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Why Scientific Knowledge Is Still the Best

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It is common knowledge among scholars and researchers that the norms of academic research dictate that one must enter an academic conversation by properly acknowledging, citing, and engaging with the work done by other scholars and researchers in the field, thereby showing that a larger conversation is taking place.¹ See, for example, Graff and Birkenstein (2018, 1-18) on “entering the conversation.” Properly “entering the conversation” is especially important when one aims to criticize the work done by other scholars and researchers in the field.

In my previous reply to Bernard Wills’ attack on *Weak Scientism* (Wills 2018a), I point out that Wills fails in his job as a scholar who aims to criticize work done by other scholars and researchers in the field (Mizrahi 2018b, 41), since Wills does not cite or engage with the paper in which I defend *Weak Scientism* originally (Mizrahi 2017a), the very thesis he seeks to attack. Moreover, he does not cite or engage with the papers in my exchange with Christopher Brown (Mizrahi 2017b; 2018a), not to mention other works in the literature on scientism.

In his latest attack, even though he claims to be a practitioner of “close reading” (Wills 2018b, 34), it appears that Wills still has not bothered to read the paper in which I defend the thesis he seeks to attack (Mizrahi 2017a), or any of the papers in my exchange with Brown (Mizrahi 2017b; 2018a), as evidenced by the fact that he does not cite them at all. To me, these are not only signs of lazy scholarship but also an indication that Wills has no interest in engaging with my arguments for *Weak Scientism* in good faith. For these reasons, this will be my second and final response to Wills. I have neither the time nor the patience to debate lazy scholars who argue in bad faith.

On the Quantitative Superiority of Scientific Knowledge

In response to my empirical data on the superiority of scientific knowledge over non-scientific knowledge in terms of research output and research impact (Mizrahi 2017a, 357-359; Mizrahi 2018a, 20-22; Mizrahi 2018b, 42-44), Wills (2018b, 34) claims that he has “no firm opinion at all as to whether the totality of the sciences have produced more ‘stuff’ than the totality of the humanities between 1997 and 2017 and the reason is that I simply don’t care.”

I would like to make a few points in reply. First, the sciences produce more *published research*, not just “stuff.” Wills’ use of the non-count noun ‘stuff’ is misleading because it suggests that research output cannot be counted or measured. However, research output (as well as research impact) can be counted and measured, which is why we can use this measure to determine that scientific research (or knowledge) is better than non-scientific research (or knowledge).

¹ I would like to thank Adam Riggio for inviting me to respond to Bernard Wills’ second attack on *Weak Scientism*.

Second, my defense of *Weak Scientism* consists of a quantitative argument and a qualitative argument, thereby showing that scientific knowledge is superior to non-scientific knowledge both quantitatively and qualitatively, which are the two ways in which one thing can be said to be better than another (Mizrahi 2017a, 354). If Wills really does not care about the quantitative argument for *Weak Scientism*, as he claims, then why is he attacking my defense of *Weak Scientism* at all?

After all, showing that “scientific knowledge is [quantitatively] better – in terms of research output (i.e. more publications) and research impact (i.e. more citations) – than non-scientific knowledge” is an integral part of my defense of *Weak Scientism* (Mizrahi 2017a, 358). To know that, however, Wills would have to read the paper in which I make these arguments for *Weak Scientism* (Mizrahi 2017a). In his (2018a) and (2018b), I see no evidence that Wills has read, let alone read *closely*, that paper.

Third, for someone who says that he “simply [doesn't] care” about quantity (Wills 2018b, 34), Wills sure talks about it a lot. For example, Wills claims that a “German professor once told [him] that in the first half of the 20th Century there were 40,000 monographs on Franz Kafka alone!” (Wills 2018a, 18) and that “Shakespeare scholars have all of us beat” (Wills 2018a, 18). Wills’ unsupported claims about quantity turn out to be false, of course, as I show in my previous reply (Mizrahi 2018b, 42-44). Readers will notice that Wills does not even try to defend those claims in his (2018b).

