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Social Epistemology
Review & Reply Collective

http://social-epistemology.com
ISSN: 2471-9560

# The Scientism Debate: A Battle for the Soul of Philosophy?

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Mizrahi, Moti. 2019. "The Scientism Debate: A Battle for the Soul of Philosophy?" *Social Epistemology Review and Reply Collective* 8 (9): 1-13. https://wp.me/p1Bfg0-4n3.

SERRC
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8 (9): 1-13. 2019.
https://wp.me/p1Bfg0-4n3

I have been thinking and writing about scientism for a few years now (since my (2017a) and most recently, an entry on scientism for the *Internet Encyclopedia of Philosophy*), but I continue to be taken aback by the ferociousness of the scientism debate in philosophy.[1] There are good reasons for that, however, since the scientism debate gets at the heart of what philosophers do professionally, namely, teaching and research. As far as teaching is concerned, scientism is perceived as a threat to the sort of teaching that philosophers typically do because it is commonly (but mistakenly) thought that degrees in science are in demand and can lead to successful careers, whereas degrees in philosophy are not and can only lead to unemployment (e.g., Shapiro 2017).

As Graham Oddie (2006, 255) recounts, Alan Musgrave once told him that he "was doing something a bit foolish—passing up the chance for a degree (and a lucrative career) in law, for a degree (and almost certain unemployment) in philosophy." In other words, many philosophers seem to think that scientism poses a threat to them as teachers because it somehow implies that philosophy has no valuable skills to impart to students. For this reason, some philosophers find it necessary to argue that philosophy can teach students something of value. For example, Martha Nussbaum argues that the humanities and arts can teach students skills that STEM fields cannot teach them, such as critical thinking, reasoning, and problem-solving skills (Nussbaum 2010, xvii-xviii).

As far as research is concerned, scientism is perceived as a threat to the sort of research that philosophers typically do because it advocates the use of empirical methods of observation, experimentation, and the like, whereas philosophers are typically content with armchair reflection. As Patricia Churchland (2011, 4) puts it, "philosophy and science are working the same ground, and [empirical] evidence should trump armchair reflection." In other words, many philosophers seem to think that scientism poses a threat to them as researchers because it somehow implies that philosophy has no valuable contributions to make to the advancement of knowledge unless it adopts the empirical methods of the sciences. For this reason, some philosophers find it necessary to defend the traditional methods of philosophy against any attempt to introduce empirical methods into philosophy. For example, Jennifer Nagel defends the method of making intuitive judgments about hypothetical cases of philosophical interest (AKA "the method of cases") from experimental results suggesting that intuitions are not as reliable as many philosophers tend to think (Nagel 2012).[2]

All of this suggests to me two things that the scientism debate in philosophy might *really* be about. First, the scientism debate is fundamentally a battle for the future of philosophy as a discipline or a field of study (i.e., a subject for undergraduate students to major in): as teachers, philosophers seek to defend their territory from invading scientists by

[1] For example, see my exchanges with Christopher Brown and Bernard Wills in the *Social Epistemology Review and Reply Collective*. Mizrahi (2017b), (2018a), (2018b), and (2018c). In these papers, I distinguish between *Strong Scientism* and *Weak Scientism*. The argument for the latter is that scientific knowledge is quantitatively better (in terms of research output and research impact) and qualitatively better than (in terms of explanatory, instrumental, and predictive success) than non-scientific knowledge.

[2] On the method of cases and the use of intuitions as evidence in philosophy, see Mizrahi (2014), (2015a), and (2015b).

communicating to students the value of philosophy for their education and professional success. This is hypothesis 1: Many philosophers find scientism threatening because they see it as a threat to the future of philosophy as a major in colleges and universities. For instance, Massimo Pigliucci (2018) thinks that scientism is "a threat to every other discipline, including philosophy."

