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Algorithmic Opinion Mining and the History of Philosophy: A Response to Mizrahi's *For and Against Scientism*

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As Moti Mizrahi's editorial introduction points out, *For and Against Scientism* 'arises from an exchange between several scholars over the pages of the *Social Epistemology Review and Reply Collective*' (Mizrahi 2022, 18) in response to Mizrahi (2019). Mizrahi (2019) defended two hypotheses, H1 and H2, concerning philosophers' responses to 'scientism':

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

H2: Academic philosophers find scientism threatening because they see it as a threat to the soul or essence of philosophy as an *a priori* field of inquiry. (Mizrahi 2022, 27-28)

In Mizrahi's (2019) original paper, he had sought to dispel H1 by appealing to a lack of a negative correlation between JSTOR publications containing the word 'scientism' and the number of philosophy degrees granted from 1970 to 2016. Instead, he defended H2 by appealing to a correlation between the appearance of 'scientism' and 'experimental philosophy' in JSTOR publications. The use of scientific methods, Mizrahi concludes, does indeed threaten to undermine the traditional conception of philosophical methodology as distinct from those of the sciences. Mizrahi (2022) adds that, though—or perhaps even because—it may mean radically revising traditional conceptions of *a priori* philosophical methodology, a weak version of methodological 'scientism' is not something that philosophers should remain averse to.

Two Objections by Bryant

At the heart of Mizrahi's project lies a sociological narrative concerning the recent history of philosophers' negative attitudes towards scientism. Critics (e.g. de Ridder (2019), Wilson (2019) and Bryant (2020)), have detected various empirical inadequacies in Mizrahi's methodology for discussing these attitudes. Bryant (2020) points out one of the main pertinent methodological deficiencies here, namely that the mere appearance of the word 'scientism' in a text does not suffice in determining whether the author feels threatened by it. Not all philosophers use the term in 'inherently negative' (29) or pejorative ways. In what follows, I will not only corroborate Bryant's critical claim, but argue that Mizrahi's response to this part of Bryant's objection is inadequate.

There is a second, connected worry that Bryant also discusses, and which concerns the ambiguity of the term scientism. Bryant notes that 'at this complicated juncture in the dialectic, there is no one thing, *scientism*, about which philosophers can possess a shared and explainable sentiment' (2020, 29). This second objection amplifies the first, since the ambiguity of 'scientism' entails that, without further ado, the mere fact that the word appears in a text says nothing about the author's attitude towards 'scientism'. Mizrahi (2022) does partly address Bryant's ambiguity objection in the effort, centrally discussed throughout the

volume, to develop a typology of different weak and strong epistemological, methodological, and metaphysical variants of ‘scientism’.¹

Science and its Limits

As an aside, a criticism of Mizrahi’s typology deserves some attention here. Mizrahi explicitly focuses on ‘neutral’ (2022, 3) uses of ‘scientism’. As a result, at least one significant critical use of the term is ignored by Mizrahi’s typology: ‘scientism’ as the characterisation of any attempt to apply the methods of scientific inquiry where they are strictly speaking inapplicable. Where the relevant line is drawn partly depends on how one conceives of the limits of the applicability of the scientific method. Mizrahi (2022, 8-9) does briefly discuss the view that science has limits.² He dismisses it by siding with Hempel against those critics of ‘scientism’ (in this critical sense) that criticise overreaching the scope of scientific inquiry, e.g. in asking ‘questions about the existence of God and the supernatural’ (9).³ Upholding a thesis that was earlier put forth by Carnap, Hempel denies that there are questions concerning anything that is knowable that are in principle unanswerable by science.⁴ Yet even Hempel’s rejection of the imposition of limits onto the scope of scientific inquiry does not entail that the scientific method can never be misapplied.

A Hempelian might accept that scientific methods could, for instance, be misapplied in attempting to investigate purely *a priori* questions, such as whether all triangles have three sides. They could also possibly be misapplied in investigating a question that has not been well-formed (as e.g. de Ridder (2019) accuses Mizrahi (2019) of doing). There would thus remain no reason to assume that, once adequately distinguished from the ‘neutral’ notions of ‘scientism’ discussed by Mizrahi (2022), the ‘negative’ use of ‘scientism’ to criticise the misapplication of scientific methods is incompatible with upholding some of the ‘neutral’

¹ Mizrahi’s typology is further expanded by Turunen et al. (2022) by qualifying the differences between ‘broad’ and ‘narrow’ variants of weak scientism.

² Polisei and Russo (2022, 105-106) also discuss ‘scientism’ as the view that there are no limits to the applicability of scientific method.

