**The Philosopher Versus the Physicist: Eddington’s Rejoinder to Stebbing**

***Introduction***

A number of recent papers and monographs have examined Susan Stebbing’s criticisms of Arthur Eddington’s scientific-philosophical writing (Janssen-Lauret ‘Stebbing’s Metaphysics’ and *Susan Stebbing*; Chapman *Susan Stebbing* (108-117); Tuboly ‘Knowledge Missemination; West ‘The Philosopher Versus the Physicist’ and ‘Philosophy and the Physicists’; Moravec and West ‘Stebbing and Eddington’), especially his 1928 text *The Nature of the Physical World.*[[1]](#footnote-1)These papers focus on Stebbing’s critique of Eddington’s attempt to infer philosophical conclusions from developments in modern physics, his view that there is a discrepancy between the world of science and the world of common sense (best encapsulated by his famous claim that in front of him are two distinct tables: a table of common sense and a table of physics), and his use of “inexact language” to try and convey modern scientific insights to his readers (PP, 7). As other readers of Stebbing’s *Philosophy and the Physicists* (1937) (e.g., Broad ‘Philosophy and the Physicists’) have noted, her criticisms of Eddington are often harsh – although that is not to say they are not warranted (*Philosophy and the Physicists* is more than just a negative or critical text, but Stebbing’s criticisms of Eddington are my focus here).

On November 10th, 1938, Eddington presented a paper at the Moral Sciences Club in Cambridge entitled “Prof. Stebbing’s ‘Philosophy and the Physicists’” (a full transcript of the Minutes of this meeting is included as an Appendix to this paper). Eddington did not go on to publish this paper and it has not been discussed in the relevant scholarship to date. However, the details of Eddington’s talk are outlined in the minutes of that meeting (the 4th meeting of the Moral Sciences Club in 1938)[[2]](#footnote-2) which were taken by Theodore Redpath, then Secretary of the Club (and later signed off by the Chair, G. E. Moore). In fact, two sets of minutes are available; one of which is more concise and the other a little more detailed – both were written by Redpath (I draw on both).[[3]](#footnote-3)

Given scholarly interest in Stebbing’s engagement with Eddington and the nature of Eddington’s responses, this archival material is significant because it reveals what Eddington thought of Stebbing’s scathing critique of his attempt to engage in philosophical theorising. Within the context of Eddington scholarship, this talk at the Moral Sciences Club is also noteworthy because it provides a link between his earlier, more straightforwardly scientific writing and his later work, which focused on more religious and spiritual matters.[[4]](#footnote-4) In this talk, we find Eddington reflecting on developments in his views between the time of writing *The Nature of the Physical World* (1928) and his later *New Pathways in Science* (1935). Thus, this discussion note is of twofold significance: it examines archival material concerning two underdiscussed figures (Stebbing and Eddington) and sheds light on an area of Eddington’s thought that is particularly understudied.

***1. Inexact language: Stebbing’s critique***

In what follows, I will focus primarily on Stebbing’s criticisms of Eddington, since it is those criticisms that Eddington is responding to. But this should not be taken as an indication that Stebbing’s engagement with philosophy of science is a purely negative or critical project. In recent scholarship, Frederique Janssen-Lauret (‘Stebbing’s Metaphysics’ and *Susan Stebbing,* 32-44) and Peter West (‘The Philosopher Versus the Physicist’ and ‘Philosophy and the Physicists’) have both emphasised the originality of Stebbing’s philosophy of science. And there is much more that could be said about the value of *Philosophy and the Physicists*. For the sake of brevity, though, I focus on her criticisms of Eddington herein.

One of Stebbing’s central concerns with Eddington’s writing is encapsulated by the following claim: “*exact* thought cannot be *conveyed in inexact language*; at best it can be but partially conveyed” (PP, 7). On the one hand, Stebbing is expressing a concern with Eddington’s use of certain metaphors or similes. Throughout *The Nature of the Physical World,* Eddington employs metaphors or similes that are intended to make some of the insights of modern physics accessible to a popular audience. For example, Eddington suggests that modern physics tells us that stepping on a plank of wood is “like stepping on a swarm of flies” (NPW, 342) in that it feels like a ‘solid’ object but is in fact a mass of microphysical entities. Stebbing accepts that using metaphors or similes – simply put, drawing somewhat crude comparisons – can be helpful when communicating with a non-specialist audience. However, she argues that it is crucial that specialists be clear about when and how such metaphors or similes break down. Stebbing’s concern is that without this kind of transparency, metaphors or similes threaten to mislead the reader. This is problematic since popular scientists, of Eddington’s ilk, have a unique responsibility to ‘translate’ the findings of science to a public audience (PP, ix). But, as far as Stebbing is concerned, Eddington is not particularly careful and is guilty of employing language and metaphors intended to “arouse” the reader’s “emotions” – thereby erecting a barrier to “clear thinking” (PP, 5). Stebbing is not doubting the truth of the physical theories that lie behind Eddington’s metaphors, but the efficacy of expressing them in this manner.