Second, the scientism debate is fundamentally a battle for the soul or essence of philosophy as a field of inquiry (i.e., a subject for scholars to work in): as scholars, philosophers seek to defend their territory from invading scientists by justifying the traditional methods of philosophical inquiry and resisting attempts to introduce empirical methods of investigation into philosophy. This is hypothesis 2: Many philosophers find scientism threatening because they see it as a threat to the soul or essence of philosophy as an *a priori* discipline. For instance, Susan Haack (2017, 43) thinks that "the rising tide of scientistic philosophy [...] spells shipwreck for philosophy itself."

Rather than reflect on these two hypotheses while sitting in an armchair, primarily because I do not own an armchair, I decided to test them empirically, thereby demonstrating the usefulness of empirical methods to philosophical (and/or metaphilosophical) inquiry. In what follows, I describe how I tested the aforementioned hypotheses empirically and I report the results of my empirical study. Finally, I discuss the implications of the results of my empirical study for the scientism debate in philosophy.

**Methods and Results**

For the purpose of this empirical study, my research question is this: What is the scientism debate in philosophy fundamentally about? As mentioned above, there are two hypotheses that will be tested empirically in this study. First, the scientism debate is fundamentally about philosophy as a field of study (i.e., a subject for undergraduate students to major in):

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.

Second, the scientism debate is fundamentally about philosophy as a field of inquiry (i.e., a subject for scholars to work in):

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.

Now, if H1 is true, we would expect philosophers to feel more threatened when they lose more students to STEM majors. In other words, if more students choose to major in STEM fields instead of philosophy, then philosophers might feel more threatened by scientism. Conversely, if more students choose to major in philosophy instead of STEM fields, then philosophers might feel less threatened by scientism. In statistical terms, we would expect to find a negative linear relationship between the number of students that choose philosophy over STEM and how concerned philosophers are about scientism if H1 were true.

SERRC
Social Epistemology
Review & Reply Collective
8 (9): 1-13. 2019.
https://wp.me/p1Bfg0-4n3

So now the question is how to find out whether there is a relationship between undergraduate students choosing to major in philosophy over STEM fields and philosophers being concerned about scientism. Data on the subjects undergraduate students choose to major in is relatively easy to come by. The Institute of Education Sciences' (IES) National Center for Education Statistics (NCES) provides data on Bachelor's degrees conferred by postsecondary institutions in the United States through its Integrated Postsecondary Education Data System (IPEDS). Since my focus is the scientism debate in philosophy, I have looked at data on Philosophy and Religious Studies degrees as well as Theology and Religious Vocations (these are NCES's groupings, not mine), which I have taken from the NCES's 2017 Digest of Education Statistics (available here: https://nces.ed.gov/programs/digest/d17/tables/dt17_322.10.asp). The data relevant to my empirical study are summarized in Table 1.

| Year | Philosophy and Religious Studies BAs | Theology and Religious Vocations BAs |
|---|---|---|
| **1970-71** | 8149 | 3720 |
| **1975-76** | 8447 | 5490 |
| **1980-81** | 6776 | 5808 |
| **1985-86** | 6396 | 5510 |
| **1990-91** | 7423 | 4799 |
| **1995-96** | 7541 | 5292 |
| **2000-01** | 8717 | 6945 |
| **2005-06** | 11985 | 8548 |
| **2006-07** | 11969 | 8696 |
| **2007-08** | 12257 | 8992 |
| **2008-09** | 12448 | 8940 |
| **2009-10** | 12503 | 8719 |
| **2010-11** | 12830 | 9073 |
| **2011-12** | 12645 | 9304 |
| **2012-13** | 12792 | 9385 |
| **2013-14** | 11999 | 9642 |
| **2014-15** | 11071 | 9713 |
| **2015-16** | 10157 | 9804 |

**Table 1.** Number of Bachelor's degrees in Philosophy and Religious Studies as well as Theology and other Religious Vocations conferred by postsecondary institutions in the United States from 1970 to 2016 (Source: NCES).

