**L. Susan Stebbing *Philosophy and the Physicists* (1937): a re-appraisal**

**Peter West, Durham University**

An early review of *Philosophy and the Physicists* from the Cambridge metaphysician C. D. Broad gives the overall impression that although the text might serve as a useful critique of popular science writing (particularly that of the physicist Arthur Eddington) it does not make any significant contributions to the philosophy of science. Broad concludes that while “we owe a debt of gratitude to Miss Stebbing” for taking the time to clear up “the messes made by amateur philosophers”, Stebbing’s accomplishments are akin to those enjoyed by “a good housewife who has at last completed her spring-cleaning”. He continues, “were it not for the ill-omened associations of the phrase, we might congratulate her and her readers on the house being now ‘swept and garnished’”. Ill-omened indeed. Apart from the obvious sexism (which haunted Stebbing throughout her career),[[1]](#footnote-1) what should also be noted about Broad’s review is that it suggests there is little to be gained from reading *Philosophy and the Physicists* aside from having some confusions about popular science cleared up. This review came as part of a larger trend; for, as Siobhan Chapman notes in her philosophical biography of Stebbing, the critical reception of *Philosophy and the Physicists* was “almost entirely negative in tone” (2013, 116).[[2]](#footnote-2)

In this re-appraisal of *Philosophy and the Physicists*, I want to challenge Broad’s account of what Stebbing accomplishes and show that, alongside a thorough (and sometimes scathing) critique of Eddington’s philosophical-scientific writing, the text in fact offers valuable insights into both Stebbing’s own philosophy of science and her wider views on philosophical analysis. More specifically, I will argue that in *Philosophy and the Physicists,* Stebbing defends a model of scientific progress that, to some extent, pre-empts Thomas Kuhn’s attempt to change the “image of science” in *The Structure of Scientific Revolutions,* published in 1962(1996, 1). I will also show how Stebbing’s response to Eddington’s attempt to use developments in modern physics to argue for idealism fit into her wider metaphysical outlook – which she elsewhere refers to as ‘realism’.

**The Responsibility of the Popular Scientist**

One question worth asking about *Philosophy and the Physicists* is why Stebbing felt compelled to engage in what is ostensibly a prolonged criticism of popular scientific writing. In other words, why did Stebbing (who, by this point, had published widely across various areas of philosophy) think writing this text was important? Two years later, in 1939, with the threat of the Second World War on the horizon, Stebbing published another piece of philosophy that, like *Philosophy and the Physicists*, was aimed at an audience of non-specialists: *Thinking to Some Purpose.* In this case, her motivations are very clear. In the Preface to that text, she writes:

I am convinced of the urgent need for a democratic people to think clearly without the distortions due to unconscious bias and unrecognized ignorance. Our failures in thinking are in part due to faults which we could to some extent overcome were we to see clearly how these faults arise. It is the aim of this book to make a small effort in this direction. (Stebbing 1941, 5)

In *Thinking to Some Purpose*, Stebbing identifies failures in thinking amongst the population at large as a threat to democracy and prescribes a series of lessons in clear thinking as the solution to that problem.

In the case of *Philosophy and the Physicists,* however, Stebbing’s motivations are less obvious. Some poor popular scientific writing would not appear, at least on the surface, to pose as much of a threat as the downfall of democracy. So why did Stebbing feel it was important to write this text? Stebbing’s answer is that, when it comes our scientific understanding of the world, “[w]e common readers… are fitted neither to criticize physical theories nor to decide precisely what are their philosophical implications” (PP, ix).[[3]](#footnote-3) Coming to understand a physical theory in a comprehensive manner requires a great deal of time, effort, and training – which means that most of us are simply unable to do so. This is not a defect in us, but simply the result of circumstance: it requires being a *physicist* tounderstand physical theories in-depth, and most of us are not physicists. This division of labour makes sense: there is no need for all of us to be physicists, and in fact (for pragmatic reasons), it’s a good thing we aren’t. But this does place a considerable amount of responsibility on physicists’ shoulders, for we (‘common readers’) are completely dependent on them to inform us what the latest developments in science tell us about the world. In turn, this places on physicists – particularly those engaging in *popular science* - the additional responsibility of determining what kind of inferences we can draw from such developments.[[4]](#footnote-4)

