***The Relativity of Theory* by Moti Mizrahi: Pandemics and Pathogens: What’s at Stake in the Debate Over Scientific Realism?**

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This is a pre-published draft: Please Cite Published Version.

Abstract: *I provide a critical review of Moti Mizrahi's The Relativity of Theory, expounding on the book's strengths and then providing an extended argument that Mizrahi mischaracterizes the epistemic attitude of concern to antirealism about science as well as the practical stakes involved in adopting the antirealist position.*

How much can scientific theories tell us about the world around us?[[1]](#footnote-1) This is the question Moti Mizrahi’s new book, *The Relativity of Theory,* sets out to address in the form of careful articulation and explanation of competing answers to the question and detailed, entry-level exposition of the arguments in favor of those competing answers. In this forum, I have the privilege of first expounding on the strengths of Mizrahi’s book and then articulating concerns I have with Mizrahi’s characterization of the social stakes involved in the scientific realism/antirealism debate and the view of the nature of suspension of judgment which his discussion of antirealism implies.

Mizrahi’s stated intent in the preface is to provide an introduction to the debate over scientific realism that is deeply accessible to anyone interested in the debate, including non-philosophers. Mizrahi accomplishes this aim admirably. He uses plain, transparent language to explain the essential theses included under the umbrellas of scientific realism and antirealism, particular views of realism (including entity realism and structural realism) and antirealism (including instrumentalism and constructive empiricism), famous arguments in favor of and against scientific realism such as the No Miracles Argument and the Pessimistic Induction, as well as more recent arguments questioning whether contemporary science is more trustworthy than the scientific outputs of the past. The book concludes with an extended chapter defending Mizrahi’s own realist view, relative realism.

Mizrahi’s approachable articulation of the discussions surrounding scientific realism is coupled with in-text references to the original texts in the field as well as comprehensive but well-curated further suggested readings lists at the end of each chapter. This allows the entry-level explanations to remain attached to the robust arguments as they originally appeared in the field, without pushing readers into technical weeds unnecessarily. Mizrahi also manages to reveal his cards (in favor of his own view of scientific realism, relative realism) early on without forcing his hand on the reader orienting themselves to the discussion as they progress through the book. While the chapters progressively build on each other as Mizrahi develops major arguments for and against scientific realism, the crucial philosophical vocabulary (such as inference to the best explanation, modus ponens, deductive and inductive argumentation) is explained afresh in each chapter. At the end of each chapter, a glossary provides succinct definitions of every technical concept Mizrahi has introduced in the chapter. Mizrahi’s clarity in explaining these concepts provides a significant kindness to his readers. Never in reading the book will a reader find themselves dealing with a philosophical concept whose meaning they are forced to return to a previous chapter to ascertain or remember. This feature makes the book a ready resource for educators in fields including and beyond philosophy, as well as interested readers across audiences. While the chapters build on each other, I can also imagine that they could be used in pairs or some of them as stand-alone readings to quickly and effectively catch readers up to this crucial discussion in the philosophy of science.

My concern with Mizrahi’s presentation of the debate comes early on in the book. In the first chapter, he makes a succinct case for the importance and relevance of the debate to contemporary concerns. I applaud Mizrahi for embracing the challenge of translating the sometimes abstract concepts of scientific realism and antirealism into socially relevant issues of concern to non-philosophers. But I am concerned that Mizrahi’s presentation of the importance of the scientific realism debate does a severe injustice to scientific antirealism, and more specifically that it misrepresents the practical consequences following from a commitment to scientific antirealism.

Now, I will lay my own cards on the table honestly, as Mizrahi does. I am a convinced entity realist who finds, following Hacking (1983), that the ways in which we can manipulate the unobservable posits of our scientific hypotheses and theories give us sufficient reason to believe that these unobservable posits exist. But even in my realism, I do not believe Mizrahi is fair to the antirealist.

After stating the basic questions central to the debate, Mizrahi claims that “whether one takes a realist or an antirealist attitude with respect to the theoretical posits of science will in turn inform or influence one’s decisions about social and political issues” (Mizrahi 2020, p. 11). Mizrahi defends this statement by providing two illustrations of the rubber of scientific realism and antirealism meeting the road of social and political concerns: discussions over the legalization of marijuana and arguments over the efficacy of social distancing as a measure to prevent the spread of COVID-19 (2020, p. 11-12).