It is a bit more challenging to gather data on how concerned humanities scholars, particularly philosophers, theologians, and scholars of religion, are about scientism. Nonetheless, when scholars are concerned about something, they write about it, both in academic journals (see, e.g., Bilgrami 2014) and books (see, e.g., Scruton 2014) as well as in non-academic venues

(see, e.g., Schmidt 2018). Accordingly, if we look at how many publications in philosophy, theology, and religious studies include a discussion of scientism, we would have a pretty good idea of how concerned these scholars are about scientism. In other words, the more concerned philosophers, theologians, and scholars of religion are about scientism, the more articles and book chapters they would write about scientism and its perceived threat to the humanities.

Such data can be mined from the JSTOR database using JSTOR Data for Research (www.jstor.org/dfr/). Researchers can use JSTOR DfR to create datasets, including metadata, n-grams, and word counts, for most of the articles and book chapters contained in the JSTOR database. So I have used it to create a dataset of philosophy publications and a dataset of publications in religious studies and searched for publications in which the term "scientism" occurs. Table 2 lists the number of publications in each subject category, namely Philosophy and Religion, on JSTOR that contain the term "scientism."[3]

| Year | "scientism" in Philosophy publications | "scientism" in Religion publications |
|---|---|---|
| **1970-71** | 37 | 26 |
| **1975-76** | 31 | 22 |
| **1980-81** | 67 | 17 |
| **1985-86** | 66 | 40 |
| **1990-91** | 79 | 32 |
| **1995-96** | 123 | 44 |
| **2000-01** | 86 | 41 |
| **2005-06** | 127 | 60 |
| **2006-07** | 57 | 36 |
| **2007-08** | 71 | 36 |
| **2008-09** | 58 | 38 |
| **2009-10** | 56 | 45 |
| **2010-11** | 65 | 39 |
| **2011-12** | 74 | 32 |
| **2012-13** | 72 | 45 |
| **2013-14** | 84 | 56 |
| **2014-15** | 58 | 62 |
| **2015-16** | 81 | 52 |

**Table 2.** Number of publications that contain the term "scientism" in the Philosophy and the Religion subject categories on JSTOR from 1970 to 2016 (Source: JSTOR Data for Research).

The years in Table 2 were selected to match the years in the data from NCES (see Table 1).

[3] For additional examples of the application of methods from data science, such as text mining, corpus analysis, and data visualization, to philosophy, see Ashton and Mizrahi (2018a) and Ashton and Mizrahi (2018b).

SERRC
Social Epistemology Review & Reply Collective
8 (9): 1-13. 2019.
https://wp.me/p1Bfg0-4n3

As far as Philosophy BAs and publications are concerned, a correlation analysis indicates a positive correlation between the number of Philosophy and Religious Studies Bachelor's degrees conferred by postsecondary institutions in the United States from 1970 to 2016 and the number of publications that contain the term "scientism" in the Philosophy subject category on JSTOR from 1970 to 2016 ($r = .005$).

The Pearson correlation coefficient $r$ can tell us about the linear relationship between two variables (positive or negative) and the strength of that relationship (the closer $r$ is to 0, the weaker the linear relationship; the closer $r$ is to -1, the stronger the negative relationship; the closer $r$ is to 1, the stronger the positive relationship). Accordingly, the positive correlation between the number of Philosophy and Religious Studies Bachelor's degrees conferred by postsecondary institutions in the United States and the number of publications in the Philosophy subject category on JSTOR that contain the term "scientism" ($r = .005$) is a very weak positive correlation.

In addition, a linear regression analysis did not find a significant regression equation: ($F(1, 16) = 0.0004$, $p = .98$), with an $R^2$ of 2.75. This suggests that the number of Philosophy and Religious Studies Bachelor's degrees conferred by postsecondary institutions in the United States does not explain the variation in the number of publications that contain the term "scientism" in the Philosophy subject category on JSTOR. See Figure 1.