Stebbing considers herself as “common reader” (PP, 5), rather than an expert, and worries that she and other common readers are in danger of not only being let down by popularises of science but deliberately misled. For instance, Stebbing claims that (in the work of Jeans and Eddington) “[m]any devices are apparently used for no other purpose than to reduce the reader to a state of abject terror” (PP, 10). Having put their readers in this fearful state, such popularises then exploit their position of authority to promote mystical or religious claims that – and this is what Stebbing takes greatest issue with – do not actually follow from the science they are expositing.[[5]](#footnote-5)

Furthermore, Stebbing writes:

We are dependent upon the scientists for an exposition of those developments which – so we find them proclaiming – have important and far-reaching consequences for *philosophy*. (PP, ix, my emphasis)

It is not just the common reader, then, who is dependent on popularisers of science but philosophers too. Assuming that our *philosophical* attempts to give an account of reality should be informed by our best *scientific* understanding of reality; and assuming that most philosophers do not have the time or leisure to also be physicists, it seems that philosophers (especially metaphysicians) are dependent on scientists to keep their work up to date. Indeed, Stebbing makes it clear that she is not writing for a general readership alone, but for

[O]ther philosophers *and* for that section of the reading public who buy in large quantities and, no doubt, devour with great earnestness the popular books written by scientists for their enlightenment. (PP, ix, my emphasis)

To some extent, then, this answers another query implicit in Broad’s review: why should philosophers be interested in Stebbing’s critique of popular science? Because, Stebbing argues, philosophers, as well as the general public, are dependent on popular physics for their understanding of what, to the best of our scientific knowledge, the world is like. For instance, at the beginning of the twentieth-century, Einstein’s theories of general and special relativity instigated a revolution in how physicists understood the nature of time. This of course had significant ramifications for the metaphysics of time – providing data that suggests our experience of time’s passage may not accurately reflect the nature of time itself. But what is important here, Stebbing would emphasise, is that this is *not* the kind of data a philosopher working in isolation could ever attain. It requires the work of physicists and, in turn, *popular* physicists to articulate it in a way that is accessible to non-specialists.

**Stebbing’s Critique of Jeans and Eddington**

Two of the most widely read popular scientists in the 1920s and 30s were Sir James Jeans and Sir Arthur Eddington. Given the responsibility already held by popular physicists, according to Stebbing, these writers have a particular duty to articulate the right kind of information to the common reader in the right kind of way. “Unfortunately, however,” Stebbing writes, “our popular expositors do not always serve us very well” (PP, ix). Stebbing’s underlying concern with both writers is twofold: they employ careless metaphors that are liable to mislead the reader or cloud their judgement, and they move too quickly from developments in physics to philosophical conclusions (PP, 5).[[6]](#footnote-6)

Stebbing only dedicates one chapter of *Philosophy and the Physicists* to Jeans. The primary focus of her attack is his *The Mysterious Universe* (1930) where Jeans argues that since, in physics, we are acquainted with the mathematical structure of the universe and since mathematics is something that only exists in the mind, it follows that the structure of the universe exists only in the mind (e.g., PP, 36). Stebbing explains that she will spend more time analysing Eddington because, unlike Jeans, “he does not desire to base any religious belief upon scientific discoveries” (PP, 21). In other words, unlike Jeans, Eddington is better at keeping questions of faith out of his expositions of science.[[7]](#footnote-7) She explains that “This difference between the two scientists is responsible for greater subtlety of Eddington’s argument and for its wider ramifications” (PP, 21). The claim here seems to be that Eddington is more worthy of attention since he does at least try to support his position without recourse to claims about faith or religion.[[8]](#footnote-8)

Reading between the lines, however, one gets the impression that the real reason Stebbing does not discuss Jeans in any great depth is that he does not need to be taken seriously. She cites the fact that Jeans himself seems almost proud of his lack of philosophical training; as he likes to put it, he is a “stranger in the realms of philosophy” (PP, 8). While Jeans seems to think this bestows him some kind of advantage – perhaps one of clarity in drawing philosophical conclusions without prejudice – Stebbing argues that it in fact leads him to “make a fool of himself” (PP, 8). For, she argues, he defends a position (what Stebbing takes to be a version of Berkeleian idealism (PP, 31)) that has already received a considerable amount of philosophical scrutiny – without the advantage of learning from that scrutiny.[[9]](#footnote-9)

