientific community to tell whether or not their working hypothesis, their methods, their collection of data, and the interpretation of data have a bias (in this case, gendered bias). Saul understands bias simply as "a belief or interest that the investigator possesses prior to beginning the research" [Saul (2003), p. 233]. These interests are precisely what Longino has argued influence research by permeating background assumptions. The female orgasm was evolutionarily mysterious for decades because there were no observations of orgasms in female primates. Therefore, it was inferred that the female orgasm has an evolutionary role which is unnecessary in the case of primates. One of the theories proposed by male researchers to explain this evolutionary role was that women had evolved to have orgasms because after orgasm they feel exhausted and need to rest or sleep, thus they remain in a position in which ova are more likely to be fertilised. Given that primates move around on all fours, they do not need to lie down in order to promote fecundation, and thus have no need to orgasm. Several other theories were proposed, but only when women scrutinised those theories was it revealed that they were based on false assumptions. Perhaps the most surprising discovery is that female primates do in fact have orgasms, although they do not (usually) have them during sexual relations with male primates: they orgasm in sexual practices with other female primates. Male researchers had classified this behaviour as a form of greeting or some sort of social bonding. It is clear that the background assumption in this case was that sex could only take place between a male and a female. Moreover, there was a false assumption not only in the recollection of data, but also in the theory aimed at making sense of the data. The female orgasm does not have exhaustion as a consequence, which is precisely the consequence it has in men, but rather leads in most cases to greater arousal and activity. Male researchers had theorised from their point of view, generalising what consequences orgasms have on women from their own experiences.

Longino's contextual empiricism is able not only to explain this case, as I shall now show, but it also has the sufficient normative force necessary to prevent future cases. Regarding the poor collection of data,

Longino argues that this is due to the fact that what evidence is deemed relevant to a certain hypothesis depends on background assumptions. These background assumptions may prevent relevant evidence from being regarded as such (female primate orgasms were classified as greeting rituals). Observation, it has been argued, is intersubjective and must be verified and validated by the community of inquirers. However, this cannot be done by a homogenous community. There needs to be a diversity of perspectives (as the fourth criterion stipulates) for transformative criticism to take place. In a male-only community, transformative criticism or even articulation of these background assumptions was unlikely to take place. This is proven by the fact that once women made their contribution, previously disregarded observations were considered relevant. The theory proposed to explain female orgasm as an evolutionary trait by appealing to the beneficial consequences it has for fecundation relies once more on a false background assumption, one that has been, and still is, quite common: confusing white heterosexual male features for human features. This background assumption was invisible to researchers until women started doing their own research. This does not mean that women are less prone to false background assumptions, it only shows that by increasing diversity and allowing dissent, scientific practices will achieve a higher degree of objectivity.

II. THE RELATIVIST OBJECTION

Before explaining what I call the Relativist Objection to Longino's view, I would like to compare her view to current standpoint theory accounts. In recent years, the most common version of standpoint theory and contextual empiricism have found many points of convergence, although some differences still remain. Intemann (2010) and Kourany (2009), (2012) use precisely those differences to solve the Relativist Objection, thus arguing that standpoint theory is preferable to contextual empiricism.

Following Wylie [Wylie (2012), pp. 61-2], I shall introduce the two main theses of contemporary standpoint theories:

1. The Situated-Knowledge Thesis: There is no view that comes from nowhere. The social location of a subject affects his or her experiences and limits the epistemic resources he or she has ac-

cess to. Moreover, there is a hierarchical system of power that systematically shapes knowledge. However, this position is not straightforwardly known to the inquirer. Contemporary standpoint theorists argue that standpoints are not default positions, but that they are achieved only by means of critical reflection on power and oppression and how they influence our access to knowledge.

2. The Thesis of Epistemic Advantage: There are certain standpoints that arguably have an epistemic advantage compared to dominant groups. In particular, those of minorities and oppressed groups.

Intemann argues that the first point of contemporary standpoint theory looks like the contextual empiricist view. First, knowledge is situated in both views. Second, critical engagement is necessary to unveil the situatedness of knowledge. Finally, objectivity is not value-free: social and practical values are necessary to minimise bias. The second point also shows similarities between the two views. “This thesis can now be understood as the claim that epistemic communities that *include* members of marginalized groups will have epistemic advantages, or more rigorous critical consciousness, than communities that do not” [Intemann (2010), p. 787]. According to standpoint theorists, not any member will do, but only those that are insider-outsiders (in a certain context) and are critically aware of their condition. On the one hand, outsiders are those that have been historically excluded from scientific practice. This is required because background assumptions are often invisible to those already holding them. On the other hand, they need to be insiders because in order to criticise background assumptions they must be able to communicate with other members and to understand the context in which these assumptions are taking place. Hence, both standpoint theory and contextual empiricism agree that diversity, equality of intellectual authority, and uptake of criticism are crucial aspects of social objectivity.

Intemann points out two differences between standpoint theory and contextual empiricism. The first is that feminist contextual empiricism claims that *diversity of values and interests* contributes to a higher degree of objectivity, while for standpoint theorists it is *diversity of social positions*. According to Intemann, diversity of social positions is preferable to diversity of values and interests.