Fourth, whether Wills cares about quantity or has opinions on the matter is completely beside the point. With all due respect, Wills’ opinions about research output in academic disciplines are worthless, especially when we have data on research output in scientific and non-scientific disciplines. The data show that scientific disciplines produce more research than non-scientific disciplines and that scientific research has a greater impact than non-scientific research (Mizrahi 2017a, 357-359; Mizrahi 2018a, 20-22; Mizrahi 2018b, 42-44).

Wills (2018b, 35) thinks that the following is a problem for *Weak Scientism*: “what if it *were* true that Shakespeare scholars produced more papers than physicists?” (original emphasis) Lacking in good arguments, as in his previous attack on *Weak Scientism*, Wills resorts to making baseless accusations and insults, calling me “an odd man” for thinking that literature would be better than physics in his hypothetical scenario (Wills 2018b, 35). But this is not a problem for *Weak Scientism* at all and there is nothing “odd” about it.

What Wills fails to understand is that *Weak Scientism* is not supposed to be a necessary truth. That is, *Weak Scientism* does not state that scientific knowledge *must be* quantitatively and qualitatively better than non-scientific knowledge. Rather, *Weak Scientism* is a contingent fact about the state of academic research. As a matter of fact, scientific disciplines produce better research than non-scientific disciplines do.

Moreover, the data we have (Mizrahi 2017a, 357-359; Mizrahi 2018a, 20-22; Mizrahi 2018b, 42-44) give us no reason to think that these trends in research output and research impact are likely to change any time soon. Of course, if Wills had read my original defense of *Weak Scientism* (Mizrahi 2017a), and my replies to Brown, he would have known that I have discussed all of this already (Mizrahi 2017b, 9-10; 2018a, 9-13).

Likewise, contrary to what Wills (2018b, 36, footnote 2) seems to think, there is nothing odd about arguing for a thesis according to which academic research produced by scientific disciplines is superior to academic research produced by non-scientific disciplines, “while leaving open the question whether non-scientific knowledge *outside the academy* may be superior to science” (original emphasis). If Wills were familiar with the literature on scientism, he would have been aware of the common distinction between “internal scientism” and “external scientism.”

See, for example, Stenmark’s (1997, 16-18) distinction between “academic-internal scientism” and “academic-external scientism” as well as Peels (2018, 28-56) on the difference between “academic scientism” and “universal scientism.” Again, a serious scholar would have made sure that he or she is thoroughly familiar with the relevant literature before attacking a research paper that aims to make a contribution to that literature (Graff and Birkenstein 2018, 1-18).

Wills also seems to be unaware of the fact that my quantitative argument for *Weak Scientism* consists of two parts: (a) showing that scientific research *output* is greater than non-scientific research output, and (b) showing that the research *impact* of scientific research is greater than that of non-scientific research (Mizrahi 2017a, 356-358). The latter is measured, not just by publications, but also by *citations*. Wills does not address this point about *research impact* in his attacks on *Weak Scientism*. Since he seems to be proud of his publication record, for he tells me I should search for his published papers on Google (Wills 2018b, 35), let me to illustrate this point about research impact by comparing Wills’ publication record to a colleague of his from a science department at his university.

According to Google Scholar, since completing his doctorate in Religious Studies at McMaster University in 2003, Wills has published ten research articles (excluding book reviews). One of his research articles was cited three times, and three of his research articles were cited one time each. That is six citations in total.

On the other hand, his colleague from the Physics program at Memorial University, Dr. Svetlana Barkanova, has published 23 research articles between 2003 and 2018, and those articles were cited 53 times. Clearly, in the same time, a physicist at Wills’ university has produced more research than he did (130% more research), and her research has had a greater impact than his (783% more impact). As I have argued in my (2017a), this is generally the case when research produced by scientific disciplines is compared to research produced by non-scientific disciplines (Table 1).