Stebbing’s critique of Eddington is not just an objection to his somewhat careless use of metaphors and similes. Her concerns about his use of ‘inexact language’ go beyond that and are also directed at the ontological or metaphysical ramifications of his views. After all, Eddington did not take himself to be talking strictly metaphorically. Take the case of his famous claim that in front of him (as he sits down to write) are *two* tables: one, the table of common sense, “a commonplace object of that environment that I call the world” (NPW, ix), the other, “my scientific table”, which is “mostly emptiness” (NPW, ix). He explains:

Sparsely scattered in that emptiness are numerous electric charges rushing about with great speed but their combined bulk amounts to less than a billionth of the bulk of the table itself […] There is nothing substantial about my second table. (NPW, ix)

Throughout his description of the two tables, Eddington is clear that he means for it to be taken literally (NPW, xi; see also Janssen-Lauret ‘Stebbing’s Metaphysics’ (187)).

Stebbing acknowledges this (PP, 56) but her comments suggest that she thinks this is a non-sensical position. As she puts it:

Eddington’s philosophy may be regarded as the outcome of a sustained attempt to answer the question: How are the two tables related to one another? It never seems to occur to him that the form of the question is absurd. In answering the question he is hampered from the start by his initial assumption that the tables are *duplicates* of each other, i.e. that it really isn’t nonsensical to speak of two *tables.* (PP, 56)

The evidence that this starting point is nonsensical, Stebbing argues, is the confused position that Eddington arrives at – one on which it is never totally clear which is the real table, and which is an illusion; or, as Stebbing puts it, which is the “substance” and which the “shadow” (PP, 56). For sometimes Eddington talks as though the table of common sense were rendered an “illusion” by modern physics (PP, 57) but at other times indicates that it is the “scientific table” that is a “shadow” of the table of common sense (PP, 57). Here, Eddington’s language is ‘inexact’, not by virtue of being metaphorical, but by virtue of failing to clearly express a consistent (ontological or metaphysical) worldview. The reader is left confused and, Stebbing argues, one can only assume that this is a result of “the deep-seated confusions out of which his [Eddington’s] philosophy springs” (PP, 57). The worry here, then, is that inexact language is evidence of more substantial confusions or inconsistencies at the heart of Eddington’s worldview.

***2. Eddington’s rejoinder***

The minutes of Eddington’s talk begin with the words: “Prof. Eddington first maintained against Miss Stebbing that exact thought can be conveyed in inexact language” (*Minutes,* 53). Clearly, while Eddington does not deny the charge of using inexact language to express exact thought, he denies that doing so is problematic. The minutes then read:

He went on to say that Miss Stebbing seemed to be trying to arrive at his philosophy by the psycho-analytic method of fastening on remarks let slip by way of appealing to a reader unacquainted with the subject rather than by studying the sentences he had rewritten many times. (*Minutes,* 53)

Eddington’s point seems to be that Stebbing has (unfairly) picked up on language that has been employed for the sake of a non-specialist reader, or perhaps on a surface-level reading of his claims. Yet, given Stebbing’s claims about the responsibility of popular scientists, it makes sense that she would pick him up on language intended to form the general reader, or on a surface level reading of the text (i.e., the way a general reader might read it). In any case, what does seem clear is that Eddington sees no issue with the idea that “exact ideas” can be expressed by “inexact language.”

Much of the talk then focuses (once again) on the idea that there are two ‘worlds’: one described by physics and one encountered in everyday, familiar experience. The minutes explain that Eddington

[P]assed on to a passage on p.278 of Prof. Stebbing’s book in which she said that the physicist has never been concerned with chairs, & that it lay beyond his competence to inform us that chairs we sit upon are abstract. (*Minutes,* 53)[[5]](#footnote-5)

In the section of *Philosophy and the Physicists* that Eddington is referring to here (PP, 277-78), Stebbing discusses the way that physics has become “more abstract” with time; for instance, it has become increasingly difficult to ‘picture’ the entities and events described by physical theories (PP, 277). She explains that due to *confused* understandings of modern physics, “[n]ot a few preachers have told their (largely ignorant) congregations that ‘science has shown’ that the chairs upon which they sit are *abstract*” (PP, 278). But she argues that what it really means to say that physics has become more abstract is that

[T]he physicist is making ever more use of mathematical methods, that new forms of mathematics have had to be devised as the need for them arose, and, finally, that the results of mathematical physics can in no ordinary sense of the word ‘picture’ be pictured. (PP, 278)

In other words, physical theories have moved away from being conceivable in terms of models or images (such as the Newtonian picture of nature as a mechanism or machine) and are only accurately characterised mathematically – indicating, again, that there is a problem with Eddington’s frequent use of simple metaphors or similes to describe them. Stebbing goes on to say that there is “another sense in which physics is, and has always of necessity, been abstract” (PP, 278). Physicists, she claims, deal only with a *section* of the properties of things in the world and the success of their investigations depends on their “isolating those properties and considering them on their own account” (PP, 278). As she puts it:

[The physicist] has never been concerned with *chairs*, and it lies beyond his competence to inform us that the chairs we sit upon are abstract. Eddington thinks otherwise, for he believes that physics has shown that this chair is a schedule of pointer-readings. (PP, 278)

What Stebbing is taking issue with here is the idea that developments in physics require us to revise our ordinary conceptions of what physical objects like chairs or tables involve. She is objecting to the suggestion that ‘chair’ does not mean what we ordinarily take it to mean.