Having dealt with Jeans in a single chapter, the remainder of the text focuses on various aspects of Eddington’s popular science as well as his own philosophical position which is also a version of idealism.[[10]](#footnote-10) Stebbing’s critique of Eddington has been subject to various commentaries available in the secondary literature.[[11]](#footnote-11) Rather than treading over old ground, and to make space for my exposition of Stebbing’s more positive claims about the philosophy of science in the next section, in the rest of this section I will outline just one aspect of Stebbing’s criticism of Eddington. However, I think this serves as a useful exemplar of the kind of concerns Stebbing has with popular scientific writing more generally.

Stebbing objects to Eddington’s attempts to “convey exact thought in inexact language” (PP, 7). The problem is, Stebbing argues, “*exact* thought cannot be *conveyed in inexact language*; at best it can be but partially conveyed, at worst the illusion will be created that it has been conveyed” (PP, 7). In other words, Eddington is in danger of giving his readers the impression that they have comprehended the whole picture – that they have properly understood this or that particular issue – when in fact they have been given only part of that picture, or worse, the wrong picture entirely. What’s more, Stebbing continues:

Eddington seldom aids the reader in co-operating in determining *how* inexactly the thought has been conveyed. He contents himself with remarking that he must not be taken always to mean just what he says. (PP, 7)

Eddington deliberately talks loosely in order to bring his readers into the discussion in a way that doesn’t immediately take that discussion beyond their comprehension (as would happen, if, for example, he spoke in *exact* language; i.e., the language of physics). Stebbing admits that painting a metaphorical picture of things for someone, especially when educating them on something they do not yet understand, is often helpful (PP, 51). However, the problem is that Eddington is not transparent in his doing so. It is important, Stebbing thinks, to alert your readers to where and how analogies or metaphors break down (to where the picture stops being accurate) – lest they should forget that the language being employed is analogical or metaphorical in the first place. For instance, Stebbing argues that Eddington is serially guilty of using language that, in a strict sense, is only appropriate to the world of everyday experience and macroscopic objects when he is in fact talking about what is taking place on a microscopic level. “The language of common sense”, Stebbing argues, “is not appropriate to the description of such phenomena” (PP, 51). Again, it can be helpful to do this carefully and in a way that makes it clear to the reader where the similarities between the macroscopic and microscopic break down. But, she argues, this isn’t the approach that Eddington takes. Consequently, his exposition is liable to give readers a very misleading impression of the nature of the microscopic world.

Perhaps the best example of this, and one which Stebbing returns to several times, is Eddington’s treatment of *solidity.* Eddington writes:

I am standing on a threshold about to enter a room. It is a complicated business… I must make sure of landing on a plank travelling at twenty miles a second around the sun… The plank has no solidity of substance. To step on it is like stepping on a swarm of flies. Shall I not slip through?... if unfortunately I should slip through the floor or be boosted too violently up to the ceiling the occurrence would be, not a violation of the laws of Nature, but a rare coincidence. (Eddington 1929, 342)

Eddington’s point is that developments in physics tell us that the nature of ‘solid’ objects, on a microscopic level, is not how we ordinarily take it to be. We don’t tend to think of planks of wood as ‘swarms’ of particles and even when told that this is ‘really’ the case, we find it hard to conceive of them as such. Planks of wood, tables, and other objects *seem* to be solid, without gaps, single objects rather than ‘swarms’ of particles, and so on. However, Eddington claims, physics tells us otherwise.

Stebbing takes great issue with this claim that objects are not ‘really’ solid.[[12]](#footnote-12) In characteristic fashion, she begins her critique of Eddington with an analysis of the ordinary language conception of ‘solidity’. She writes:

Stepping on a plank is not in the least like ‘stepping on a swarm of flies’. This language is drawn from, and is appropriate to, our daily intercourse with the familiar furniture of the earth.[[13]](#footnote-13) We understand well what it is like to step on to a solid plank; we can also imagine what it would be like to step on to a swarm of flies. We know that two such experiences would be quite different. The plank is solid. (PP, 48)

Stebbing’s point is this: if *anything* is solid, then planks of wood are solid. In fact, we get our notion of solidity from our experiences of stepping on planks of wood, placing things on tables, walking into walls, and the like.[[14]](#footnote-14) If these experiences are *not* experiences of solidity, as Eddington’s example suggests, then it is unclear what it means for something to be solid in the first place. What’s more, Eddington’s example trades in on the fact that *do* know what it means for something to be solid and that we can at least *imagine* (fairly reliably) that stepping onto a swarm of flies would be nothing like stepping onto something solid – thus undermining his claim that solidity isn’t what we tend to think it is.