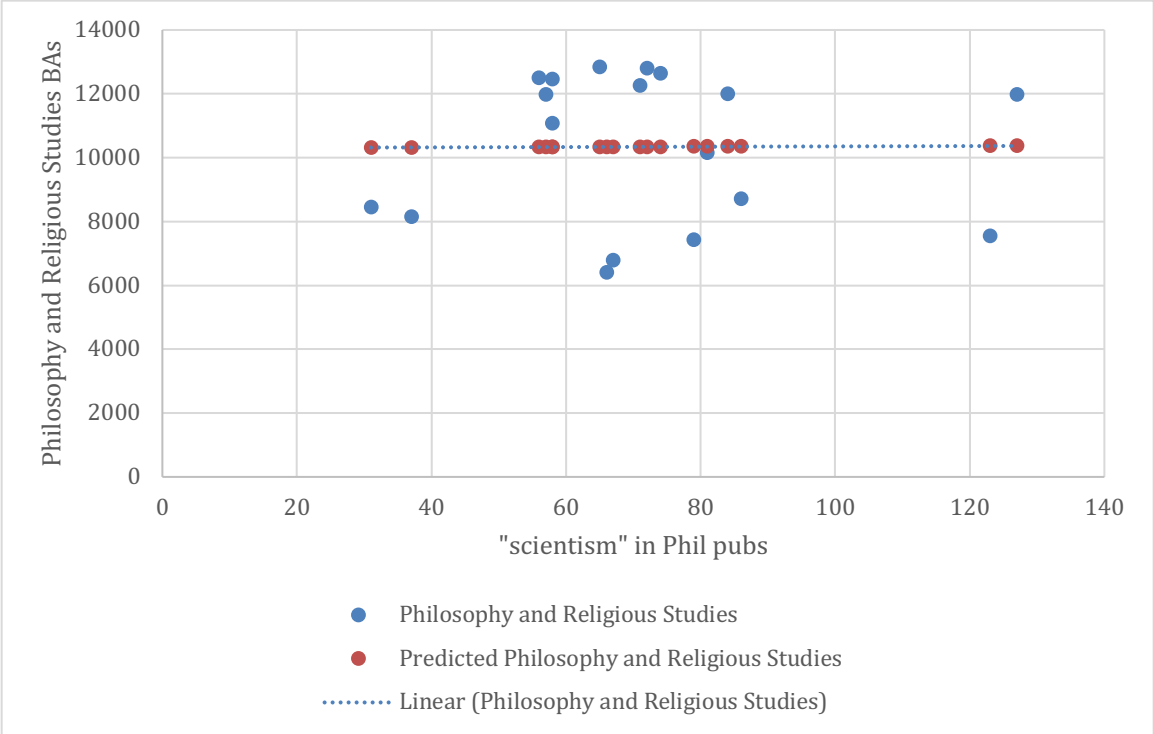


**Figure 1.** Number of Bachelor's degrees in Philosophy and Religious Studies conferred by postsecondary institutions in the United States in relation to the number of publications in which the term "scientism" occurs in the Philosophy subject category on JSTOR from 1970 to 2016 (Sources: NCES and JSTOR Data for Research).

As far as Theology BAs and publications are concerned, a correlation analysis indicates a positive correlation between the number of Theology and Religious Vocations Bachelor's degrees conferred by postsecondary institutions in the United States from 1970 to 2016 and the number of publications that contain the term "scientism" in the Religion subject category on JSTOR from 1970 to 2016 ($r = .60$). The positive correlation between the number of Theology and Religious Vocations Bachelor's degrees conferred by postsecondary institutions in the United States and the number of publications in the Religion subject category on JSTOR that contain the term "scientism" ($r = .60$) is a moderate positive correlation.

In addition, a linear regression analysis did find a significant regression equation: ($F(1, 16) = 9.459$, $p = .007$), with an $R^2$ of .37. This suggests that the number of Theology and Religious Vocations Bachelor's degrees conferred by postsecondary institutions in the United States explains 37% of the variation in the number of publications that contain the term "scientism" in the Religion subject category on JSTOR. See Figure 2.