Eddington disagrees. The minutes of his talk inform us that he “thought otherwise, since he believed physics *had* shown the chair to be a schedule of pointer readings” (*Minutes,* 53, my emphasis). The minutes continue (with a pun):

Prof. [Eddington]. did not think Miss Stebbing could expect us to take the statement that the [physicist] is not concerned with chairs, sitting down. He thought Prof. Stebbing’s language different from his: he had the familiar chair & the scientific chair: she had the familiar chair & the NOT-chair. This was just arrogance of language. The scientific chair is described in all scientific books as a chair: why change usage? (*Minutes,* 53)

Stebbing’s point is that the claim that chairs *are* pointer-readers could only be true in a certain context, i.e., the context of physics where chairs (and other objects) are treated as isolates. For something to be treated as an isolate is for certain properties of that object to be isolated and considered “on their own account” (PP, 278), in this case, in order to incorporate them into a physical theory.[[6]](#footnote-6) In the context of a certain physical theory, it might make sense to treat chairs as though they were pointer-readings. But that does not mean that chairs *are* pointer-readings, full stop. Just because we treat chairs as though they were pointer-readings in a certain context, that does not mean that we ought to in any and all contexts.

It is unclear why, exactly, Eddington thinks Stebbing is committed to “familiar” chairs and “NOT-chairs.” But his point seems to be that physicists, even in the context of a certain theory, are still *talking* about chairs in the ordinary sense. This is evidenced, he thinks, by the fact that “[w]hen the LPTB [London Passenger Transport Board] wished to improve the seats in their buses they consulted physicists” (*Minutes,* 53). There would be no sense in consulting physicists if physicists were not *really* interested in chairs. But they are, Eddington claims, and so there was.[[7]](#footnote-7)

***3. Developments in Eddington’s thought***

The minutes report that, as Eddington’s talk continued, he drew attention to some developments in his own thought; in particular, differences between *The Nature of the Physical World* (1928) and *New Pathways in Science* (1935).[[8]](#footnote-8) In the latter text, Eddington notes, he dropped the terminology of two ‘worlds’ in favour of “the terminology of 2 stories” (*Minutes,* 54). He explains that

This change represented partly what he thought an improvement in explanation but partly a growth of idea[s] in physics, which had in the last 20 years become far more epistemological in character. (*Minutes,* 54)

This shift, from talk of ‘worlds’ to ‘stories’, is a shift from talking about the *ontological* ramifications of modern physics to *epistemic* ones. In other words, if Eddington is right, physicists (himself included) have become less prone to talk about what physics says the world is really like – and what kinds of entities do and do not exist – and more prone to focus on *our understanding or knowledge* of it. As Eddington puts it, “Modern quantum theory analyses our knowledge, not the universe, into elements” (*Minutes,* 54).[[9]](#footnote-9)

Eddington then cites a question raised by C. E. M. Joad,[[10]](#footnote-10) who asks:

If I never know directly events in the extl. [external] world, but only their alleged effects on my brain, & if I never know my brain exc. [except] in terms of its alleged effects on my brain, I can only reiterate in bewilderment my original question: what sort of thing is it that I know? (*Minutes,* 54)

Eddington’s answer to this question is: “what we know is structure” (*Minutes,* 55). “The tendency now”, he explains, “is to exhibit scientific knowledge as knowledge of structure” (*Minutes,* 54). He adds: “The scientific world at least [is] definitely structure only” (*Minutes,* 54). Eddington’s point seems to be that the world we *know,* through science, is constituted by structure. By ‘structure’, Eddington has in mind the relations or patterns that hold between both (a) the phenomena we observe (through the senses) or measure (via scientific instruments) as well as (b) the ‘noumenal’ reality that lies beyond such observations or measurements (see Gherab-Martin ‘Eddington’s Philosophy of Physics’, 507-8). According to Eddington, the structure of observable phenomena and the structure of their ‘noumenal’ counterparts are isomorphic. And it is on the basis of the structure of our phenomena that we gain indirect, inferential knowledge of noumenal reality. As Eddington puts it in the discussion after his talk, “Structure expresses everything we know of the [physical world]” (*Minutes,* 55).