However, what is even worse, as far as Stebbing is concerned, is that having (apparently) banished solidity from the world, Eddington’s example then requires that we *do* have some ordinary language notion of solidity in order to understand what he has to say about what things are like at the micro-level. *Why* is it that we can be ‘supported’ by a ‘swarm’ of particles, in a way that makes us believe we are stepping onto a genuinely solid plank of wood? Precisely *because* those particles themselves are solid! Yet, solidity, according to Eddington, is not what we (ordinarily) think it is. So what do we mean when we say that, according to physics, the particles themselves are solid? There is no helpful answer forthcoming. Overall, Stebbing argues that Eddington’s liberal and careless metaphors – while they might appear to provide greater clarity concerning the true nature of physical objects according to the latest scientific theories – ultimately leave the reader (and Eddington himself) in a muddle. All that has really happened is that our ordinary language conception of ‘solidity’ has been undermined. Physics has apparently shown that ‘solidity’ does not mean what we thought, but has failed to provide an analysis of what we really mean when we use that term.

**Stebbing’s Philosophy of Science**

To some extent, *Philosophy and the Physicists* is a ‘negative’ text, in the sense that Stebbing’s first order concern is bring to light the mistakes made by popular sciences and their consequences. However, it is nonetheless possible to identify some more positive aspects of Stebbing’s own philosophical views.[[15]](#footnote-15) In particular, Stebbing’s critique of Eddington and Jeans reveals her own account of the aims of science and, in turn, the nature of scientific progress. What becomes clear, in various places in the text, is that Stebbing places considerable emphasis on the role of *scientists* in scientific progress.[[16]](#footnote-16)

This ‘humanisation’ of science echoes Thomas Kuhn’s more familiar attempt to transform “the image of science” in *The Structure of Scientific Revolutions* (1996, 1). Kuhn argues that the progress of science is punctuated by periods of relative stability (‘paradigms’) and moments of great upheaval: what he calls scientific revolutions. Kuhn places considerable emphasis on the role of the scientific *community* in allowing such revolutions to take place, but also from holding them back at times too. In this way, Kuhn acknowledges that the somewhat arbitrary values and circumstantial interests of individual scientists plays a role in determining scientific progress. In *Philosophy and the Physicists,* Stebbing rejects the ideal of objective scientific progress, favouring instead a view on which the role of individual scientists is crucial. This account of science fits with Stebbing’s view, expressed in *Thinking to Some Purpose,* that it is “persons who think, not purely rational spirits” (Stebbing 1941, 21). For Stebbing, thinking, reasoning, and attempting to understand the world around us through the sciences are *human* activities. As she sees it, in attempting to better understand the nature of things we are not laying aside our ‘selves’ but directing ourselves (not just our rational selves but our whole selves) towards particular a problem or set of problems.

Stebbing takes issue with Eddington’s tendency to personify nature as it if were an agent who, when understood in the right way, will reveal herself to us. In doing so, she claims, Eddington commits “the anthropomorphic fallacy” (PP, 15). On one level, this is simply another criticism of the form that popular scientific writing often takes. Thus, part of Stebbing’s concern is that this is an inaccurate way of understanding the relation between science and nature. She explains that Eddington “seem[s] to believe in a strange anthropomorphic female” (PP, 15) but retorts that “Science is not a Goddess or a woman. We cannot ask *science,* but only *scientists*” (PP, 9).[[17]](#footnote-17) However, while this is clearly part of Stebbing’s critique of Eddington’s popular scientific method, this type of remark also provides an insight into Stebbing’s own views about what determines the nature of scientific progress and the extent to which science can be said to ‘progress’ at all. For example, she explains that when presenting a scientist with a problem to be solved or phenomenon to be explained,

[W]e must ask our questions of the scientist at a moment when he is in a scientific temper, capable of giving us ‘the ascertained facts and provisional hypotheses’ without any admixture of the emotional significance with which he reads into these facts in his least scientific moods. (PP. 9)

We’ve seen already that, in the case of Jeans and Eddington, Stebbing believes that it is very difficult, perhaps impossible, to find *any* moments where the way in which a scientist interprets the latest physical developments are not affected by their non-scientific concerns. As far as Stebbing is concerned, for example, Jeans is guilty of letting his religious commitments bleed into his scientific inferences.