The contribution of “insider-outsiders” to scientific communities is likely to have greater epistemic significance than, for example, the contribution of someone who has experiences that may be different, but that lack the double vision insider-outsider experiences can produce. Thus, the standpoint aim is not only to be inclusive of different experiences, but particularly those that undermine hierarchical power structures and counteract the negative effects of oppression on knowledge production. [Intemann (2010), p. 791]

It is true that different social locations allow different epistemic resources, and that those in oppressed conditions will be able to track power relations in a way that those in the dominant position might not be able to. However, Longino's view does not preclude this kind of diversity. As we can read in Longino [(1990), p. 80], she talks about diversity of points of view, not only of values and interests. Points of view are broadly understood and can include values and interests as well as social location. The difference, then, is that Longino does not give preference to diversity of social positions, and this might indeed be a virtue rather than a problem for her view, as Intemann suggests. I shall argue for this claim in the next section, but first let me introduce the second difference between the two theories, which is closely related to this last claim and is the grounds for the Relativist Objection.

The second difference is that although both theories argue that values in science are not only the source of bias but also its solution, feminist empiricists give them an instrumental role and do not prioritise certain values over others: all values are helpful to unveil hidden background assumptions. According to standpoint theorists, this is a flaw of Longino's view because it is unable to endorse and promote feminist values.

The Relativist Objection is the following. As I have explained, contextual empiricism claims that diversity of values and interests increases objectivity independently of their content — in other words, there are no privileged values. Therefore, given that every value is worth as much as any other, Kourany and Intemann claim that Longino's view is relativist with respect to moral values. Hence, it is unable to prevent certain problematic values: “Do we need to include members of the Flat Earth Society in research in astronomy? Do we need to ensure there are representatives of chemical companies in research on environmental toxins? Should the interests and values of tobacco companies be represented in cancer research?” [Intemann (2010), p. 792]. Moreover, given that feminist and anti-feminist values are equally beneficial, contextual empir-

icism fails to provide an account of feminist science, which is precisely what it had set out to do.

III. OVERCOMING THE RELATIVIST OBJECTION

According to standpoint theorists, there is only one way to overcome the relativist objection: to privilege certain points of view over others. In Kourany's words, this means that we must "temper the equality of intellectual authority by social location and political involvement" [Kourany (2009), p. 213]. In particular, feminist standpoints should be privileged because:

The development of a feminist standpoint presupposes that, for example, oppression is unjust, revealing gender is valuable, and that hierarchical power structures ought to be abolished. In this way, certain ethical and political values are intrinsically valuable to the achievement of standpoints and scientific objectivity [Intemann (2010), p. 793].

Therefore, according to standpoint theorists contextual empiricism should be complemented with at least the thesis that those with a feminist standpoint are more likely to contribute a higher degree of scientific objectivity than those from other standpoints. In what follows, I shall argue that privileging certain values over others is problematic and moreover is incompatible with Longino's approach, so it is not a solution that she could implement. Furthermore, I shall show that Longino's view has enough resources to solve the objection without appealing to privileged standpoints.

Longino's contextual empiricism is able to avoid the Bias Paradox – the most prominent argument against feminist empiricism – precisely because in her view there are no privileged points of view. Louise Antony summarises the Bias Paradox perfectly: "if we don't think it's good to be impartial, then how can we object to men's being partial?" [Antony (1993), p. 189]. That is, if we do think that feminist values are more beneficial when it comes to scientific objectivity and we therefore reject impartiality, what reason do we have to claim that men's biases are wrong? Longino solves the paradox precisely by not taking a stand on which values are to be promoted over others. As long as the four criteria are endorsed, any value will be beneficial to spot background assumptions. If Longino were to solve the Relativist Objection by promoting certain val-

ues over others, then the Bias Paradox would again be a problem. For this reason, I shall propose a solution to the Relativist Objection that avoids the re-emergence of the Bias Paradox and that, moreover, does not rely on standpoint theory. The solution has two parts. First, I shall show that even though contextual empiricism does not prevent problematic values from entering the scientific arena, it guarantees that they do not survive long. Second, I shall argue that contextual empiricism is a feminist theory of philosophy of science because feminist values do play a preeminent role, although not in the way suggested by the standpoint theorists.

Let me consider the problematic points of view I quoted before: the Flat Earth Society, chemical companies, and tobacco companies. I agree that these points of view do not increase objectivity and that they should not play a role in the assessment of theories. However, there are two ways to prevent this from happening: either they are forbidden outright, or we let the scientific community criticise and finally reject them. Let us consider the first situation. We can simply avoid them by forbidding their contributions. Of course, these are points of view which are already problematic and easily identifiable as spurious and harmful. However, not every problematic point of view is so easily identified as such, and it is difficult to reach an agreement on which points of view should be banned or promoted only on the basis of being points of view of "historically under-represented social groups". Therefore, what is key is not whether these points of view can enter the scientific debate, but whether the scientific community has enough tools for detecting and avoiding spurious interests and prejudicial values. This is precisely the second method proposed to reject problematic values. I claim that any scientific community satisfying the four criteria proposed by Longino would be able to reject and prevent these problematic views from having an impact on scientific practice. For instance, let us consider the aforementioned cases:

- The Flat Earth Society: Members of the scientific community holding the thesis that the Earth is flat should uptake criticism and change their views in light of it as much as any other member. However, what characterises them is precisely the refusal to uptake criticism, so they would be easily excluded from the community.