The minutes of the discussion that followed Eddington’s talk suggest that others in the room had similar questions to those first raised by Stebbing in *Philosophy and the Physicists*; specifically, questions about how the scientific ‘world’ (the ‘structure’ of things known through pointer-readings) relates to the world of familiar experience. “Mr Watson” (who is most likely W. H. Watson, author of *On Understanding Physics*)[[11]](#footnote-11) begins the discussion:

[I]t seemed to him that Prof. E agreed with Miss [Stebbing] that physicists are not concerned with chairs. Did the LPTB [London Public Transport Board] install structures of chairs in buses, or chairs? If chairs, why were physicists consulted [?] (*Minutes,* 55)

To which Eddington replies: “It seems difficult to say that if a person were concerned with the structure of the chair he is not concerned with the chair” (*Minutes,* 55). This is not a particularly satisfying answer, since the question – initially posed by Stebbing and enforced by Watson’s remarks – is how Eddington can maintain that physicists *are* interested in ordinary objects like chairs, without also thinking that the ‘chairs’ they are referring to are not *really* chairs (as we ordinarily understand them). With this response, Eddington is in danger of re-committing himself to the view, which Stebbing criticised him for, that the objects picked out in ordinary language by words like ‘chair’ and ‘table’ do not really exist. What really exists, it seems, is structure (and the question remains whether Eddington is right to say that this is merely an epistemic, not an ontological, claim).

At this point, the discussion moves in an interesting direction. Watson makes a further remark (which echoes Stebbing’s initial concerns with Eddington’s ‘two worlds’ view):

Surely according to your view the problem of the relation between the 2 stories is simple. The familiar story is largely an inaccurate [account] of some things of which science is a true [account]. (*Minutes,* 55)

Surely, Watson is asking, the familiar story – or at least aspects of it – is reducible to the scientific story. Isn’t that what Eddington has been pushing for the whole time? Why, then, is he so reticent to explicitly commit himself to the idea that familiar world ought to be replaced by the scientific one?

Eddington’s reply tells us where this reticence comes from and why he is not a reductive physicalist: “Not entirely: we know of something not represented, i.e. consciousness. This shows us our [physical] knowledge is incomplete: it is adapted to attain structure & nothing else” (*Minutes,* 55). It is important to note that the claim that physical knowledge is incomplete because it deals in *representations,* while our knowledge of our own consciousness does not, echoes Henri Bergson’s view that introspective experience (of ourselves as enduring) reveals that there is a world behind the symbols or representations of external experience (see, e.g., Bergson *The Creative Mind,* 133).[[12]](#footnote-12) It is also reminiscent of the Kantian approach to scientific reality; the idea that there is the measurable world of phenomena studied by science and then a world beyond those phenomena (a world of noumena) which is inhabited by things like the soul, God, time, consciousness. In his later work, Eddington would move increasingly towards this account (which, as I’ve suggested, might be read as either Kantian or Bergsonian), which differentiates the scientific world of symbols (or phenomena) from the world *behind* those symbols, accessible only by introspective or spiritual experience.

Eddington is also here iterating the kinds of claims that have recently garnered him attention in discussions about the history of panpsychism (e.g., Goff *Galileo’s Error*). Like contemporary panpsychists, Eddington’s claim here is that while physics describes the structure of reality – what physical entities do and how they are interconnected – it does not inform us about the *nature* of whatever it is that exhibits that structure. A little earlier in the discussion, the minutes tell us that Eddington had remarked: “We have definite knowledge that we are more than structure, viz. consciousness” (*Minutes,* 55). While a more in-depth discussion of Eddington’s views on consciousness (and its possible ubiquity in nature) are beyond the scope of this paper, this can at least help us to understand why Eddington is so reluctant to endorse reductive physicalism. And looking again at Stebbing’s criticisms, this might also explain why he finds himself in such a bind: wishing to promote the idea that modern physics tells us what things are *really* like, while also holding back from suggesting that physics can provide a *complete* description of reality.

***4. Who was in the room where it happened?***

I want to conclude with some remarks on the figures who attended this meeting of the Moral Sciences Club. The minutes do not include a full list of attendees, but both Broad and Wittgenstein are mentioned as having been in attendance. During the discussion, a question about the relation between structure and consciousness came from “Prof Broad” (*Minutes,* 55) who, it is worth noting, had previously reviewed *Philosophy and the Physicists* in 1937. The more concise set of minutes also explain that “[t]he discussion consisted mainly of objections by Mr Watson & Dr Wittgenstein against Prof. E’s views that all scientific knowledge is knowledge of structure” (*Minutes,* 58). Unfortunately, they provide no further information on what questions or objections Wittgenstein (or Watson) put forward – which is a little surprising given that the more detailed minutes outline several of Watson’s (and one of Broad’s) questions. It is also unclear whether Moore, who signed off the minutes as chair of the Moral Sciences Club, was in attendance.