Elsewhere in the text, Stebbing claims that the separation between one’s own personal concerns, interests, and values, and one’s purely scientific, rational theorising is at best an ideal and perhaps only an illusion. She argues that “’the physicist himself’ is an abstraction, and may well become a vicious abstraction” (PP, 269). Why? Because, she states, “He also tends to have a philosophical outlook on the world which – in some of its aspects – he is engaged in studying”. Physicists and philosophers are, after all, in the same game, roughly speaking. Both are concerned with understanding the world around us on some kind of fundamental level. Thus, Stebbing emphasises, it is unlikely and perhaps impossible to imagine that a physicist can completely banish from their mind any pre-conceptions about the nature of things and stick to only what physics, strictly, tells them.

The notion that science is entirely dependent on *scientists* (people with values, per-conceptions, personal interests) comes to a head in a discussion of laws and regularities. There, again, Stebbing tells us that “*science* is not a *person* who can state in advance what he intends to do and how he proposes to carry out his intention” (PP, 68-69). Rather, she explains, “Science is the work of *scientists,* who, profiting by each other’s labours, come gradually to achieve an agreed body of knowledge, and in the course of this achievement continually develop new and more powerful technical methods” (PP, 69). Stebbing’s emphasis on scientists working towards a clear body of knowledge closely resembles Kuhn’s descriptions of scientific paradigms; shared sets of theoretical assumptions that only come under scrutiny in the event of a crisis or rejected in the event of a scientific revolution. Stebbing has nothing to say about revolutions or about whether (and if) such agreed bodies of knowledge come to be doubted, but her emphasis on the achievements of individual scientists certainly moves her away from the traditional teleological model of scientific progress (the same model Kuhn also rejects). Stebbing adds to these remarks that:

The development of science does not in the least resemble the building of a house, or of a palace, or of a planned garden-suburb. There is nothing in its development comparable to a single foundation upon which, once well and securely laid, the building may be erected by the labours of many workmen, with or without the control of a master-builder. (PP, 69)

Again, there is a clear sense that, in Stebbing’s view, science does not progress in accordance with a plan. There is no pre-ordained or inevitable end-point of the trajectory of science. In fact, it may not have any kind of trajectory at all. Instead, Stebbing thinks Eddington is right (on this occasion) in comparing scientific discovery to “fitting together the pieces of jigsaw puzzle” (PP, 69). Scientists are not following the plans of a master-builder. Instead, labour is divided, individual explanatory challenges are met, and then “profiting from each other’s labours” and working collaboratively, scientists put the jigsaw together.

**Stebbing’s Realism**

Finally, I want to show how some of Stebbing’s claims in *Philosophy and the Physicists* fit into her wider account of philosophical and scientific analysis, which she calls ‘realism’. Doing so reveals that *Philosophy and the Physicists* is part of a wider project of working out what is required in order for us to analyse the world around us.

In ‘Realism and Modern Physics’ (a paper she gave as part of a symposium alongside John Laird and C. E. M. Joad), Stebbing lists six propositions, “with regard to each of which” she states, “I am now asserting that I know this proposition to be true” (1929, 147). These propositions are:

(1) I am now seeing a red patch.

(2) I am now perceiving a piece of blotting paper.

(3) That is a piece of blotting paper.

(4) That piece of blotting paper is on the table.

(5) That piece of blotting paper was on the table before I saw it.

(6) Other people besides myself have seen that piece of blotting paper.