³ Turunen et al. (2022) argue that the scientism-debate in contemporary philosophy emerged from such attempts within ‘New Atheism’.

⁴ As Carnap puts it in the *Aufbau*, ‘there is no *Ignorabimus*’, which amounts to saying ‘there is no question whose answer is in principle unattainable by science’ (1928/2003, 290). Contrary to Wilson’s claim, Carnap is not merely ‘reported to have said’ (Wilson 2022, 120) this, but explicitly defends this thesis in the *Aufbau*. Wilson describes the proponents of such forms of scientism as threatening to ‘arrogate the whole field of human knowledge to themselves’ (120). Yet, in Carnap’s defence, he took very seriously the expressions of different ‘attitude[s] toward life’ (quoted in Wilson, 120) that he claimed metaphysicians misguidedly ventured to express using the medium of theory. Carnap accuses metaphysicians of engaging in theoretical debates over matters about which no possible agreement can be reached—i.e. of misapplying the method of theoretical debate, which can be fruitfully applied in resolving scientific matters, onto matters that are practically very significant (see Vrahimis 2021). Far from upholding Wilson’s eclipse thesis, Carnap, like other Vienna Circle members, saw ‘the inner kinship between the attitude on which our philosophical work is founded and the intellectual attitude which presently manifests itself [...] in artistic movements, especially in architecture, and in movements which strive for meaningful forms of personal and collective life, of education, and of external organization in general. [...] It is an orientation which demands clarity everywhere, but which realizes that the fabric of life can never quite be comprehended.’ (Carnap 1928/2003, xviii). Carnap’s demand for clarity is clearly not tantamount to a form of ‘scientism’ that would seek to eclipse all non-scientific forms of human endeavour.

notions. Even strong methodological scientism does not preclude the possibility that scientific methods are misapplied when employed in attempts to answer questions that are not well-formed.

Mizrahi's Response to Bryant

Having explored the above criticism, let us return to Bryant's objection to Mizrahi's sociological narrative. In the face of the ambiguity of the term 'scientism', Bryant (2020) agrees with de Ridder (2019) and Wilson (2019) that 'in order to test our sociological narrative [...] the natural way to proceed [...] would be via survey and interview' (30). However, in Mizrahi's (2021) initial direct response to Bryant he, perhaps unfortunately, does not follow the paths (survey and interview) suggested by his three critics. Instead, Mizrahi attempts to gauge the sentiment of authors discussing 'scientism' by using the corpus-based method of 'sentiment analysis, also known as "opinion mining"' (2021, 20).

Sentiment analysis, as undertaken by Mizrahi, involves the use of an algorithm that searches a text for words from a specific list. In this list or lexicon, each of these words has a sentiment tag of either positive, negative, or neutral. The tags come in degrees, expressed in a score from 0 to 1, where 'a score close to zero gets a "negative" tag, a score close to one gets a "positive" tag, and a score approximately midpoint between zero and one gets a "neutral" tag' (2021, 22). Based on the scores associated with all the words detected in the titles and abstracts (and not the contents) of each paper, the analysis generates an overall score. This method is applied to the titles and abstracts of 'the first 30 journal articles that came up in the search results on PhilPapers' (Mizrahi 2019, 20)—the criterion for the search being the inclusion of the word 'scientism' in the title. (Later, in Mizrahi (2022, 28-29), the number of articles is cut down to 25.) Mizrahi claims that his method of sentiment analysis will discover 'whether the authors of these published articles *have* mostly positive, negative, or neutral sentiments toward "scientism"' (2021, 22, my italics).

Reiterating this view in *For and Against Scientism*, Mizrahi promises instead that the method informs us about the opinions these authors '*express* [...] toward scientism' (2022, 30, my italics). Elsewhere, Mizrahi talks instead, perhaps less problematically, of articles that 'contain' (2021, 23; cf. 2022, 30) positive, negative, or neutral sentiments towards scientism.

Mizrahi somewhat puzzlingly suggests that the use of corpus-based techniques 'borrowed from data science and computational linguistics' (2022, 25) constitutes an 'empirical investigation' (2021, 19), and that he is setting out to 'test [...] hypotheses about the scientism debate in philosophy empirically' (2022, 25). It remains unclear how the application of algorithmic sentiment analysis to the titles and abstracts (*not* the content) of 25 or 30 papers is somehow meant to be a more empirically adequate method than a human simply reading the entire papers. Though perhaps slightly more time-consuming, the latter is clearly a more direct method for discovering what their authors have to say about 'scientism', which may be somewhat more complicated, and perhaps interesting, than the expression, to some degree, of one of three sentiments in their titles and abstracts.