One figure who is absent from the minutes and thus, it seems, was absent from the meeting, is Stebbing. It is of course possible that she was in attendance but had nothing to say or that her comments were unrecorded in the minutes. But that seems unlikely. Stebbing would have no doubt had something to say about Eddington’s responses to her book – and it seems unlikely that these would not have been deemed worth reporting in the minutes. The most obvious explanation is that she was not present. So where might Stebbing have been? In her biography, *Susan Stebbing and the Language of Common Sense*, Siobhan Chapman reports that 1938 was a busy and “truly terrible” year for Stebbing (Chapman *Susan Stebbing,* 124). She was on the advisory committee and gave the inaugural lecture for the International Congress on the Unity of Science which took place in early September (Chapman *Susan Stebbing,* 97). Chapman also reports that Stebbing was suffering difficult “personal circumstances”, including chronic illness, which delayed work on her paper ‘Some Puzzles About Analysis’ (Chapman *Susan Stebbing,* 98). “[M]edical and personal crises”, along with her illness, also affected Stebbing’s work on *Thinking to Some Purpose,* published in 1939 (Chapman *Susan Stebbing,* 123), and prevented her from attending several other events and forced her to be absent from Bedford College (Chapman *Susan Stebbing,* 123-24). It may simply be that Stebbing was too busy, too unwell, or too preoccupied with other matters to attend this meeting. It may also be that, living in London at the time,[[13]](#footnote-13) Stebbing simply did not wish to attend or had prior commitments. Her absence, then, might not be noteworthy at all.

Yet, it is tempting to speculate about how the meeting might have proceeded were Stebbing in attendance, given that two of the men in the room were connected to her in ways that are, at the very least, historically noteworthy. First, Wittgenstein. At this point in time, Chapman reports, Stebbing was “grappling with a hard decision” (*Susan Stebbing,* 126): whether to apply for the Chair of Moral Philosophy in Cambridge that Moore would soon vacate. Stebbing wrote in a letter to a friend that she had been “urged by some more ‘influential’ people to apply” (Chapman *Susan Stebbing,* 126). Yet, her letters also inform us that she was told by colleagues including Gilbert Ryle and Richard Braithwaite that her being a woman would be a barrier to her being appointed (Chapman *Susan Stebbing,* 126-27). The position ultimately went to Wittgenstein.[[14]](#footnote-14) Then there is Broad. In his review of *Philosophy and the Physicists,* Broad levels some overtly sexist remarks at Stebbing that seem at odds with the nature of the ideas being discussed in her writing. For instance, he claims that: “[Stebbing] must have enjoyed something of the exhilaration of a good housewife who has at last completed her spring-cleaning” (Broad ‘Philosophy and the Physicists’, 226). It goes without saying that Broad would not have levelled such remarks at male contemporaries, such as Wittgenstein who was preferred to her for the vacant chair.

Given these cases of overt (ad hominem) sexist criticism of Stebbing, it is tempting to treat her absence from this meeting as a further case of mistreatment. This suggestion is reinforced by the presence of at least one explicit form of sexism in Redpath’s minutes, where Eddington is referred to as ‘Professor E’ throughout and Stebbing is referred to simply as ‘Miss Stebbing’. Stebbing was, by this point, a full professorof philosophy at Bedford College.[[15]](#footnote-15) And yet, at the same time, one thing this meeting does tell us is that Broad, Wittgenstein, and others (not least Eddington) took *Philosophy and the Physicists* quite seriously. Broad’s review, for example, aside from the sexism, is quite positive about the content of the text. Perhaps what this instance tells us is that the experiences of women in early analytic philosophy (in Britain) were not straightforward. Having great ideas, or doing good philosophy, was able to merit serious attention even if one was a woman, and yet, paradoxically, being a woman seems to have held figures like Stebbing back from being seen as one of *the best philosophers* – or at least, worthy of a chair in Cambridge. Figures like Broad, we can now see with hindsight, thus held an inconsistent view: women’s ideas can be worthy of serious contemplation, but women ought not to be held up as leading philosophers.

As previous scholars have noted, the exclusion of women from many mainstream histories of philosophy does not come down to the fact that they did not write good philosophy or that their work was not read by their contemporaries (e.g., O’Neill ‘Disappearing Ink’; Janssen-Lauret and Connell ‘Lost voices’ (200-201)). Nor does it come down to the fact that women did not write about topics deemed interesting or important (for example, see Kremer ‘A philosophical friendship’, for a discussion of Margaret Macdonald’s influence on Gilbert Ryle’s now-famous distinction between ‘know-that’ and ‘know-how’). As Frederique Janssen-Lauret and Sophia Connell (‘Bad Philosophy’) have argued, the exclusion of women from philosophy and its history, is not about their *philosophy,* but about their status as women – it is about how they comported themselves, how they were perceived, and how they were treated, both by other philosophers and more systematically by the discipline/ profession. Stebbing’s treatment is exemplary of this state of affairs. Her work was taken seriously by some of the ‘great’ (male) minds of the time – indeed, if these *Minutes* are reliable, figures like Broad seemed largely in agreement with her – but Stebbing herself is referred to, *in absentia,* as “Miss Stebbing”, relegated below her officially-recognised status as a professor (while Eddington, Broad, or Wittgenstein are not). And despite the significance of her work, she never really stood a chance of being given a professorship in Cambridge. In the words of Gilbert Ryle: “every one thinks you are the right person to succeed Moore, except that you are a woman.” (Chapman *Susan Stebbing,* 126)[[16]](#footnote-16)

