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Some Devils in the Details: Methodological Concerns Regarding Mizrahi's "The Scientism Debate"

Amanda Bryant, University of Lisbon, abryant@letras.ulisboa.pt

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“The Scientism Debate” in Summary

In his article “The Scientism Debate: A Battle for the Soul of Philosophy?” (2019), Moti Mizrahi sets out to empirically test two hypotheses that putatively explain why philosophers find scientism threatening. The hypotheses are:

H1: Many philosophers find scientism threatening because they see it as a threat to the future of philosophy as a major in colleges and universities.

H2: Many philosophers find scientism threatening because they see it as a threat to the soul or essence of philosophy as an *a priori* discipline (2019, 2).

According to Mizrahi, H1 predicts that “if more students choose to major in STEM fields instead of philosophy, then philosophers might feel more threatened by scientism” (2019, 2). Mizrahi’s proxy for philosophers’ sense of threat by scientism is the number of philosophy publications (as well as other publications that happen to be grouped with philosophy) in JSTOR that contain the word “scientism” from 1970 to 2016. As a proxy for losing philosophy majors to STEM, Mizrahi takes the number of philosophy degrees granted (as well as other degrees that happen to be grouped with philosophy) per year in the United States between 1970 and 2016.¹ He then performs correlation and linear regression analyses.

The results of the correlation analysis show a very weak positive correlation between the number of philosophy degrees granted and the number of publications containing the word “scientism”. The linear regression analysis found no significant regression equation. These results do not support H1. According to Mizrahi, if H1 were true, we would expect to find a negative correlation between philosophy degrees granted and philosophy publications containing the word “scientism” (more philosophy degrees granted should be accompanied by *less* concern over scientism), yet we find a weak positive one.

Mizrahi tests H2 in the following way. First he derives a prediction: “If H2 is true, we would expect philosophers to feel more threatened by scientism when they think that the traditional methods of philosophical investigation (such as the method of cases) begin to lose ground to empirical methods of investigation” (2019, 6-7). Mizrahi’s proxy for the sense of threat by scientism is once again the prevalence of the word “scientism” in certain scholarly publications. Since experimental philosophy introduced more empirical methods into philosophical practice, Mizrahi’s proxy for traditional methods being seen to lose ground to empirical ones is the prevalence of the phrase “experimental philosophy” in the philosophy subject category of JSTOR. Mizrahi again performs correlation and linear regression analyses on the data.

The correlation analysis finds a very strong positive correlation between publications containing the word “scientism” and publications containing the phrase “experimental

¹ To keep things simple, in what follows, I will just refer to philosophy degrees and philosophy publications (but remember that the details of the study are a bit more complex).

philosophy”. The linear regression analysis also found a significant regression equation. According to Mizrahi, H2 correctly predicts these results. He claims that the results “suggest a link between the introduction of empirical methods into philosophy and concerns about scientism among philosophers that is worthy of further investigation” (2019, 9).

In this reply, I will highlight some important respects in which I believe the formulation of H1 and H2, the predictions that Mizrahi derives from them, as well as the methods by which he tests them are flawed. The flaws will include, among other things, an insufficiently well-defined research question; inadequate indicators of the relevant sentiments, including feeling threatened by scientism, concerned about the future of philosophy as a major, and concerned about the soul of philosophy as an *a priori* discipline; a reliance on questionable auxiliary hypotheses; as well as inattention to plausible rival hypotheses. As a result of these problems, I believe the study does not succeed in its aims.

Preliminary Concerns

I have two concerns regarding the set-up of Mizrahi’s paper.

The first is that it relies on a sociological assumption that itself stands in need of empirical confirmation. Bourget and Chalmers showed in their well-known study that “philosophers have substantially inaccurate sociological beliefs about the views of their peers” (2014, 489), and as such, it is important to check that the facts support our sociological narratives. In particular, not only do the putative explanantia require empirical support, so too does the explanandum. That is, we need evidence supporting Mizrahi’s initial assumption that “many” philosophers find scientism threatening.² Even if some philosophers are threatened by it—which is perhaps evidenced by the “ferociousness” of the scientism debate (Mizrahi 2019, 1)—there is still a question as to the prevalence of this sense of threat.