The results of Mizrahi’s analysis are summarily presented, but not spelled out in detail. For example, Mizrahi (2021; 2022) does not tell us which article was tagged as negative, positive, or neutral, but rather tells us how many articles fell into each category, and what the mean scores for each category were. Thus, without further access, a human reader of these articles cannot judge whether the sentiment analysis performed by the algorithm in each case is in accordance with what they understood to be the sentiment towards ‘scientism’ expressed by the article.

The Author against the Machine

Being the author of two of the articles (Vrahimis 2018; 2020) ‘randomly’ (Mizrahi 2021, 22) sampled by Mizrahi (2021, 21; 2022, 29), I am especially curious as to what score the algorithm assigned in either case—even if, as I will show, neither of the three options would be applicable in either case. Barthes-like musings concerning the death of the author notwithstanding, the articles’ author (or even a casual reader of the entire article) may have some insight into the matter that a machine scanning abstracts and titles for specific words does not.

Rather than being engaged in the current ongoing systematic debate over ‘scientism’ that Mizrahi is involved in, the aforementioned articles are part of the overall trend within the resurgent interest in scientism that Kidd refers to as ‘new studies of the antiscentism of historical figures’ (2022, 75). This is to say that, from the outset, the author of both articles does not, in either case, uphold *his own* stance, either positive, negative, or neutral, concerning the ‘scientism’ criticised by the figures discussed. In other words, in neither of the two articles (let alone their titles or abstracts) does the author ‘have’ (Mizrahi 2021, 22), ‘express’ (Mizrahi 2022, 30), or in any way defend his own sentiment towards ‘scientism’. Investigating other authors’ positions does not entail endorsing them. Nonetheless, both articles discuss other authors’ very disparaging criticisms of ‘scientism’. An ‘opinion mining’ algorithm, as set out above (i.e. merely searching for specific words with sentiment tags), fails to make the pertinent distinction between use and mention.

A case in point is one article’s discussion of Wittgenstein’s and Heidegger’s criticisms of scientism in aesthetics. The problem would persist even had Mizrahi’s algorithm looked beyond merely the title and abstract. It would still detect numerous words associated with the expression of a negative sentiment. For example, it would surely detect a negative attitude towards scientism behind Wittgenstein’s characterisation of the psychologistic attempt to explain ‘all the mysteries of Art [...] by psychological experiments’ as ‘exceedingly *stupid*’ (quoted in Vrahimis 2018, 672, my italics).⁵ The negative sentiment behind Heidegger’s more oracular pronouncements on the topic may be somewhat more difficult for an algorithm to detect. Yet the author of the article would most vehemently protest against any insinuation that discussing these sentiments is tantamount to sharing or

⁵ Unsurprisingly, the word ‘stupid’ is included in the Multi-Perspective Question Answering (MPQA) Subjectivity Lexicon (http://mpqa.cs.pitt.edu/lexicons/subj_lexicon/) used by Mizrahi (2021, 2022), and its prior polarity is marked as ‘negative’.

uncritically condoning them. While it is true, in either case, that the articles do somehow ‘contain’ negative sentiments towards scientism, this is not to say that their author either ‘has’ or ‘expresses’ them.

Excursus 1: Scientism and Psychologism

In the contents of the above articles, one might glean something relevant to Mizrahi’s discussion that happens to be more complex than simply the expression of some sentiment towards scientism. In one article’s discussion of Wittgenstein’s and Heidegger’s attitudes towards aesthetic scientism, we may see how some of the still prevailing contemporary attitudes towards scientism came to be entrenched on both sides of the purported divide between analytic and continental philosophy. As the article demonstrates, at the background of both Wittgenstein’s and Heidegger’s critiques of ‘scientism’ lies an early twentieth-century controversy over philosophy’s relation to the then newly-separated discipline of psychology. Given its focus on aesthetics, this background is not extensively explored in the article itself. An elaborate discussion can be found in Martin Kusch’s (1995) classic analysis of the Germanophone *Psychologismusstreit*. Kusch maps out various features of this dispute that arguably resemble the contemporary squabble over ‘scientism’ in more ways than one. For example, Kusch shows that most academic philosophers involved in the *Psychologismusstreit* felt a clear threat from psychology’s overreach into the disciplinary boundaries of philosophy.⁶ In 1913, 107 Germanophone academic philosophers feared this threat enough so as to petition the ministries of three different states to stop employing experimental psychologists in philosophy departments (Kusch 1995, 190-203). (Husserl even considered unionizing to prevent this takeover (Kusch, 191).)