- Chemical and tobacco companies: In this case, what is problematic of these views is that they have economic and often political power to influence research in order to maintain or increase their benefits. This violates at least two of the criteria. On the one hand, theories must be assessed by shared standards as per the third criterion, and standards appealing to economic benefit are likely to be rejected. On the other, any point of view must be considered equal as per the fourth criterion. Therefore, whatever power these companies have, their point of view is no more relevant than any other. Given that their current source of legitimacy is their political and economic power, without them they are unlikely to survive long.

Any other problematic point of view would be scrutinised in light of the four criteria and the scientific community itself would have the tools to identify and dismiss them.

Finally, I will argue that contextual empiricism is a feminist philosophy of science. According to Longino, any feminist philosophy of science must accomplish two goals:

1. Identification and elimination of masculinist ideologies in the content and methodologies of scientific inquiry, and
2. Identification and realisation of liberatory or emancipatory potential in the sciences, or at least a transformation of the sciences for feminist ends. [Longino (1993), p. 97]

Although contextual empiricism defends that in the scientific arena there must be diversity of values and interests to foster objectivity, and thus feminist values are in principle no more privileged than any other, I will argue that Longino's view is able to, at least in principle, accomplish both goals. As I have explained, according to contextual empiricism the ideal scientific community must be regulated by the four aforementioned criteria. Crucially, these criteria reflect and endorse feminist values. Therefore, it is not sufficient or necessary that feminist values are in play in the scientific arena itself as standpoint theorists suggest, but they must be included in the rules that govern the game, and that every player should follow. The criteria straightforwardly guarantee the first goal. Masculinist ideologies will be eliminated because they will not survive transformative criticism, as they are idiosyncratic. Contextual empiricism achieves the second goal of feminist philosophy of science by means of

the fourth criteria. As I have shown, assumptions shared by a community are often invisible to the members of that community, so detecting racist and sexist biases, for instance, requires the active participation of minorities. Therefore, Longino claims that “a community [...] must also take active steps to ensure that alternative points of view are developed enough to be a source of criticism and new perspectives. Not only must potentially dissenting voices not be discounted; they must be cultivated” [Longino (2002), p. 132]. This is sufficient to argue that the second goal is achieved: given that the scientific community is currently far from this ideal, embracing contextual empiricism would require a transformation of science to foster not only women’s voices, but also other voices from oppressed groups. This clearly is a way to transform the sciences for feminist ends.

There is a further reason why contextual empiricism is a feminist philosophy of science. As I have mentioned in section I, there is no sharp distinction between cognitive and non-cognitive standards, so the third criterion allows standards on non-cognitive grounds. Hence, theory choice can include standards such as the value of diversity, applicability to current human needs, and diffusion of power. These standards are in line with the two goals that Longino believes feminist philosophy of science should pursue. First, these standards aim to overthrow masculinist ideologies. For instance, ontological heterogeneity is a way to reject theories of inferiority: there is no single type that has ontological priority and must be used as the norm to measure any deviance as inferior. Difference is valuable and must be preserved. Another example is complexity of relationship, which claims that when choosing between theories the community should advocate, we should choose those that promote models with horizontal interactions rather than dominant-subordinate ones. Second, these standards promote “the emancipatory role of the sciences”. For instance, diffusion of power is meant to give “preference to research programs that do not require arcane expertise, expensive equipment, or that otherwise limit access to utilisation or participation” [Longino (1994), p. 478]. Applicability to current human needs is a standard that values theories which help developing treatments and technology that cover long-standing human needs, and these too often coincide with women’s needs [Longino (1994), p. 478]. Hence, the two goals of feminist philosophy of science are secured by the four criteria proposed.

CONCLUSION

In this essay I have shown how contextual empiricism is able to overcome Intemann and Kourany's Relativist Objection. Helen Longino's view is not only able to achieve the main goals any feminist philosophy of science should pursue, but it is also able to do so without directly altering equality of intellectual authority in favour of certain standpoints. The fact that any scientific view, as long as it respects and follows the four criteria ruling scientific practice, is allowed to enter the scientific arena is not a weakness of contextual empiricism but the reason it should be preferred to standpoint theories. The four standards that should rule the scientific arena are themselves an endorsement of feminist values, but they do not entail artificially debilitating points of view or even banning them solely because of who their proponents are or because of their content. Scientific practice must provide the proper environment for any view to flourish and to be tested against its peers and against the evidence. Only in this way can scientific knowledge avoid dogmatism and idiosyncratic values from hindering its course.

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