My second initial concern is that the question of *why philosophers find scientism threatening* is too ambiguous to constitute a well-defined research question. Likewise, the hypotheses that purport to explain the sense of threat are not sufficiently well-defined to test empirically. That is because, in addition to not specifying what it means concretely for philosophers to *find* something *threatening*, Mizrahi does not say what it means for them to find *scientism* threatening.³ That is, he neglects to introduce an operative definition of scientism. There are many substantively distinct theses to which the label “scientism” has been applied, both of the inherently negative variety (Haack 2003, 2012, 2017; Pigliucci 2010; Sorell 1991) and of non-negative varieties (Buckwalter and Turri 2018, Ladyman and Ross 2007, Mizrahi 2017, and Rosenberg 2011). This has in turn resulted in the need to catalog, compare, and taxonomize the various formulations (Hietanen et al. 2020, Peels 2018, Stenmark 2018). So at this complicated juncture in the dialectic, there is no one thing, *scientism*, about which philosophers can possess a shared and explainable sentiment. Rather, there are a range of scientisms, our attitudes toward which require directed and detailed sociological

² In his reply piece, de Ridder correctly points out that many is too vague to lend itself to empirical testing without further specification (2019, 9).

³ I attempt to improve upon these oversights in my “The Supposed Spectre of Scientism” (unpublished manuscript), which distinguishes several forms of scientism, considers the concrete ways in which certain forms of scientism might be thought to be “threatening” to philosophers, and spells out the contentful assumptions required to make even the strongest scientisms genuinely threatening in those ways.

investigation. What we need in order to test our sociological narrative is unambiguous hypotheses; then, since those hypotheses would concern conscious individual feelings, the natural way to proceed (as de Ridder 2019 and Wilson 2019 point out) would be via survey and interview.

Why Preserve Ambiguity?

There are at least three reasons why one might not disambiguate “scientism”.

The first is that one might have established a preferred conception in prior publications. This is true of Mizrahi, in that he has previously defended *weak scientism*, according to which “Of all the knowledge we have, scientific knowledge is the best knowledge” (2017, 354). Perhaps when he doesn’t specify otherwise, we should assume that he is operating with his preferred conception. However, given that Mizrahi is trying to explain a supposedly shared sentiment toward scientism among “many philosophers”, it does not lend more plausibility to the project to suppose that it’s this preferred version of scientism they all have opinions about and feelings toward. That would require a surprising level of convergence on Mizrahi’s conception.

A second possible reason not to disambiguate might be that one is interested in explaining philosophers’ feelings about some vague, *shared* sense of what scientism amounts to—for instance, a positive attitude toward science, coupled with the belief that philosophy should somehow make contact with it. If that were the case here, Mizrahi would have to show that the many philosophers in question actually possess such a shared understanding. And even if they did, examining our attitudes toward that shared understanding would be potentially less interesting and informative than an examination of our attitudes toward more contentful views.

A third possible reason for not defining “scientism” could be that one is interested in patterns that emerge when we aggregate philosophers’ individual attitudes toward the views they individually associate with the word. An analogous research program might ask whether and why “naturalism” has positive or negative associations among philosophers. Projects of this kind are potentially interesting in their own right. Mizrahi’s method seems to point in this direction, since it involves mining JSTOR for publications including the word “scientism”. However, if this is what Mizrahi is up to, it is misleading for him to claim that “Many philosophers find scientism threatening” (2017, 2), as if there is some unified thing that they feel threatened by. It would be clearer to say, “Many philosophers are threatened by whatever views and attitudes they individually associate with the word ‘scientism’”.

At any rate, without a definition, we are left to rationally reconstruct the nature of the project, as well as the determinate content of the explanandum and the hypotheses that putatively explain it. More generally, not disambiguating the term can lead to ignored distinctions, misconstruals and cross-purposes, as well as obscured lines between scientism and nearby epistemological and methodological positions, stances, and practices. Unless our research interests and aims require the preservation of ambiguity, when we talk about “scientism,” let’s always dispel it.