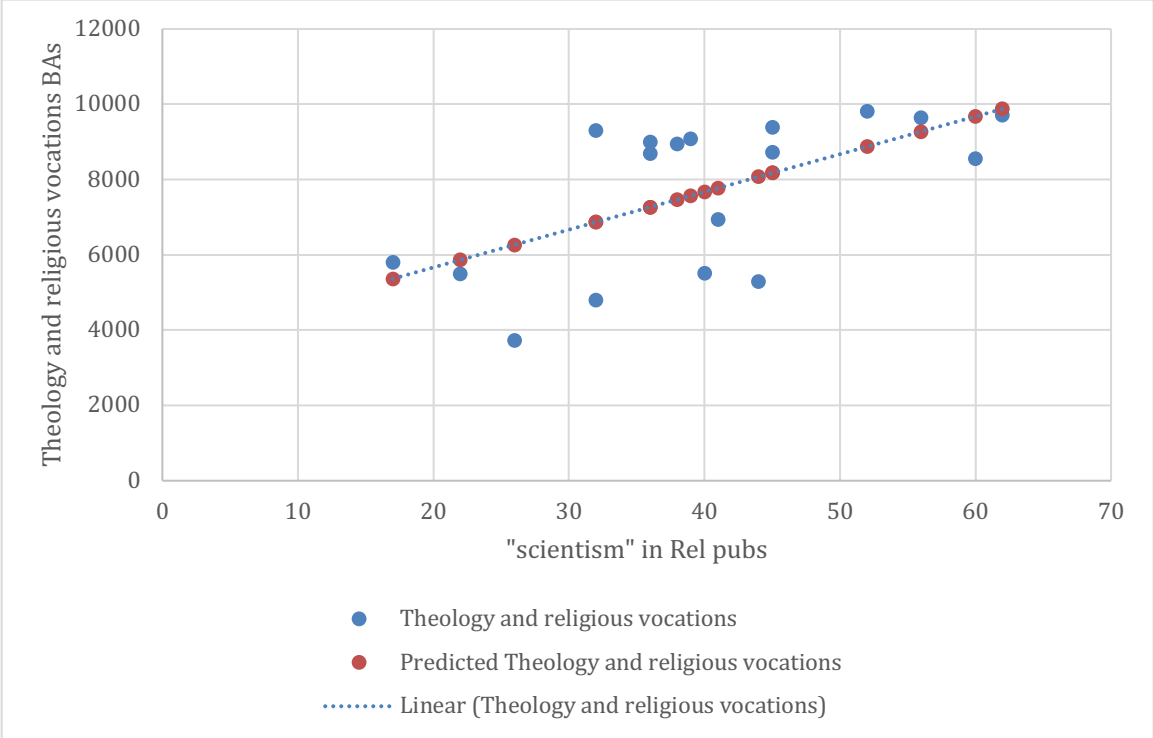


**Figure 2.** Number of Bachelor's degrees in Theology and Religious Vocations conferred by postsecondary institutions in the United States in relation to the number of publications in which the term "scientism" occurs in the Religion subject category on JSTOR from 1970 to 2016 (Sources: NCES and JSTOR Data for Research).

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. In other words, if more scientific methods are being introduced into philosophy, then philosophers would feel more

8 (9): 1-13. 2019.
https://wp.me/p1Bfg0-4n3

threatened by scientism, which would be reflected in an increased number of publications that discuss scientism. In statistical terms, we would expect to find a positive linear relationship between the number of philosophy publications that make use of empirical methods and how concerned philosophers are about scientism, as indicated by the number of philosophy publications that discuss scientism, if H2 were true.