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**Appendix 1: Minutes of the Moral Sciences Club from November 10th 1938**

Transcribed from: ‘Minutes and other papers of the Moral Sciences Club,’ 1878 - 2018, GBR/0265/UA/Min.IX.44. Cambridge University Library.

*Note on the text:*

*As much as possible, I have transcribed these Minutes from the Moral Sciences Club, written by Theodore Redpath, as they are found. For the sake of readability, I have removed small or insignificant crossings-outs or typos, replaced some abbreviations of Eddington and Stebbing’s names with their full names, and have inserted any words later added to the Minutes (via a ^) into the body of the text. At various places in the original Minutes, Redpath leaves a long break between sentences – I have interpreted these as paragraph breaks. Page references in my article are to the original pagination of the Minutes – noted, in the transcription that follows, in square brackets and italics (note that there is a gap of two pages between the first and second set of Minutes).*

*One final note: it is not clear to me why there are two sets of Minutes for this meeting (one longer, one shorter), as this does not seem to have been the norm. What’s more, in the more concise set of Minutes, Redpath claims that discussion was mainly led by Watson and Wittgenstein, yet Wittgenstein is not mentioned in the longer set of Minutes. Again, no obvious explanation of this presents itself.*

*I am grateful for the current Secretaries and Senior Officers of the Moral Sciences Club in Cambridge for permission to publish this transcription.*

Nov. 10th, 1938

Sir Arthur Eddington: Prof. Stebbing’s ‘Philosophy & the Physicists’

*[53]* Prof. Eddington first maintained against Miss Stebbing that exact thought can be conveyed in inexact language. He went on to say that Miss Stebbing seemed to be trying to arrive at his philosophy by the psycho-analytic method of fastening on remarks let slip by way of appealing to a reader unacquainted with the subject rather than by studying the sentences he had rewritten many times.

Miss Stebbing has said of his remarks on the two tables that his philosophy might be regarded as a sustained attempted to answer the question ‘how are the 2 tables related to each other’, & that it never occurred to him that the form of the question was absurd. Prof. E. said that most questions which raise themselves have an absurd form, but that there is an idea behind them which we can crystallise. It is quite as much our task to find out what the question really is as to answer it. He thought the right time to formulate the question properly was at the end of the investigation. He passed on to a passage on p. 278 of Prof. Stebbing’s book in which she said that the physicist had never been concerned with chairs, & that it lay beyond his competence to inform us that chairs we sit upon are abstract: but [Eddington] thought otherwise, since he believed physics had shown the chair to be a schedule of pointer readings. Prof. [Eddington] did not think Miss Stebbing could expect us to take the statement that the [physicist] is not concerned with chairs, sitting down. He thought Prof. Stebbing’s language different from his: he had the familiar chair & the scientific chair: she had the familiar chair & the NOT-chair. This was just arrogance of language. The scientific chair is described in all scientific books as a chair: why change usage? In Prof. Eddington’s view the familiar body sits on a familiar chair, & the scientific body on a scientific chair. When the LPTB [London Passenger Transport Board] wished to improve the seats in their ‘buses *[54]* they consulted physicists.

As to a better form of the question he had in his earlier works put in the form ‘what is the relation between the 2 tables,’ he had in ‘New Pathways to Science’ adopted the terminology of 2 stories. This change represented partly what he thought an improvement in explanation but partly a growth of idea in physics, which had in the last 20 years become far more epistemological in character. Modern quantum theory analyses our knowledge, not the universe, into elements. To define the physical universe as the theme of a specific branch of knowledge doesn’t raise the question of the existence of the universe.[[17]](#footnote-17) How the stories dovetailed into one another indicated by recent developments in physics: this could be dealt with in discussion. The point had been raised as to whether the [external] world had been arrived at through the labours of physicists. The answer was that the scientific world had. The [d]ata from which the physicists start, however, were primarily given in their minds & attributed to the external world. A chemist studies a substance called silver nitrate: does he start from silver nitrate or is it arrived at by his labours? Both: if he does not arrive at what he started from he knows he’s wrong.