A Poor Proxy for Scholarly Sentiment

As I explained above, in Mizrahi's tests for both H1 and H2, he attempts to gauge the level of concern philosophers have with respect to scientism by searching JSTOR for philosophy publications that contain the word "scientism". His rationale for doing so is that "when scholars are concerned about something, they write about it, both in academic journals ... and books ... as well as in non-academic venues" (2019, 3). Suppose that's true. The converse—when scholars write about something, they are concerned about it—does not follow.

Independently of whether the rationale is valid, the prevalence of publications mentioning the word "scientism" is a poor measure of philosophers' level of concern regarding scientism. First, as Bishop (2019, 48) correctly points out, significantly many uses of the term could be neutral or positive. Some could also be negative without being accompanied specifically by concern or feelings of threat. There are plenty of reasons for increased discussion of "scientism" other than increased concern about it. De Ridder suggests, "Without going out on a limb here, I suspect they might sometimes think the topic is genuinely interesting and worthy of scholarly attention" (2019, 10). Alternatively, sometimes scholars talk about certain topics because others are talking about them; in philosophy, we see topics go in and out of philosophical fashion over time. Concern isn't implied.

Moreover, use of the term "scientism" may not always track intended meaning. In addition to there being many substantively distinct meanings associated with the term, there is a nearby constellation of views, stances, and practices that relate to various forms of scientism in complex and subtle ways—including empiricism, physicalism, realism, naturalism, and interdisciplinarity.⁴ This could easily lead to confusion. In particular, scholars may use the term "scientism" when a different term would be more appropriate, or they may not use it when doing so would be appropriate. In other words, the term "scientism" does not necessarily track the ideas and attitudes that are commonly recognized as scientisms. This shows that the prevalence of the term "scientism" is too superficial a phenomenon to be a good measure of scholarly sentiment toward scientism.

Testing H1

Recall that the test for H1 compares the prevalence of the term "scientism" in philosophy publications with philosophy degrees granted. An initial worry here is that Mizrahi does not consider the heterogeneity of degree-granting trends in local contexts. Differing attitudes and strategies toward enrolment and retention at the departmental level, among other highly local factors, such as student demographics and local culture, lead to different trends in different locales. It wouldn't be surprising if philosophers were concerned primarily with those local trends, since those are the trends that affect them most directly (in the form of, e.g., budgetary decisions, administrative good- or ill-will, and so forth). But let's suppose for

⁴ On the relation of scientism to physicalism, see Ney (2018); on the relation of scientism to philosophical naturalism, see Stenmark (2018); on the relation of scientism to realism, see Nickles (2017). On the confusion of scientism with interdisciplinarity, see Bishop (2019).

the sake of argument that philosophers both care about and attend to coarse-grained trends in degree-granting.

An additional problem concerns the prediction Mizrahi derives from H1—namely, that philosophers will feel more threatened by scientism if they lose more students to STEM majors. As I understand it, the idea is that if there is a causal-explanatory connection between philosophers feeling threatened by scientism and their seeing it as a threat to the future of philosophy education, then we should expect to see a correlation between prevalence of the term “scientism” in the discourse and the loss of philosophy majors to STEM. However, as other respondents have pointed out (Bishop 2019, de Ridder 2019), correlation does not imply causation or, for that matter, explanation. Without further argumentation, if a significant correlation were found (it wasn’t), it would have limited causal-explanatory import. In particular, it would not imply that the diminishing proportion of philosophy majors explains the uptick in publications containing the word “scientism” or that perceiving scientism as a threat to the future of philosophy education explains why philosophers find scientism threatening.

Mizrahi might reply that while *of course* correlation does not imply causation or explanation, finding a correlation lends Bayesian confirmation to a hypothesis, however weakly, when the hypothesis predicts the correlation. The intention is not to illicitly draw explanatory conclusions from correlation and linear regression analyses but to confirm or disconfirm H1 by testing predictions that can be reasonably drawn from it. This would be a fair response. The natural question would then be whether the relevant prediction *is* reasonably drawn from H1.