So now the question is how to find out whether there is a relationship between the popularity of empirical methods in philosophy and philosophers being concerned about scientism (as indicated by the number of articles and book chapters on scientism they publish). The conventional wisdom in philosophy is that the early years of the twenty-first century marked the advent of experimental philosophy (Knobe and Nichols 2017). Accordingly, if we find that there is a relationship between the increased popularity of experimental philosophy and concern among philosophers over scientism, then that would count as some positive evidence for H2.

Again, data on scientism and experimental philosophy in philosophy publications can be mined from the JSTOR database using JSTOR Data for Research (www.jstor.org/dfr/). So I have used it to create a dataset of articles and book chapters mined from the Philosophy subject category in JSTOR and searched for the term "scientism" and the phrase "experimental philosophy." Table 3 lists the number of publications that contain the term "scientism" as well as those that contain the phrase "experimental philosophy" mined from the Philosophy subject category in the JSTOR database. For the purpose of this analysis, I went as far back as 2008, since it is generally considered to be the year that marks the advent of experimental philosophy with the publication of Joshua Knobe and Shaun Nichols' "An Experimental Philosophy Manifesto" in Knobe and Nichols (2008).

Now, a correlation analysis indicates a positive correlation between the number of philosophy publications in which the term "scientism" occurs and those in which the phrase "experimental philosophy" occurs ($r = .85$), which is a very strong positive correlation.

In addition, a linear regression analysis did find a significant regression equation: ($F(1, 10) = 26.144$, $p = .000$), with an $R^2$ of .72. This suggests that the number of philosophy publications that contain the phrase "experimental philosophy" explains 72% of the variation in the number of publications that contain the term "scientism" in the Philosophy subject category on JSTOR. See Figure 3.