Table 1. H Index by subject area, 1999-2018 (Source: Scimago Journal & Country Rank)

	H Index
Physics	927

Psychology	682
Philosophy	161
Literature	67

Reflecting on One's Own Knowledge

In his first attack on *Weak Scientism*, Wills (2018a, 23) claims that one “can produce a potential infinity of knowledge simply by reflecting recursively on the fact of [one’s] own existence.” In response, I pointed out that Wills (2018a, 23) himself admits that this reflexive procedure applies to “ANY fact” (original capitalization), which means that it makes no difference in terms of the *quantity* of knowledge produced in scientific versus non-scientific disciplines.

As I have come to expect from him, Wills (2018b, 35) resorts to name-calling again, rather than giving good arguments, calling my response “sophism,” but he seems to miss the basic logical point, even though he admits again that extending one’s knowledge by reflexive self-reflection “can be done with any proposition at all” (Wills 2018b, 35). Of course, if “it can be done with *any proposition at all*” (Wills 2018b, 35; emphasis added), then it can be done with scientific propositions as well, for the set of *all* propositions includes scientific propositions.

To illustrate, suppose that a scientist knows that p and a non-scientist knows that q . Quantitatively, the amount of scientific and non-scientific knowledge is equal in this instance ($1 = 1$). Now the scientist reflects on her own knowledge that p and comes to know that she knows that p , i.e., she knows that K_p . Similarly, the non-scientist reflects on her knowledge that q and comes to know that she knows that q , i.e., she knows that K_q . Notice that, *quantitatively*, nothing has changed, i.e., the amount of scientific versus non-scientific knowledge is still equal: two items of scientific knowledge (p and K_p) and two items of non-scientific knowledge (q and K_q).

Wills might be tempted to retort that p may be an item of scientific knowledge but K_p is not because it is not knowledge that is produced by scientific procedures. However, if Wills were to retort in this way, then it would be another indication of sloppy scholarship on his part. In my original paper (Mizrahi 2017a, 356), and in my replies to Brown (Mizrahi 2017b, 12-14; Mizrahi 2018a, 14-15), I discuss at great length my characterization of disciplinary knowledge as knowledge produced by practitioners in the field. I will not repeat those arguments here.

Baseless Accusations of Racism and Colonialism

After raising questions about whether I am merely rationalizing my “privilege” (Wills 2018a, 19), Wills now says that his baseless accusations of racism and colonialism are “not personal” (Wills 2018b, 35). His concern, Wills (2018b, 35) claims, is “*systemic racism*” (original emphasis). As a white man, Wills has the *chutzpah* to explain (or white-mansplain, if you will) to me, an immigrant from the Middle East, racism and colonialism.

My people were the victims of ethnic cleansing and genocide, lived under British colonial rule, and are still a persecuted minority group. Since some of my ancestors died fighting the British mandate, I do not appreciate using the term ‘colonialism’ to describe academic disputes that are trifles in comparison to the atrocities brought about by racism and colonialism.

Perhaps Wills should have used (or meant to use) the term ‘imperialism’, since it is sometimes used to describe the expansion of a scientific theory into new domains (Dupré 1994). This is another sign of Wills’ lack of familiarity with the literature on scientism. Be that as it may, Wills continues to assert without argument that my “defense of weak-scientism is ideologically loaded,” that it implies “the exclusion of various others such as women or indigenous peoples from the socially sanctioned circle of knowers,” and that I make “hegemonic claims for science from which [I] stand to benefit” (Wills 2018b, 36).