Prof. E. said that Joad, who seemed to understand his work & always made profitable criticisms, had said: If I never know directly events in the [external] world, but only their alleged effects on my brain, & if I never know my brain [except] in terms of its alleged effects on my brain, I can only reiterate in bewilderment my original question: What sort of thing is it that I know? Prof. E. thought this a good question & said science could answer it: but could not have done so 20 years ago. The answer was that what we know is structure. He has learned of this this answer through Russell: it has been developed in Group Theory. The tendency now is to exhibit scientific knowledge as [knowledge] of structure so the answer given was no guess.

As to Miss Stebbing’s allegation that he sometimes called one of the 2 worlds real & sometimes the other, Miss S. herself said the meaning of real could only be determined by the context. Prof. E. agreed, & said if one was speaking of the scientific world its objects were real: if of the familiar world, its objects were real. This was no philosophic point but a mere verbal question. The scientific world at least was definitely structure only. The relation between the two worlds was one of structure & thing of which it was structure.

[In the following account of the discussion following Eddington’s talk, ‘E’ stands for Eddington and ‘W’ stands for Watson.]

The discussion began by Mr Watson saying it seemed to him that Prof. E. agreed with Miss [Stebbing] that physicists are not concerned with chairs. Did the LPTB install structures of chairs in its ‘buses, or chairs? If chairs, why were physicists consulted. E: It seems difficult to say that if a person were concerned with the structure of a chair he is not concerned with the chair. W: If he’s only [concerned] with structure how can you tell he is concerned with the structure of a CHAIR? E: One’s own structure is applied to the structure of the chair. Whether the chair has more than its structure we don’t know: we’ve no evidence. We have definite knowledge that we are more than structure, viz. consciousness. Structure expresses everything we know of the [physical] world. W: What is the familiar story, does consist of false statements, or is it a myth? E: The only true part of it is what relates to structure, & not all that is true. W: Surely according to your view the problem of the relation between the 2 stories is simple. The familiar story is largely an inaccurate [account] of some things of which science is a true [account]. E: Not entirely: we know of something not represented, i.e., consciousness. This shows us our [physical] knowledge is incomplete: it is adapted to attain structure & nothing else; it excludes, e.g., aesthetics. Prof. Broad: The LPTB was not enquiring about structure in general, surely, but structure of something in particular, & from the end of your paper it seems to be about the structure of some experiences. E: Possibly: but the structure is not in one individual consciousness but in those of all who uses the ‘buses.

Nov. 10th, 1938

Sir Arthur Eddington: Prof. Stebbing’s ‘Philosophy & the Physicists’

*[58]* The 4th meeting of the term was held in Mr Redpath’s room, 49, Madingley Road. Prof. Eddington read a paper called ‘Prof. Stebbing’s Philosophy & the Physicists.’ He complained that Miss [Stebbing] has seized upon his preliminary remarks & treated them as his final pronouncements. Exact thought could be conveyed in inexact language. The correct formulation of a question was as much of a task to find as its answer. Speaking of the 2 well-known chairs & tables, Prof. E. said that in his view the familiar body sits on the familiar chair, & the scientific body on the scientific chair. The latter was described in scientific books as a chair & he saw [no][[18]](#footnote-18) reason for changing terminology & calling it no chair at all. He said in his later works instead of 2 worlds he had spoken of 2 stories. This represented both an improvement in explanation & a recent tendency in physics to become more epistemological. Prof. E. said later that [w]hat we know in physics is structure. Our scientific knowledge, or the scientific world, is structure only. The relation between the scientific world & the familiar world is one between structure & thing of which it is a structure.

The discussion consisted mainly of objections by Mr Watson & Dr Wittgenstein against Prof. E.’s view that all scientific knowledge is knowledge of structure, given by the relations between pointer readings.

[The Minutes are signed ‘G. E. Moore’ on November 17th, 1938.]