To derive the relevant prediction from H1, Mizrahi requires an auxiliary hypothesis, according to which the philosophers in question *blame scientism specifically* for the decline in philosophy majors. Since there are many factors that contribute to trends concerning college majors, for there to be a causal-explanatory connection between philosophers feeling threatened *by scientism* and the loss of philosophy majors to STEM, philosophers would have to believe that scientism is responsible for the loss of majors. Is this a plausible auxiliary hypothesis? Note how specific it is; the sense of threat could not simply be directed at the loss of majors, at the institution of science or its growth, but at scientism in particular.

Note also that it is not clear what the determinate content of the relevant belief would be. This is one juncture where the specific conception of scientism makes a difference. For instance, the philosophers in question might believe that increasing numbers of students are majoring in STEM rather than philosophy because those students have an “inappropriate, uncritical deference to the sciences” (Haack 2017, 41). Alternatively, the philosophers in question might believe that growing numbers of students are majoring in STEM rather than philosophy because they believe that science is epistemically or methodologically privileged. Precisely how philosophers conceive of scientism and allegedly view its connection to trends concerning college majors would need to be spelled out.

Another worry is that Mizrahi does not collect all of the data required to test the prediction he derives from H1. If we want to know how many students choose to major in philosophy

over STEM, we cannot just look at philosophy degrees granted; as Wilson also points out (2019, 56), we need to consider STEM degrees granted, too. After all, philosophy majors versus STEM majors isn't a zero-sum game. We need to establish that philosophy is losing students *to STEM*, not to other disciplines and not as part of a general decline in enrolments.

In sum, correlation and regression analyses are insufficient to establish any causal-explanatory connections between the correlated phenomena or to establish the explanatory content of H1. Moreover, deriving the relevant prediction from H1 requires a questionable auxiliary hypothesis to the effect that philosophers believe scientism to be specifically responsible for the changing degree trends. Finally, Mizrahi neglects to consider data on STEM degrees granted, which is needed to show that philosophy is losing majors to STEM.

Testing H2

The test for H2 compares the prevalence of philosophy publications that contain the term “scientism” with the prevalence that contain the phrase “experimental philosophy”. Given the discussion so far, my first two points should not be surprising.

First, just as the prevalence of the word “scientism” isn't necessarily a good indicator of concern about scientism, the prevalence of the phrase “experimental philosophy” isn't necessarily a good indicator of philosophers seeing empirical methods gaining ground over traditional philosophical ones. That's because talking about experimental philosophy in the abstract does not necessarily signal actual or perceived uptake of its characteristic methods in philosophical practice.

Second, correlation still does not imply causation or explanation. Significant findings in the correlation and regression analyses would not necessarily mean that the prevalence of the phrase “experimental philosophy” causes or explains the prevalence of the term “scientism” in the literature, nor would they secure the explanatory content of H2.

However, I have acknowledged that we get confirmation when a hypothesis makes a true prediction. Yet, again we have to ask whether the relevant hypothesis (H2) reasonably gives rise to the relevant prediction (that philosophers will feel more threatened by scientism when they see empirical methods gaining ground over traditional philosophical ones). For there to be a causal-explanatory connection here, it would have to be the case that the philosophers in question believe that scientism is responsible for the changing landscape of philosophical method. This must be another auxiliary hypothesis. But is it a plausible one? It seems equally—if not more—appropriate to attribute such changes to increased acceptance of empiricism or naturalism. If it is assumed that philosophers see a connection between scientism and increased use of empirical methods in philosophy, the precise nature of that perceived connection would have to be made clear. This is another juncture at which the operative definition of scientism is crucial.

A further reason why the predicted correlation might not be reasonably expected based on H2 (and its accompanying auxiliary hypothesis) is that seeing empirical methods gain ground over traditional philosophical ones is not clearly sufficient to cause philosophers to feel threatened by scientism. The increased use of empirical methods alone shouldn't threaten even the most staunchly aprioristic philosophers. That is because experimental methods can

co-exist with and complement traditional armchair methods (Nagel and Mortensen 2016). As such, in order to feel threatened by an increase in empirical philosophy, philosophers would have to feel that the increase was somehow at odds with, shrinking space for, or devaluing their own kind of philosophy. So the increased use of empirical methods alone likely wouldn't panic many aprioristic philosophers; to incite panic, the uptake of empirical methods would have to be seen as somehow undermining or supplanting philosophers' preferred research methods.