In response, I must admit that I have no idea what sort of “ideologies” *Weak Scientism* is supposed to be loaded with, since Wills does not say what those are. Wills (2018b, 36) asserts without argument that “the position [I] take on scientism has social, political and monetary implications,” but he does not specify those implications. Nor does he show how social and political implications (whatever those are) are supposed to follow from the *epistemic* thesis of *Weak Scientism* (Mizrahi 2017a, 353). I am also not sure why Wills thinks that *Weak Scientism* implies “the exclusion of various others such as women or indigenous peoples from the socially sanctioned circle of knowers” (Wills 2018b, 36), since he provides no arguments for these assertions.

Of course, *Weak Scientism* entails that there is non-scientific knowledge (Mizrahi 2018b, 41). If there is non-scientific knowledge, then there are non-scientific knowers. In that case, on *Weak Scientism*, non-scientists are *not* excluded from “the circle of knowers.” In other words, on *Weak Scientism*, the circle of knowers includes non-scientists, which can be women and people of color, of course (recall Dr. Svetlana Barkanova). Contrary to what Wills seems to think, then, *Weak Scientism* cannot possibly entail “the exclusion of various others such as women or indigenous peoples from the socially sanctioned circle of knowers” (Wills 2018b, 36).

In fact, if it is “the exclusion of various others” that Wills (2018b, 36) is genuinely concerned about, then he is undoubtedly aware of the fact that it is precisely white men like him who are guilty of systematically excluding “various others,” such as women (Paxton et al. 2012) and people of color (Botts et al. 2014), from the academic discipline of philosophy (American Philosophical Association 2014). As anyone who is familiar with the academic discipline of philosophy knows, “philosophy faces a serious diversity problem” (Van Norden 2017b, 5). As Amy Ferrer (2012), Executive Director of the American Philosophical Association (APA), put it on Brian Leiter’s blog, *Leiter Reports*:

philosophy is one of the least diverse humanities fields, and indeed *one of the least diverse fields in all of academia*, in terms of gender, race, and ethnicity. Philosophy has a

reputation for not only a lack of diversity but also an often hostile climate for women and minorities (emphasis added).

In light of the lack of diversity in academic philosophy, some have gone as far as arguing that contemporary philosophy is racist and xenophobic; otherwise, argues Bryan Van Norden (2017a), it is difficult to explain “the fact that the rich philosophical traditions of China, India, Africa, and the Indigenous peoples of the Americas are completely ignored by almost all philosophy departments in both Europe and the English-speaking world.”

In fact, Wills’ attacks on *Weak Scientism* illustrate how white men like him attempt to keep philosophy white and “foreigner-free” (Cherry and Schwitzgebel 2016). They do so by citing and discussing the so-called “greats,” which are almost exclusively Western men. Citations are rather scarce in Wills’ replies, but when he cites, he only cites “the greats,” like Aristotle and Augustine (see Schwitzgebel et al. 2018 on the “Insularity of Anglophone Philosophy”).

As for his claim that I “stand to benefit” (Wills 2018b, 36) from my defense of *Weak Scientism*, I have no idea what Wills is talking about. I had no idea that History and Philosophy of Science (HPS) and Science and Technology Studies (STS) “can often assert hegemony over other discourses” (Wills 2018b, 36). I bet this will come as a surprise to other HPS and STS scholars and researchers. They will probably be shocked to learn that they have that kind of power over other academic disciplines.

More importantly, even if it were true that I “stand to benefit” (Wills 2018b, 36) from my defense of *Weak Scientism*, nothing about the merit of my defense of *Weak Scientism* would follow from that. That is, to argue that *Weak Scientism* must be false because I stand to benefit from it being true is to argue fallaciously. In particular, it is an informal fallacy of the circumstantial *ad hominem* type known as “poisoning the well,” which “alleges that the person has a hidden agenda or something to gain and is therefore not an honest or objective arguer” (Walton and Krabbe 1995, 111).

It is as fallacious as arguing that climate change is not real because climate scientists stand to benefit from climate research or that MMR vaccines are not safe (e.g., cause autism) because medical researchers stand to benefit from such vaccines (Offit 2008, 213-214). These are the sort of fallacious arguments that are typically made by those who are ignorant of the relevant science or are arguing in bad faith.