Stebbing then adds: ““I should say that anyone who believes that such propositions as these are true and can be known to be true is to be called a *realist*” (1929, 147). As Frederique Janssen-Laurent notes, Stebbing’s commitment to these specific propositions in turn commits her to the view that, as Janssen-Lauret puts it:

There is a well-delineated collection of truths about perception, mind, other minds, and external objects which form the basis of philosophical and scientific investigation; together these truths constitute ‘realism’. (forthcoming, 25)

Stebbing argues that this view – and the more specific propositions it encompasses – must be accepted *before* we can begin to analyse the world around us. ‘Realism’, then, is a stance one must adopt *if* one wishes to engage in analysis. This goes for both metaphysical and physical analysis (see West 2021, 16-17).

There are signs that Stebbing’s claim that one mustadopt a realist stance before one is able to engage in analysis is at work in *Philosophy* *and the Physicists*. In ‘Realism and Modern Physics’, Stebbing claims that “the denial of realism is inconsistent with the validity of physical theories” and that physics ought really to concern itself with questions about ““how we come to know such facts as these [i.e, the six realist propositions above] and what is their correct analysis” (1929, 147). In *Philosophy and the Physicist*s, similarly, we find Stebbing chastising those (like Eddington) who claim that developments in physics cast doubt over our common sense beliefs about the world. Instead, Stebbing argues that physics actually *requires* us to make such assumptions to even get off the ground. For instance, in *The Nature of the Physical World,* Eddington suggests that our best physical theories about consciousness suggest that we face a potentially intractable problem of other minds. That is, given that (in his view) we can only be directly aware in experience of what exists in our own consciousness, we cannot know for sure that there are other minds like ours. In response, Stebbing states that the existence of other minds “must be assumed if physics is to be possible” (PP, 109). After all, she argues, no individual physicist working alone could arrive at the latest physical theories about how perception and consciousness work. The fact that, if Eddington is right, the existence of other minds cannot be assumed, Stebbing argues, is a mark against his position.

The way Stebbing pushes back against Eddington’s account of the ‘physical world’ as one full of ‘swarms’ of particles rather than solid objects is also consistent with the kind of propositions that (in ‘Realism and Modern Physics’) she claims one must accept in order to be a realist. For instance, she writes:

You, who are reading this, may pause and look around you… Wherever you may be, you will see objects distinguishable from one another, differing in colour and in shape; probably you are hearing various sounds. You can see the printed marks on this page, and notice that they are black marks on a whitish background. That you are perceiving something coloured and shaped you will not deny; that your body presses against something solid you are convinced; that, if you wish, you can stop reading this book, you know quite well. (PP, 46)

Given Stebbing’s list of realist propositions in ‘Realism and Modern Physics’ it should be clear that this is the kind of worldview that arises once one has adopted the realist stance. For Stebbing, this is the kind of position one must adopt *before* one can begin to analyse things. Yet, if Eddington is right, these are precisely the kinds of claims that physics would have us doubt. According to Eddington, “the page is not ‘really coloured’… the seat upon which you are sitting is not ‘really solid’… you hear only ‘illusory sounds’” (PP, 46). We’ve seen before that Stebbing thinks such claims mislead the reader and trade in on the fact that we *do,* in fact, know what it means for something to be solid, while also suggesting that all the things we previously took to be solid are not so. However, by holding up such claims alongside the account of realism Stebbing endorses elsewhere, I think it becomes clear that Stebbing has a further, underlying concern with Eddington’s approach. His ‘scientific’ worldview is *not* consistent with the six propositions one must accept as true to be realist. And since adopting the realist position is a *pre-requisite* for analysis, Eddington has in fact undermined his own attempt to provide a physical analysis of the world around us.

As Stebbing puts it, in her conclusion to the text, the common reader starts with the assumption that “[t]he world is as it is” (PP, 285). The physicist’s job is not to undermine that claim but to tell us more about what it means. *Why* is the world as it is? What laws make it that way? How do we come to learn that this is how the world is? And what kinds of questions should philosophers be asking about it? These are the kinds of questions that, if Stebbing is right, physics should help us to answer.