Since experimental psychologists employed in philosophy departments approached both teaching and research in ways that radically differed from traditional pure philosophy, philosophers clearly felt a threat against what lies ‘at the heart of what philosophers do professionally, namely, their teaching and their research’ (Mizrahi 2022, 26). A connected resemblance between the early twentieth-century *Psychologismusstreit* and the contemporary *Scientismusstreit* lies in the flexibility afforded by the vagueness of the term ‘psychologism’ (analogously to ‘scientism’), employed primarily in a pejorative sense and directed as an accusation against multifarious targets.

In this earlier context, ‘psychologism’ was, in some ways, a species of the genus ‘scientism’, and the fact that most philosophers in the first half of the twentieth century, including some of the founders of analytic philosophy and phenomenology, saw psychologism as a threat to be eliminated may explain why antiscientistic tendencies remain at work in both traditions. In their criticisms of scientism, Wittgenstein and Heidegger may be broadly understood as reworking earlier forms of anti-psychologism inherited, respectively, from Frege and Husserl. As indicated by various discussions in *For and against scientism* (Kidd 2022, 82-83; Barwich 2022, 140), Heidegger’s (and Husserl’s) positions constitute the backdrop for the ongoing tendency within the phenomenological tradition to take a type of anti-scientism for

⁶ Cf. Bryant’s (2022) caveats as to what would constitute a genuine relevant threat to philosophy by ‘scientism’.

granted. Similarly, Wittgenstein's critique of scientific attitudes remains to this day highly influential in several areas of philosophy (e.g. in contemporary debates concerning the relevance of psychology and cognitive science for the field of aesthetics).⁷

Excursus 2: Scientism vs. *A Priori* Philosophy?

The second article mentioned by Mizrahi may also, apart from discussing other expressions of different sentiments directed towards scientism during the course of a failed effort at collaboration between the Frankfurt School and the Vienna Circle, contain some information that is pertinent to Mizrahi's second hypothesis. According to Mizrahi's H2, one possible threat posed by scientism is that against some traditional conception of 'the soul or essence of philosophy as an *a priori* field of inquiry' (28). However, as Kidd (2022, 80-83) points out, there is no such uniform agreed-upon conception of the essence of philosophy—different conceptions would include e.g.

philosophy as “spiritual practice,” as a means of release from the “wheel of suffering,” as “underlabourer” for the sciences, as a cure for “mental cramps,” as an engine of progressive social change, as “conceptual geography,” as a diverting cognitive game played for its own sake (80).

Vrahimis (2020) focusses on a critique of scientism coming from the Frankfurt School, perhaps the leading twentieth-century representatives of a conception of philosophy 'as an engine of progressive social change' (Kidd, 80). This conception is what, in 1937, Max Horkheimer named 'Critical Theory'. In a paper published that same year, right before setting out his own account of Critical Theory as differentiated from 'Traditional Theory', Horkheimer (1937/1974) had set out to dispel two competing alternatives. These alternatives were both reactions to the rise of modern science, which he sees as effecting a disenchantment of the world.⁸

According to Horkheimer, part of modern philosophy arose as a reactionary attitude against scientific disenchantment, seeking to reinvent *a priori* metaphysics as a method for investigating what exceeds the grasp of science. Thus, in Horkheimer's (1937/1974, 134-135) example, Descartes paves the path of resistance against the disenchantment of the material world (qua *res extensa*) by displacing traditional non-naturalistic beliefs into the *res cogitans*. In his day, Horkheimer (139) saw this development as culminating in metaphysicians' political defences of authoritarianism.

⁷ On Wittgenstein's response to scientism, see e.g. Beale and Kidd (2017).

⁸ See also Wilson's (2022, 121) discussion of the disenchantment thesis against scientism, which she attributes to Horkheimer's later work with Adorno. It is notable that Horkheimer's early critique of positivism is not limited to his and Adorno's later claims concerning disenchantment, but also raises some further issues broadly connected to the significant concerns Wilson raises about value-neutrality (2019, 57), 'misappropriation', and 'no boundaries' (2022, 124-129). In various early works, Horkheimer argues that as long as scientific inquiry is tied to economic interests it cannot help but be subjugated to them, resulting in various partial, fragmentary, and disunified piecemeal investigations that are mere means to technological and other economic ends.