In fact, the same sort of fallacious reasoning can be used to attack any scholar or researcher in any field of inquiry whatsoever, including Wills. For instance, just as my standing to benefit from defending *Weak Scientism* is supposed to be a reason to believe that *Weak Scientism* is false, or Paul Offit’s standing to gain from MMR vaccines is supposed to be a reason to believe that such vaccines are not safe, Wills’ standing to benefit from his attacks on *Weak Scientism* (e.g., by protecting his position as a Humanities professor) would be a reason to believe that his attacks on *Weak Scientism* are flawed.

Indeed, the administrators at Wills’ university would have a reason to dismiss his argument for a pay raise on the grounds that he stands to benefit from it (Van Vleet 2011, 16). Of course, such reasoning is fallacious no matter who is the target. Either MMR vaccines are

safe and effective or they are not regardless of whether Offit stands to benefit from them. Climate change is real whether climate scientists stand to benefit from doing climate research. Likewise, *Weak Scientism* is true or false whether or not I stand to benefit from defending it.

Revisiting the Joyce Scholar

Wills (2018b, 36) returns to his example of the Joyce scholar as an example of non-scientific knowledge “that come[s] from an academic context.” As I have already pointed out in my previous reply (Mizrahi 2018b, 41-42), it appears that Wills fails to grasp the difference between *Strong Scientism* and *Weak Scientism*. Only *Strong Scientism* rules out knowledge that is not scientific. On *Weak Scientism*, there is both scientific and non-scientific knowledge. Consequently, examples of non-scientific knowledge from academic disciplines other than scientific ones do not constitute evidence against *Weak Scientism*.

Relatedly, Wills claims to have demonstrated that I vacillate between *Strong Scientism* and *Weak Scientism* and cites page 22 of his previous attack (Wills 2018a, 22). Here is how Wills (2018a, 22) argues that I vacillate between *Strong Scientism* and *Weak Scientism*:

Perhaps it is the awareness of such difficulties that leads Mizrahi [sic] to his stance of ‘Weak Scientism’. It is not a stance he himself entirely sticks to. Some of his statements imply the strong version of scientism as when he tells us the [sic] knowledge is “the scholarly work or research produced in scientific fields of study, such as the natural sciences, as opposed to non-scientific fields, such as the humanities” [Mizrahi 2018a, 22].

However, the full passage Wills cites as evidence of my vacillation between *Strong Scientism* and *Weak Scientism* is from the conclusion of my second reply to Brown (Mizrahi 2018a) and it reads as follows:

At this point, I think it is quite clear that Brown and I are talking past each other on a couple of levels. First, I follow scientists (e.g., Weinberg 1994, 166-190) and philosophers (e.g., Haack 2007, 17-18 and Peels 2016, 2462) on both sides of the scientism debate in treating philosophy as an academic discipline or field of study, whereas Brown (2017b, 18) insists on thinking about philosophy as a personal activity of “individual intellectual progress.” Second, I follow scientists (e.g., Hawking and Mlodinow 2010, 5) and philosophers (e.g., Kidd 2016, 12-13 and Rosenberg 2011, 307) on both sides of the scientism debate in thinking about knowledge as the scholarly work or research produced in scientific fields of study, such as the natural sciences, as opposed to non-scientific fields of study, such as the humanities, whereas Brown insists on thinking about philosophical knowledge as personal knowledge.

Clearly, in this passage, I am talking about how ‘knowledge’ is understood in the scientism debate, specifically, that knowledge is the published research or scholarship produced by

practitioners in academic disciplines (see also Mizrahi 2017a, 353). I am *not* saying that non-scientific disciplines do not produce knowledge. How anyone can interpret this passage as evidence of vacillation between *Strong Scientism* and *Weak Scientism* is truly beyond me. To me, this amounts to “contextomy” (McGlone 2005), and thus further evidence of arguing in bad faith on Wills’ part.