**Conclusion**

Contrary to Broad’s reading of the text*, Philosophy and the Physicists* does have more to offer than simply ‘spring-cleaning’. It is certainly true that Stebbing believes the work of Jeans and Eddington needs clearing up, but *Philosophy and the Physicists* offers the reader much more than just that. Stebbing shows that the use of metaphors and anthropomorphism is not always harmless; that, if it isn’t properly checked and balanced, it can lead to gross misunderstandings about what the world around us is like and how the progress of science works. Indeed, Stebbing’s work requires us to re-think (or at least remind ourselves) what science actually is. It is not some unitary, centralised enterprise with an easily identifiable goal. It is the work of individual scientists – *people* – each of whom is working with their own localised goals in mind. Neither Science itself, not Nature, can speak to us. And no piece of popular scientific writing can tell us, in inexact language, what Science says. The best we can do is try to get a sense of what the work of scientists tells us about the world, while also acknowledging the inevitable limits of our own understanding. For Stebbing, it is better to be a well-informed common reader dissatisfied than a misled common reader satisfied.

Popular science is as influential now as it was when Stebbing was writing. For that reason, *Philosophy and the Physicists* offers valuable insights, even to the contemporary reader. We now have popular science communicated to us via forms of imagery that Stebbing never had to contend with; films and documentaries with computer-generated graphics that promise to show us what the world is like on the microscopic level and what the cosmos is like millions of lightyears away. Stebbing would no doubt have something to say about the potential of such awe-inducing images to mislead and the extent to which they can genuinely tell us what the world around us is really like. Such images might serve us well, Stebbing might argue, but just so long as they do not prohibit us from thinking clearly.[[18]](#footnote-18)