Horkheimer refers to the dialectically opposite case, which accepts and even champions scientific disenchantment, as ‘scientivism’ (182). Horkheimer’s ‘scientivism’ may be equivalent to Mizrahi’s (2022, 5-7) strong epistemological scientism, i.e. the thesis that all knowledge is identified with, and limited to, scientific knowledge. Horkheimer’s ‘scientivism’ denies all epistemic recourse to anything other than scientific knowledge, originating in purportedly value-free facts given in sensation. In his day, Horkheimer sees this tendency as taking the form of ‘logical positivism’, which claimed to offer a path of opposition against reactionary metaphysics and thus ‘attracts wide circles opposed to fascism’ (139). Nevertheless, in Horkheimer’s view, this latest manifestation of ‘scientivism’ not only fails to offer an unassailable elimination of metaphysics, but, on the contrary, its anti-metaphysical strictures prohibit any effort to grasp the social praxis that is constitutive of the given from which scientific investigations commence.

While, in Vrahimis (2020), I argued that Horkheimer’s anti-positivism is directed against a strawman, one of its aspects is relevant to Mizrahi’s opposition between ‘scientism’ and the traditional conception of philosophy as an *a priori* discipline. Horkheimer set up a dialectical opposition between these two poles, only to attack both. His critique of scientism was not meant as a means of regressing back to some ahistorical, *a priori* philosophical methodology in reaction against ‘scientivism’. Instead, Horkheimer called for a historically situated form of critical theory that would avoid both *a priori* speculation, and the limitations of strict ‘scientivism’. Horkheimer thinks the latter prohibits any attempt to go beyond the empirically given in grasping the social forces that constitute and shape scientific knowledge. Critical theory instead seeks to understand these forces without reverting to traditional *a priori* methods. Thus, in Horkheimer’s case, the dilemma between scientism and *a priori* philosophy is false, and a third option is crucial. As shown e.g. by O’Neill and Uebel (2004), in his forgotten response to Horkheimer, Neurath opened a line of dialogue (which, for various non-philosophical reasons, was disrupted) between the Vienna Circle and the Frankfurt School concerning the possibility of undertaking a kind of Critical Theory from within the scientific endeavour. A contemporary discussion of scientism could benefit from looking back at this forgotten debate.⁹

Conclusion

In the above, I have endeavoured to outline some further empirical inadequacies of Mizrahi’s (2021) corpus-based methods for detecting philosophers attitudes towards scientism, in addition to those pointed out by Bryant (2020), de Ridder (2019), and Wilson (2019). I have argued that applying ‘opinion mining’ to the titles and abstracts of a small selection of papers fails to inform us of their authors’ sentiments or opinions. At best, what Mizrahi has shown is that several words, associated with negative, positive, or neutral

⁹ For example, insofar as part of Neurath’s methodological dispute with Horkheimer concerns the (small) difference between the encyclopaedic project of unified science and critical theory’s interdisciplinary research agenda, it appears in some ways parallel to the methodological distinction between Mizrahi’s hierarchical conception of ‘weak scientism’ and the interdisciplinary, methodologically diverse approach of Philosophy of Science in Practice (an enterprise otherwise quite Neurathian in spirit) as discussed by Poliseli and Russo (2022).

sentiments, are contained in the titles and abstracts of a small selection of papers that also contain the word ‘scientism’. As demonstrated by the counterexample of the two papers examined above, the authors’ own sentiments cannot be ‘mined’ by an algorithm that makes no distinction between use and mention.

In the remainder of this response to *For and against scientism*, I have indicated how the contents of the two articles ‘mined’ by the algorithm include discussions of matters that are somewhat relevant to some of the volume’s contents. One important result of paying heed to the relevant history of philosophy would be that the specific words pertinent to the current debate over scientism change over time. While the number of philosophers discussing ‘scientism’ in the early twentieth-century was somewhat limited, as Kusch (1995) has shown, an enormous number of authors were engaged in a heated debate over ‘psychologism’ (and also connected debates over e.g. ‘biologism’ or ‘anthropologism’).

Another case in point are Horkheimer’s (1937/1974) criticisms, which are not directed against ‘scientism’ or ‘Sziientismus’, but, in his own peculiar verbiage, ‘scientivism’ [‘Sziientivismus’]. More linguistic diversity is introduced when Horkheimer’s ‘scientivism’ eventually becomes synonymous with ‘positivism’ in the Frankfurt School’s later polemical writings against this tendency. Taking these linguistic details into consideration would mean recognising that the debate over the proper relation between philosophy and science, and over the use and limits of scientific methods in philosophical practice, has waxed and waned at least since the second half of the nineteenth century, in some ways that resemble (and could usefully inform) contemporary debates over ‘scientism’.

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