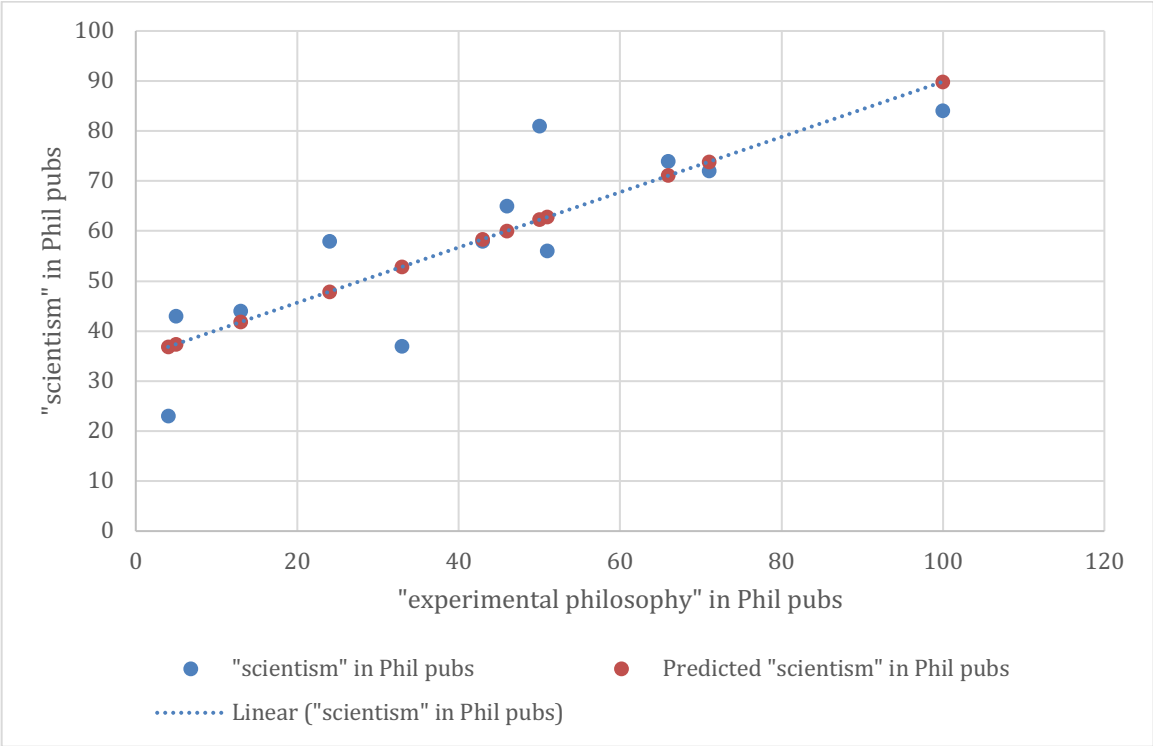


**Figure 3.** Number of publications in which the phrase "experimental philosophy" occurs in relation to those in which the term "scientism" occurs in the Philosophy subject category on JSTOR from 2008 to 2019 (Source: JSTOR Data for Research).

## Discussion

In the previous section, I reported the results of my empirical study, which was designed to test the following hypotheses:

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.

With respect to H1, there is a very weak positive correlation between the number of Philosophy and Religious Studies Bachelor's degrees conferred by postsecondary institutions in the United States and the number of publications in the Philosophy subject category on JSTOR that contain the term "scientism" ($r = .005$) as well as a moderate positive correlation between the number of Theology and Religious Vocations Bachelor's degrees conferred by postsecondary institutions in the United States and the number of publications in the Religion subject category on JSTOR that contain the term "scientism" ($r = .60$).

8 (9): 1-13. 2019.
https://wp.me/p1Bfg0-4n3

Although these positive correlations are not strong, they are not quite what we would expect to find if H1 were true. As mentioned above, if H1 were true, we would expect to find a negative linear relationship between the number of students that choose philosophy over STEM and how concerned philosophers are about scientism if H1 were true. In other words, the more students major in philosophy, the less concerned about scientism philosophers would be. Instead, however, the results of my empirical study suggest a positive linear relationship (albeit a very weak one) between the number of Philosophy BAs granted and the number of philosophy publications that discuss scientism. Likewise, the results of my empirical study also suggest a positive linear relationship (albeit a moderate one) between the number of Theology BAs granted and the number of religion publications that discuss scientism.

With respect to H2, the data show a very strong positive correlation between the number of philosophy publications that contain the term "scientism" and those that contain the phrase "experimental philosophy" ($r = .85$). This strong positive correlation between the number of philosophy publications in which the term "scientism" occurs and those in which the phrase "experimental philosophy" occurs is what we would expect to find if H2 were true. As mentioned above, 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. This positive correlation and the result of a linear regression analysis, which indicates that the number of "experimental philosophy" publications predicts "scientism" publications in Philosophy, suggest a link between the introduction of empirical methods into philosophy and concerns about scientism among philosophers that is worthy of further investigation, or so I think.

Moreover, it looks like these results are in line with the results of other empirical studies on the use of empirical methods in philosophy. In one empirical study, Joshua Knobe (2015) compared two samples of papers on philosophy of mind: one sample of papers from 1960 to 1999 and another sample of papers from 2009 to 2013. Knobe (2015) found that 62% of the papers from the 1960-1999 sample used purely *a priori* methods, whereas only 12% of the papers from the 2009-2013 sample used purely *a priori* methods. This evidence leads Knobe (2015, p. 38) to conclude that there has been "a strong shift [in method] toward the use of systematic empirical data, including original experiments conducted by philosophers [i.e., experimental philosophy]."

In another empirical study, Ashton and Mizrahi (2018b) test the view that philosophy is essentially an *a priori* discipline empirically. According to Ashton and Mizrahi (2018b, p 62), "if philosophy is indeed *a priori*, and in the business of discovering necessary truths from the armchair, we would expect philosophers to advance mostly deductive, not inductive, arguments." Consistent with the view that philosophy is an *a priori* discipline, Ashton and Mizrahi (2018b) find that the proportion of philosophy papers in which deductive arguments are made is higher than that of philosophy papers in which inductive arguments are made. However, contrary to the view that philosophy is an *a priori* discipline, Ashton and Mizrahi (2018b) also find that the proportions of philosophy papers in which deductive arguments

are made and those in which inductive arguments are made are converging over time and that the difference between the ratios of inductive and deductive arguments is declining over time. As Ashton and Mizrahi (2018b, pp 68-69) put it, their data suggest that "deductive arguments are gradually losing their status as the dominant form of argumentation in philosophy."