1. Henceforth, I refer to *The Nature of the Physical World* by NPW and *Philosophy and the Physicists* by PP. [↑](#footnote-ref-1)
2. Henceforth ‘*Minutes’* refers to ‘Minutes and other papers of the Moral Sciences Club,’ 1878 - 2018, GBR/0265/UA/Min.IX.44. Cambridge University Library. References are to page numbers there. Many thanks to staff at Cambridge University Library for support locating and consulting these minutes and to the Moral Sciences Club for permission to transcribe and includ the relevant minutes as an Appendix to this paper. [↑](#footnote-ref-2)
3. It is unclear why two sets of minutes of this meeting were provided, and this is (as far as I was able to make out) the only time this happened between the academic years of 1935-36 to 1951-52. [↑](#footnote-ref-3)
4. For discussion of these developments in Eddington’s thought, see (e.g.,) Dingle *Eddington’s Philosophy* and Gherab-Martin ‘Eddington’s Philosophy of Physics.’ [↑](#footnote-ref-4)
5. Eddington is referring to p.278 of the 1937 Methuen & Company edition of *Philosophy and the Physicists*, not the 1944 Pelican Books edition. [↑](#footnote-ref-5)
6. Stebbing discusses the role of isolates in science again in her posthumously published pamphlet *Men and Moral Principles* (1945). [↑](#footnote-ref-6)
7. Note that Eddington is making quite general claims about the practices (and language-usage) of physicists here, which may not, in fact, be true of every physicist. [↑](#footnote-ref-7)
8. It Is worth noting that Stebbing was familiar with both texts (see PP, 99-100, for discussion of *New Pathways to Science*). Many thanks to an anonymous referee for pointing this out. This is also suggested by a crossed-out sentence from the *Minutes,* which possibly alludes to Stebbing’s response to this change in Eddington’s view (see footnote 17 below). [↑](#footnote-ref-8)
9. In some of the recent literature on Eddington’s philosophical views (e.g. Gherab-Martin ‘Eddington’s Philosophy of Physics’), it has been noted that, with time, he came to adopt what might broadly be construed as a ‘Kantian’ approach that distinguishes between the phenomena measured by science and the (noumenal) world beyond, that is accessible via non-scientific (i.e., non-publicly observable), introspective means. It is worth nothing that Moravec and West (‘Stebbing and Eddington’) argue that Eddington’s distinction between the scientific world of symbols and the world as accessible by introspective experience is closer to Bergson than Kant – and that the two readings are distinct. [↑](#footnote-ref-9)
10. Eddington characterises Joad as someone who “seemed to understand his work & always make profitable criticisms of it” (*Minutes,* 55). It is unsurprising that Eddington is more positive about Joad’s ‘criticisms’ of his work than Stebbing’s. In a symposium on ‘Realism and Modern Physics’ which both Stebbing and Joad took part in (along with John Laird), Joad endorses Eddington’s suggestion that modern physics might support idealism – or at the very least, raises difficulties for opponents of idealism (see, e.g., Laird, Joad, and Stebbing ‘Realism and Modern Physics’, 126). Just as in *Philosophy and the Physicists,* Stebbing is again critical of this view (e.g., Laird, Joad, and Stebbing ‘Realism and Modern Physics’, 146). See Tuboly “Knowledge Missemination” for further discussion of this symposium. [↑](#footnote-ref-10)
11. *On Understanding Physics* appears to have been a text similar in nature and scope to *Philosophy and the Physicists.* In a review of the text in *Science,* R. B. Lindsay explains that “[t]his book is one more indication that interest in what has been variously termed the philosophy of physics or the logic of physics continues unabated” (Lindsay ‘The Philosophy of Physics’, 302). He explains that Watson “believes philosophy has great value in clarifying physical problems, but he also makes clear his opinion that the only kind of philosophy valuable for this purpose is that confined to the study of the logic of language” (Lindsay, ‘The Philosophy of Physics’, 302). Stebbing’s text is, likewise, intended to clarify notions and solve problems raised by modern physics by appealing to the philosophical study of language. [↑](#footnote-ref-11)
12. For discussion of the connections between Eddington, Bergson, and Stebbing, see Moravec and West ‘Stebbing and Eddington’. For more on Stebbing’s early response to Bergson, see Vrahimis ‘Bergsonism’ (197-227). [↑](#footnote-ref-12)
13. The minutes inform us that Stebbing was living at 27 Belsize Park (London) in 1938 (*Minutes,* 37). [↑](#footnote-ref-13)
14. For discussion of the possible influence of Stebbing on Wittgenstein, see Milkov ‘Stebbing’s Criticism’, (especially 360). [↑](#footnote-ref-14)
15. The minutes of the Moral Science Club inform us that Stebbing gave several talks between 1935 and her death in 1943 (as did other women like Margaret Macdonald and Martha Kneale). In fact, there is a note included in the minutes from 1944-45 that suggests that “It is usual to send [invite] cards to the Bedford College head of the Philosophy Department, for Bedford Students” (*Minutes,* 127). Stebbing taught at Bedford College. Macdonald was among her students. See Kremer ‘A philosophical friendship’ for more on Stebbing and Macdonald’s relationship. [↑](#footnote-ref-15)
16. Thank you to Christoph Schuringa for drawing my attention to Eddington’s reply to Stebbing (and encouraging me to go and do the archival research). Many thanks to Matyás Moravec for constructive comments on a draft of the paper. Many thanks also to two anonymous referees for pushing me on important points, not least the sexism directed at Stebbing, and improving the paper as a result. I am also very grateful to the current Secretaries and Senior Officers of the Moral Sciences Club in Cambridge for permission to publish the transcription of the report of Eddington’s talk (see Appendix). [↑](#footnote-ref-16)
17. This sentence is followed by a sentence of writing that is entirely crossed out, but which reads: “Miss. S. admitted that the contrast between the two stories was [illegible, possible ‘easier’] understood than that between the 2 worlds, but called the new language [possibly ‘nursery’] language.” [↑](#footnote-ref-17)
18. This is my insertion but is necessary to render Eddington’s claim as reported here consistent with his claim as reported in the alternative set of Minutes. [↑](#footnote-ref-18)