I will focus on the social distancing example. Mizrahi notes that realists will “generally think that we have good reasons to believe what our best scientific theories say about infectious, disease-causing agents known as ‘germs’ or ‘pathogens’” (2020, p.12). This seems right to me given basic emphases of the most commonly held articulations of scientific realism. Mizrahi then notes that antirealists will “suspend belief about the existence of theoretical posits, such as germs and viruses” (2020, p. 12). I am not certain that this articulation is on as sure ground. It seems that we can observe some bacteria directly through a simple (as opposed to, for example, an electron) microscope. Since some germs straddle the line of observability of importance to some antirealists who might admit observability through a simple microscope, the class of germs as a whole may not be the best candidate for Mizrahi’s purpose of showing the divide between realism and antirealism.[[2]](#footnote-2)

From this point however, Mizrahi makes a leap in his argument that appears unjust to antirealism to me. Mizrahi states, “if one does not think that we have good reasons to believe in the theoretical posits of epidemiology and virology, such as viruses and respiratory droplets . . . then it is difficult to see how one can believe that social distancing could have an effect on the spread of viral infections like COVID-19” (2020, p. 12). Now I grant Mizrahi that on the face of it, it would seem a bit odd to engage in social distancing practices if one actively believed that there is nothing in the universe which remotely resembles anything like a pathogen. But I do not think that the thesis of epistemic antirealism is committed to the total denial of the existence of anything remotely resembling a pathogen.

Though antirealists do not believe that we are warranted in making claims about the unobservable, that does not mean that antirealists reject wholesale the idea that diseases are communicated and that there are certain practices we can engage in which reduce the spread of disease. Indeed, it seems that antirealists will need to find some hypotheses that “save the phenomena” of disease transference, though they may suspend judgment about the nature of the unobservable entities which transmit disease. To take COVID-19 social distancing practices seriously, it seems to me, you need merely hold some theory of disease remotely resembling “diseases are sometimes passed between individuals who are in physical proximity.” And I think the antirealist (or at least, if not all, many or most antirealists) can quite comfortably maintain her antirealism while holding to any such casual theory of disease transference while she suspends judgment about the unobservable theoretical posits responsible for the disease transference.

Further, the suggestion that scientific antirealists’ epistemic suspension of judgment about the nature of disease transference should lead them to approach social distancing guidelines differently sets aside the substantial practical (as opposed to epistemic) reasons for belief that the antirealist could invoke in favor of social distancing. Even if our antirealist suspends all epistemically justified belief regarding disease transference, she could have practical or pragmatic reasons for endorsing social distancing practices. Perhaps she could reason along such lines as “I suspend belief about the nature of the unobservable theoretical posits responsible for disease transference, but since I highly value preservation of my health, and some empirically adequate hypotheses suggest that transference occurs in physical proximity to other people, I would rather hedge my bets against the possible risk of contracting COVID-19 by engaging in social distancing practices.”[[3]](#footnote-3) Epistemic reasons do not exhaust the space of reasons for belief, and partly because of this, we cannot view one’s attitude towards social-distancing as directly flowing from one’s stance regarding scientific realism.

Finally, on common theories of suspension of judgment (as discussed for example, by Lord 2020, S2.1), suspension of judgment does not involve active *dis*belief in the target proposition under suspension. Mizrahi’s language seems to imply that the antirealist actively denies that there exist unobservable entities that transfer disease between individuals. Again, “if one does not believe in the existence of the mechanisms by which the infectious disease can spread, and in what our best medical science says about those mechanisms, it is difficult to see how one can believe that social distancing can have any effect on the spread of this infectious disease” (2020, p. 12). But the antirealist is not bound by her antirealism to hold the view that disease transference does not occur when individuals are in physical proximity. She need merely suspend judgment about the nature of that disease transference. Presumably it is observable to her that she has contracted an illness some days after observing a person in close physical proximity to her coughing. So on any robust account of suspension of judgment, suspending belief about the nature of disease transference does not commit her to holding that social distancing practices aren’t important. Instead of disbelief that there exists any disease transference mechanism, the antirealist is merely committed to the agnosticism about the nature of the unobservable mechanisms responsible for disease transference.

Mizrahi wants his readers to be convinced that the scientific realism debate matters. I agree with him that it matters. But I disagree with him in his assertion that “whether one takes a realist or an antirealist attitude towards epidemiology and virology will inform or influence (perhaps even tacitly) one’s decisions about what measures, if any, should be taken in order to prevent the spread of an infectious disease like COVID-19” (2020, p. 12). The stakes between scientific realism and antirealism are just not so high. An antirealist can, with philosophical integrity, advocate for the importance of social distancing measures as enthusiastically as a realist can, and to suggest otherwise appears to me to straw man the antirealist unnecessarily. Consequently, we can disagree about whether realism is an accurate view of scientific knowledge without implicating or endangering public trust in social distancing measures.

Works Cited

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1. I am grateful to Joseph D Martin, Moti Mizrahi, and Aleta Quinn for their feedback and the conversations presented in this forum. Most of my thoughts about scientific realism had their nascence in energetic discussions with Sam Hall, Michael Pope, and Marius Stan. The thoughts presented here are no exception to this rule and I place full blame for mychronic entity realism on them. [↑](#footnote-ref-1)
2. It may not be many antirealists who are willing to admit that a simple microscope counts as permitting direct observation, but I want to draw attention to the fact that the target entities, pathogens, of concern to Mizrahi’s example are much closer to direct observation than what we see under the electron microscope. [↑](#footnote-ref-2)
3. Mizrahi’s discussion of instrumentalism and COVID-19 would seem to actually support this line of reasoning (2020, p. 39). [↑](#footnote-ref-3)