Wills also misunderstands, as in his previous attack on *Weak Scientism*, the epistemic properties of unity, coherence, simplicity, and testability, and their role in the context of hypothesis testing and theory choice. For he seems to think that “a masterful exposition of *Portrait of the Artist as Young Man* will show the unity, coherence and simplicity of the work’s design to the extent that these are artistically desired features” (Wills 2018b, 36). Here Wills is equivocating on the meaning of the terms ‘unity’, ‘coherence’, and ‘simplicity’.

There is a difference between the *epistemic* and the artistic senses of these terms. For example, when it comes to novels, such as *A Portrait of the Artist as Young Man*, ‘simplicity’ may refer to literary style and language. When it comes to explanations or theories, however, ‘simplicity’ refers to the number of entities posited or assumptions taken for granted (Mizrahi 2016). Clearly, those are two different senses of ‘simplicity’ and Wills is equivocating on the two. As far as *Weak Scientism* is concerned, it is the *epistemic* sense of these terms that is of interest to us. Perhaps Wills fails to realize that *Weak Scientism* is an epistemic thesis because he has not read my (2017a), where I sketch the arguments for this thesis, or at least has not read it carefully enough despite claiming to be a practitioner of “close reading” (Wills 2018b, 34).

When he says that the Joyce scholar “tests [what he says] against the text,” Wills (2018b, 37) reveals his misunderstanding of testability once again. On Wills’ description of the work done by the Joyce scholar, what the Joyce scholar is doing amounts to *accommodation*, not *novel prediction*. I have already discussed this point in my previous reply to Wills (Mizrahi 2018b, 47) and I referred him to a paper in which I explain the difference between accommodation and novel prediction (Mizrahi 2012). But it appears that Wills has no interest in reading the works I cite in my replies to his attacks. Perhaps a *Stanford Encyclopedia of Philosophy* entry on the difference between accommodation and prediction would be more accessible (Barnes 2018).

Wills finds it difficult to see how the work of the Joyce scholar can be improved by drawing on the methods of the sciences. As Wills (2018b, 37) writes, “What in this hermeneutic process would be improved by ‘scientific method’ as Mizrahi describes it? Where does the Joyce scholar *need* to draw testable consequences from a novel hypothesis and test it with an experiment?” (original emphasis)

Because he sees no way the work of the Joyce scholar can benefit from the application of scientific methodologies, Wills thinks it follows that I have no choice but to say that the work of the Joyce scholar does not count as knowledge. As Wills (2018b, 37) writes, “It seems to me that only option for Mizrahi here is to deny that the Joyce scholar knows anything (beyond the bare factual information) and this means, alas, that his position once again collapses into strong scientism.”

It should be clear, however, that this is a *non sequitur*. Even if it is true that scientific methodologies are of no use to the Joyce scholar, it does not follow that the work of the Joyce scholar does not count as knowledge. Again, *Weak Scientism* is the view that scientific knowledge is better than non-scientific knowledge. This means that scientists produce knowledge using scientific methods, whereas non-scientists produce knowledge using non-scientific methods, it's just that scientists produce better knowledge using scientific methods that are superior to non-scientific methods in terms of the production of knowledge. Non-scientists can use scientific methods to produce knowledge in their fields of inquiry. But even if they do not use scientific methods in their work, on *Weak Scientism*, the research they produce still counts as knowledge.

Moreover, it is *not* the case that scientific methodologies are of no use to literary scholars. Apparently, Wills is unaware of the interdisciplinary field in which the methods of computer science and data science are applied to the study of history, literature, and philosophy known as the “Digital Humanities.” Becoming familiar with work in Digital Humanities will help Wills understand what it means to use scientific methods in a literary context. Since I have already discussed all of this in my original paper (Mizrahi 2017a) and in my replies to Brown (Mizrahi 2017b; 2018a), I take this as another reason to think that Wills has not read those papers (or at least has not read them *carefully* enough).