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1. For instance, in 1939, Stebbing applied for a chair in philosophy in Cambridge soon to be vacated by G. E. Moore. In a letter to a friend from the time, she explains that Gilbert Ryle informed her that “everyone thinks you are the right person to succeed Moore, except that you are a woman” (Chapman 2013, 126-27). [↑](#footnote-ref-1)
2. In an obituary of Stebbing for *Mind,* John Wisdom writes that *Philosophy and the Physicists* “does more than perform an intellectual service” (as, for example, Broad’s review suggests) (1944, 284). However, Wisdom does not go on to explain what more it does. [↑](#footnote-ref-2)
3. References to *Philosophy and the Physicists* are to the Dover Books edition published in 1958. This is an unabridged and unaltered republication of the original 1937 Methuan & Company edition. References (‘PP’) are to page numbers therein. [↑](#footnote-ref-3)
4. Stebbing also emphasises the prominent role scientists hold in society. She explains that (unlike in the past) “theologians hang on to the mantles… of the popularizing scientist” and that some people regard scientists as “the custodians of the spiritual element in the universe” (PP, 143-44). [↑](#footnote-ref-4)
5. Many thanks to an anonymous referee for this journal for emphasising this aspect of Stebbing’s criticism. [↑](#footnote-ref-5)
6. There is an interesting link here to Stebbing’s views as espoused in *Thinking to Some Purpose*. As we have seen, Stebbing’s concern is that if are not able to think clearly then we open ourselves up to errors in thinking such as prejudice and unconscious bias. In relation to popular science writing, Stebbing explains: “they [Jeans and Eddington] seek to arouse emotions his [i.e., the common reader’s] emotions, thereby inducing a frame of mind inimical to intellectual discernment. Populaizations of such a kind constitute a grave danger to clear thinking” (PP, 5). If there is some commonality between these two works of popular philosophy, it would, then, appear to be Stebbing’s concern with various barriers to clear thinking. [↑](#footnote-ref-6)
7. This is not to say that Eddington manages to keep out discussions of religious or spiritual matters entirely. For instance, in the final chapter of *The Nature of the Physical World* (‘Science and Mysticism’), having established that physics tells us that the world is merely a set of symbols, Eddington argues that it is *mysticism* – and, in turn, religion – that can provide us with answers to questions like ‘what is real?’. Eddington argues that, unlike the entities described by physics, it is possible to have an “intimate knowledge” of God through mystical (i.e., not scientifically measurable), religious experiences (NPW, 322). Later, he concludes that “[t]he idea of a universal Mind or Logos would be, I think, a fairly plausible inference from the present state of scientific theory” (NPW, 338). [↑](#footnote-ref-7)
8. There is perhaps also a connection here to Stebbing’s own religious pre-dispositions. Stebbing was a member of The Ethical Union (now known as ‘Humanists UK’) a humanist organisation that promoted independent thinking and a secular approach to various aspects of public life such as education. From 1941-42, Stebbing was President of the organisation. Stebbing herself emphasises (in *Thinking to Some Purpose*) it is “*persons* who think, not purely rational spirits” (Stebbbing 1941, 21, my emphasis). Thus, it seems reasonable to suggest that Stebbing felt more compelled to engage in Eddington’s work than Jeans since he is less guilty of making assumptions about the existence of God and the relation between physics and theism. In a review of *Philosophy and the Physicists* for the journal *Ethics* from 1937, the secularist writer C. Delisle Burns takes Stebbing’s central aim to be, as he puts it, undermining the claim that developments in modern physics provide “a basis for maintaining the existence of a medieval deity” (Burns 1937, 559). [↑](#footnote-ref-8)
9. This is one issue about which Broad thinks Stebbing is quite right. Nonetheless, Broad manages to turn this into another criticism. “This massacre” he writes, “is too much like knocking down a sitting bird to be of much interest” (Broad 1938, 221). [↑](#footnote-ref-9)
10. Indeed, from the perspective of intellectual history, one of the most noteworthy aspects of *Philosophy and the Physicists* is the connection between modern (i.e., early twentieth-century) physics and idealism. For instance, Stebbing writes “It is worth noticing that most physicists who have attempted to construct a philosophy upon the basis of their physical researches have ended up elaborating some form of idealism” (PP, 265-66). To the contemporary eye, this is a surprising claim. First, because idealism is relatively unpopular position today - partially due to attacks from early figures in the analytic movement such as Russell, Moore, and indeed Stebbing (in the latest PhilPapers.org survey, only 4.3% of respondents chose idealism when asked “External world: idealism, skepticism, or non-skeptical realism?” see: https://philpapers.org/surveys/results.pl). Second, because of well-known arguments (such as the causal closure argument) to the effect that our best understanding of physics entails some kind of reductive physicalism. [↑](#footnote-ref-10)
11. Chapman 2013, 108-17; Tuboly 2020; West 2021. [↑](#footnote-ref-11)
12. In a recent interview with the New York Times, the philosopher of mind David Chalmers stated that objects in the world around us aren’t ‘really’ solid, so it is obviously not just physicists who (as Stebbing sees it) are guilty of using this kind of language (<https://www.nytimes.com/2019/06/18/opinion/david-chalmers-virtual-reality.html>). [↑](#footnote-ref-12)
13. Stebbing never makes it explicit, but her talk of “the furniture of the earth” would appear to be borrowed from Berkeley’s *Principles of Human Knowledge* (2008, 85). Stebbing references Berkeley at several points, sometimes to compare his idealism with that of Jeans and Eddington (which she rejects), but sometimes to cite his sceptical case against the kind of indirect realism that Eddington defends (e.g., PP, 124). I think there is more to be said about the Berkeley-Stebbing connection, especially in light of Berkeley’s own defence of ‘common sense’ philosophy, but that lies beyond the scope of my present concerns. [↑](#footnote-ref-13)
14. Stebbing makes a similar point about Russell’s claim that, according to physics, our fingers cannot, in a strict sense, ever really ‘touch’ physical objects like tables. Stebbing writes: “*Touching* just is the experience you have when you press your finger (a macroscopic body) upon the table (another macroscopic body) Had you never had an experience of such a kind, you would not know what “touching” means.” (PP, 275) [↑](#footnote-ref-14)
15. For instance, I have previously argued that by examining Stebbing’s reaction to Eddington’s account of the passage of time (in chapter 8 ‘Entropy and Becoming’) we can reconstruct Stebbing’s own philosophy of time (West 2021). [↑](#footnote-ref-15)
16. If a recent interpretation of Margaret MacDonald, Stebbing’s PhD supervisee, from Justin Vlasits (2021) is correct, then this is something the two thinkers have in common. As Vlasits puts it, according to MacDonald “philosophy of science should attend to scientific practice” (2021, 2). [↑](#footnote-ref-16)
17. Stebbing also argues that ‘laws’ are also mistakenly anthropomorphised, for instance when it is claimed that ‘a law predicts such and such’. As Stebbing puts it, “it is *we* who predict; to say that a law predicts is to talk nonsense” (PP, 204). [↑](#footnote-ref-17)
18. Thanks the journal editor and an anonymous referee for constructive comments on previous drafts and to Alex Douglas for introducing me to Stebbing in the first place. [↑](#footnote-ref-18)