Both of these empirical studies, then, find trends that reveal a methodological shift in philosophy: a shift away from purely *a priori* methods of investigation (so-called "armchair philosophy") toward *a posteriori* or empirical methods of investigation (so-called "experimental philosophy"). If this methodological shift in philosophy is really happening, and H2 is true, then we would expect to see an increase in the number of articles and book chapters in which philosophers discuss scientism. The results of my empirical study suggest that this is indeed the case, as indicated by the results of a correlation analysis and a linear regression analysis.

Now, opponents of scientism, who think that science should not go beyond its proper boundaries, might be alarmed by this methodological shift from the armchair to the laboratory (Haug 2014, 1-26). They might characterize this shift as "scientific imperialism," which is "the tendency for a successful scientific idea to be applied far beyond its original home" (Dupré 2001, 16). For example, Tom Sorell (2017, 265) finds experimental philosophy "scientistic" insofar as "it objectionably treats natural science as the preferred body of results and methods for intellectual work of every kind."

While opponents of scientism want to resist the application of scientific ideas, methods, and practices in new domains, proponents of scientism think that it would actually be a good idea. For example, Wesley Buckwalter and John Turri argue that the application of methods from the social sciences in philosophy (i.e., "experimental philosophy") has been quite successful. As they put it, "Experimental, observational, and statistical techniques have significantly contributed to research in epistemology, action theory, ethics, philosophy of language, and philosophy of mind" (Buckwalter and Turri 2018, 282). Similarly, I argue that the introduction of methods from data science into logic (Mizrahi 2019) and philosophy (Mizrahi 2018b, 48) might bring to logic and philosophy the sort of success enjoyed by the sciences.

## Conclusion

As I have mentioned in the Introduction, some philosophers who are opponents of scientism would consider a methodological shift from the armchair to the laboratory to be potentially disastrous to the future of philosophy as a field of inquiry. For instance, Susan Haack (2017, 43) thinks that "the rising tide of scientistic philosophy [...] spells shipwreck for philosophy itself." The results of my empirical study, which are consistent with the results of two other empirical studies, may point to such a methodological shift in philosophy, but they tell us nothing about whether such a shift would be good or bad for philosophy as a field of inquiry. Nevertheless, I think it is important to remember that attempts to incorporate empirical methods into philosophy are not new. In fact, many great philosophers of old were

inspired by and sought to emulate the success of science pretty much since the beginning of modern science itself (Voegelin 1948). Just to mention a few obvious examples: Thomas Hobbes' *Leviathan* (1651) introduced concepts from the new science of the seventeenth century, such as force and endeavour, into social and political philosophy, Baruch Spinoza's *Ethics* (1677) incorporated the geometrical method into metaphysics and moral philosophy, and David Hume's *A Treatise on Human Nature* (1739-1740) was an "attempt to introduce the experimental method of reasoning into moral subjects." I suspect no one would find Hobbes, Spinoza, and Hume guilty of "scientific imperialism." I also suspect that no one would complain that these giants of philosophy were not doing philosophy.[4] By incorporating methods from the successful sciences of their time, these great philosophers have produced some of the most enduring works of philosophy. Rather than fear and resist the introduction of scientific ideas, methods, and practices into philosophy, then, we should follow their example and embrace it. We might not have another Hobbes, Spinoza, or Hume, of course, but we might still have some original work produced nonetheless.

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[4] Opponents of scientism and critics of experimental philosophy often complain that empirical work is "not philosophy" (Jenkins 2014) or that it is not "philosophically significant" (see, e.g., Kauppinen 2007; cf. Knobe 2007 and O'Neill and Machery 2014).

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