To me, this is a sign that he is not interested in engaging with *Weak Scientism* in good faith, especially since my (2017a) and my replies to Brown are themselves instances of the use of methods from data science in HPS, and since I have cited two additional examples of work I have done with Zoe Ashton that illustrates how philosophy can be improved by the introduction of scientific methods (Ashton and Mizrahi 2018a and 2018b). Again, it appears that Wills did not bother to read (let alone read *closely*) the works I cite in my replies to his attacks.

Toward the end of his discussion of the Joyce scholar, Wills (2018b, 37) says that using scientific methods “may mean better knowledge in many cases.” If he accepts that using scientific methods “may mean better knowledge in many cases” (Wills 2018b, 37), then Wills thereby accepts *Weak Scientism* as well. For to say that using scientific methods “may mean better knowledge in many cases” (Wills 2018b, 37) is to say that scientific knowledge is generally better than non-scientific knowledge.

Of course, there are instances of bad science, just as there are instances of bad scholarship in any academic discipline. Generally speaking, however, research done by scientists using the methods of science will likely be better (i.e., quantitatively better in terms of research output and research impact as well as qualitatively better in terms of explanatory, predictive, and instrumental success) than research done by non-scientists using non-scientific methods. That is *Weak Scientism* and, perhaps unwittingly, Wills seems to have accepted it by granting that using scientific methods “may mean better knowledge in many cases” (Wills 2018b, 37).

Inference to the Best Explanation

In my (2017a), as well as in my replies to Brown (Mizrahi 2017b; 2018a) and to Wills (Mizrahi 2018b), I have argued that Inference to the Best Explanation (IBE) is used in both scientific and non-scientific disciplines. As McCain and Poston (2017, 1) put it:

Explanatory reasoning is quite common. Not only are rigorous inferences to the best explanation (IBE) used pervasively in the sciences, explanatory reasoning is virtually ubiquitous in everyday life. It is not a stretch to say that we implement explanatory reasoning in a way that is “so routine and automatic that it easily goes unnoticed” [Douven 2017].

Once this point is acknowledged, it becomes clear that, when judged by the criteria of *good* explanations, such as unity, coherence, simplicity, and testability, scientific IBEs are generally better than non-scientific IBEs (Mizrahi 2017a, 360; Mizrahi 2017b, 19-20; Mizrahi 2018a, 17; Mizrahi 2018b, 46-47).

In response, Wills tells the story of his daughter who has attempted to reason abductively in class once. Wills (2018b, 38) begins by saying “Let me go back to my daughter,” even though it is the first time he mentions her in his (2018b), and then goes on to say that she once explained “how Scriabin created [the Prometheus] chord” to the satisfaction of her classmates.

But how is this supposed to be evidence against *Weak Scientism*? In my (2017a), I discuss how IBE is used in non-scientific disciplines and I even give an example from literature (Mizrahi 2017a, 361). Apparently, Wills is unaware of that, which I take to be another indication that he has not read the paper that defends the thesis he seeks to criticize. Again, to quote Wills (2018b, 38) himself, “All disciplines use abduction,” so to give an example of IBE from a non-scientific discipline does nothing at all to undermine *Weak Scientism*. According to *Weak Scientism*, all academic disciplines produce knowledge, and many of them do so by using IBE, it’s just that scientific IBEs are better than non-scientific IBEs.

Wills asserts without argument that, in non-scientific disciplines, there is no need to test explanations even when IBE is used to produce knowledge. As Wills (2018b, 38) writes, “All disciplines use abduction, true, but they do not all arrive at the ‘best explanation’ by the same procedures.” For Wills (2018b, 38), his daughter did not need to test her hypothesis about “how Scriabin created [the Prometheus] chord.” Wills does not tell us what the hypothesis in question actually is, so it is hard to tell whether it is testable or not. To claim that it doesn’t need to be tested, however, even when the argument for it is supposed to be an IBE, would be to *misuse* or *abuse* IBE rather than use it.