Yet it's far from clear that the advent of experimental philosophy was perceived that way. In fact, some philosophers perceived it quite the opposite way (e.g. Levin 2009). Sufficiently many philosophers thought poorly of experimental philosophy—at least initially—that its proponents were put on the defensive against critics (Horvath and Grundmann 2012, Nadelhoffer and Nahmias 2007). Some of those critics considered experimental philosophy methodologically deficient or “just bad psychological science, conducted by researchers without proper training in methodology and statistics” (Colombo et al. 2018, 9; see, for instance, Cullen 2010 and Woolfolk 2013). Moreover, some thought its data had unclear or negligible philosophical import (Deutsch 2010, Kauppinen 2007). Now, since we have seen the importance of establishing the verisimilitude of our sociological narratives, I'll just make some conditional claims here. If a critical mass of philosophers were initially dismissive toward experimental philosophy, it would be surprising if many aprioristic philosophers felt particularly threatened by it; likewise, the advent of experimental philosophy would be largely irrelevant to the phenomenon of interest, i.e. philosophers feeling threatened.

Moreover, I believe there are independent reasons for doubting H2, in virtue of which we should assign it a low prior and require that it be supported by very strong correlation data. In particular, H2 attributes clumsy thinking to many philosophers. That's because it rests on heavy-handed caricatures of science as non-*a-priori* and of philosophy as essentially *a-priori*, when the realities of philosophical and scientific practice are a good deal messier (on this, see Chakravartty 2013). Of course, that doesn't mean H2 is false, since it could be the case that many philosophers really do think clumsily in this regard. What it does mean is that we will need strong evidence if we're going to accept it.

However, Mizrahi's evidence does not adequately support H2. Even if increased talk of experimental philosophy did signal increased use of empirical methods, and even if increased talk of scientism did signal concern over scientism, and even if we did show their correlation to have causal-explanatory import, nothing would follow about the beliefs of philosophers regarding the essence of philosophical method. We would know that philosophers see certain methodological changes happening and perceive them as a threat—but a threat to what? Mizrahi's evidence underdetermines the answer. For example, the evidence is consistent with philosophers seeing increased use of empirical methods as a threat to the way philosophy has *historically* been practiced or to their *personally preferred* research methods, neither of which entails anything about the essence of philosophy. So while the evidence is compatible with the truth of H2, H2 does not uniquely predict the data. We therefore need some reason to prefer H2 over alternate hypotheses.

In sum, Mizrahi's test for H2 has considerable flaws. The use of the phrase "experimental philosophy" is a poor proxy for philosophers seeing empirical methods gaining ground over traditional philosophical ones. H2 only gives rise to the relevant prediction on the assumption that the philosophers in question believe that scientism is specifically responsible for the uptake of empirical methods in philosophy, while the determinate content of the alleged belief remains opaque. The prediction also claims, implausibly, that philosophers will feel threatened by the increased use of empirical methods alone. Moreover, if it's true that philosophers mostly reacted dismissively toward experimental philosophy in its initial stages, then its advent is not particularly relevant to philosophers' sense of threat. H2 also attributes to many philosophers a belief in heavy-handed caricatures and, as such, requires strong evidence. Yet the evidence Mizrahi collects does not lend sufficient support to H2 over and above rival hypotheses.

In conclusion, Mizrahi's study suffers from a number of flaws, which prevent it from adequately explaining why many philosophers are (allegedly) threatened by scientism. I believe there are a few general lessons to be drawn. First, some philosophical terms ("physicalism", "emergence", "naturalism"...) are so thoroughly contested and variably defined that we cannot hope to have a productive conversation about them without disambiguating clearly and persistently, and "scientism" is one of them. Relatedly, a sociological research program that investigates *why philosophers feel threatened by scientism* is likely too coarse-grained and ill-defined to be contentful, informative, or empirically-tractable. Moreover, mining publication databases for key terms is too superficial a method of data-collection to tell us much about how scholars feel about substantive issues. Lastly, empirical testing is not sufficient for good empirical philosophy; the latter requires methodologically sound methods that are supported by, and in turn support, cogent reasoning.

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