That is, if one were to reason to the best explanation without judging competing explanations by the criteria of unity, coherence, simplicity, testability, and the like, then one would *not* be warranted in concluding that one’s explanation is the *best* among those considered. That is just how IBE works (Psillos 2007). To say that an explanation is the best is to say that, among the competing explanations considered, it is the one that explains the

most, leaves out the least, is consistent with background knowledge, is the least complicated, and yields independently testable predictions (Mizrahi 2017a, 360-362).

Wills (2018b, 39) seems to grant that “unity, simplicity and coherence” are good-making properties of explanations, but not testability. But why not testability? Why an explanation must be simple in order to be a good explanation, but not testable? Wills does not say. Again (Mizrahi 2018b, 47), I would urge Wills to consult logic and reasoning textbooks that discuss IBE. In those books, he will find that, in addition to unity, coherence, and simplicity, *testability* is one of the “characteristics that are necessary conditions for any explanation to qualify as being a reasonable empirical explanation” (Govier 2010, 300).

In other words, IBE is itself the procedure by which knowledge is produced. This procedure consists of “an inference from observations and a comparison between competing hypotheses to the conclusion that one of those hypotheses best explains the observations” (Mizrahi 2018c). For example (Sinnott-Armstrong and Fogelin 2015, 196):

- (1) *Observation*: Your lock is broken and your valuables are missing.
- (2) *Explanation*: The hypothesis that your house has been burglarized, combined with previously accepted facts and principles, provides a suitably strong explanation of observation 1.
- (3) *Comparison*: No other hypothesis provides an explanation nearly as good as that in 2.
- (4) *Conclusion*: Your house was burglarized.

As we can see, the procedure itself requires that we compare competing hypotheses. As I have mentioned already, “common standards for assessing explanations” (Sinnott-Armstrong and Fogelin 2015, 195) include unity, coherence, simplicity, and testability. This means that, if the hypothesis one favors as the best explanation for observation 1 cannot be tested, then one would not be justified in concluding that it is the *best* explanation, and hence probably true. That is simply how IBE works (Psillos 2007).

Contrary to what Wills (2018b, 39) seems to think, those who reason abductively without comparing competing explanations by the criteria of unity, coherence, simplicity, and testability are not using IBE, they are misusing or abusing it (Mizrahi 2017a, 360-361). To reason abductively without testing your competing explanations is as fallacious as reasoning inductively without making sure that your sample is representative of the target population (Govier 2010, 258-262).

The Defense Rests

Fallacious reasoning, unfortunately, is what I have come to expect from Wills after reading and replying to his attacks on *Weak Scientism*. But this is forgivable, of course, given that we all fall prey to mistakes in reasoning on occasion. Even misspelling my last name several times (Wills 2018a, 18, 22, 24) is forgivable, so I accept Wills’ (2018b, 39) apology. What is unforgivable, however, is lazy scholarship and arguing in bad faith. As I have argued above, Wills is guilty of both because, despite claiming to be a practitioner of “close reading” (Wills

2018b, 34), Wills has not read the paper in which I defend the thesis he seeks to attack (Mizrahi 2017a), or any of the papers in my exchange with Brown (Mizrahi 2017b; 2018a), as evidenced by the fact that he does not cite them at all (not to mention citing and engaging with other works on scientism).

This explains why Wills completely misunderstands *Weak Scientism* and the arguments for the quantitative superiority (in terms of *research output* and *research impact*) as well as qualitative superiority (in terms of *explanatory*, *predictive*, and *instrumental success*) of scientific knowledge over non-scientific knowledge. For these reasons, this is my second and final response to Wills. I have neither the time nor the patience to engage with lazy scholarship that was produced in bad faith.

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