Seeds of Science

Peer Review Comments on *Seeds of Science* articles (2021-2022)

Dan James[1]

Reviewed articles (links to comments below)

1. On Scaling Academia ([article](#))

- Author: Jan Hendrik Kirchner
- Date: April, 2022

I found this an interesting discussion/proposal and an important topic. Undoubtedly an idealized version of the scientific method is our best tool for gaining knowledge, but in practice the scientific method itself is not without its limitations - in particular at the level of hypothesis generation and a potential lack of importance placed on observations that lie outside the main research programme or paradigm (Castillo, 2013).

Perhaps a mention of this would be a relevant inclusion in the paper? A vivid contemporary example of how this problem (of an unwillingness to pursue/support alternative hypotheses) can have potentially disastrous effects on knowledge is the MRNA research, actually mentioned in the paper, of Katalin Karikó, which was for over 10 years seen as a dead end by other more senior researchers, to the extent that she had to accept demotion and a pay cut to even stay within the research community.

It's not clear to me that scaling academia is a necessary condition toward improving scientific research, even less that it is a sufficient condition. Scaling the current

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academic structure, which as this paper points out is highly hierarchical, seems to run the unwelcome risk of scaling the problems by potentially prioritising quantity and increased outputs of enlarged research teams over quality and meaningful research that genuinely expands knowledge. If the only metric used is journal publication there is a risk of 'Zombie Science' (Berenbaum 2021) This paper seems to accept an academic hierarchical structure without question, but could alternative models better encourage teamwork/research? I'm thinking here specifically of an Authority Gradient analysis of teams that has proved very effective in other sectors such as Medicine and Air Safety.

The other candidate mentioned (for scaling academia) is prediction markets, which I found to be a welcome and unexpected surprise in a paper that I thought was going to be mainly about improving efficiencies and scale in a traditional hierarchical system.

What was not made clear was whether the use of academic/scientific predictions markets should be open to all or just to those already involved in academic research. If not open to all, why not? Also, whilst prediction markets are appealing for many of the reasons stated in the paper, their flaws should be pointed out, especially their susceptibility to 'gaming' (Y Chen, 2009)

2. Building a Brain: An Introduction to Narrative Complexity, a language & internal dialogue-based theory of human consciousness (article)

- Author: R. Salvador Reyes
- Date: April, 2022

An ambitious paper that read more as a poetic speculation for me (though it lacked poetic brevity). Whilst the paper offered some citations, these did not convince me that it was accurately set in context, still less that those citations that were mentioned reflected the huge amount of contemporary research in this area. As a result, for me, a persuasive and coherent argument was not developed. The obvious self-promotion in the paper was also not helpful or good practice and I feel should have been omitted.

3. Market Failures in Science (article)

- Author: Milan Cvitkovic
- Date: April, 2022

This is an excellent summary and analysis of what has been seen as a creeping marketisation of science (Meagan Day- 'Capitalism is Ruining Science' 2022), that has potentially negative effects on the way science is conducted. The analysis here is persuasive, making a compelling case for failures of a market-place approach to science by highlighting specific examples. However there was one statement that I feel could possibly benefit from some revision before publication– the notion that the first

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publication of an idea in science guarantees credit (or even fame!). In fact the issue is far more nuanced than this – as shown by Stigler's 'Law of Eponymy' (Stigler 1980), There have been a great many instances where even some of the most famous discoveries in science have not been attributed to the original proposer. It seems that the crucial factor in attribution relies far more on sociological factors- that it is the scientist who convincingly presents the idea to the scientific community who gets the credit.

Whilst the paper does not go far in suggesting remedies to address 'marketisation' problems, it does act as an interesting discussion piece for further work. Splitting the topic down into individual sections made the whole paper clear, easy to read and quite 'punchy', though I felt that a broader introduction and the addition of a conclusion would have been beneficial.

What was not 'teased' out of the argument in the paper and perhaps could be mentioned in a recommended conclusion, was the idea that the problems identified are not necessarily solvable by better methods and more stringent procedures (although these would surely help), rather that they are best addressed by a closer adherence to good values and ethics, moreover that it is above all the attitude of the scientist that builds integrity in any scientific community, as so eloquently expressed by Lee Mcintyre in 'The Scientific Attitude'

4. What does it mean to represent? Mental representations as falsifiable memory patterns (article)

- Authors: Eloy Parra-Barrero, Yulia Sandamirskaya
- Date: May, 2022

A compelling and superb co-ordination of accurate philosophical notions concerning mental representation and the possibilities of translating these into practical strategies for building computational structures. Consequently, though fairly brief and concise, this paper is an exemplar of Applied Philosophy and one that has potentially important implications for AI research. I found the arguments were developed convincingly and clearly, with good explanatory graphics and the whole paper to be well-researched. I have no hesitation in recommending this paper for publication as, at the very least, it is clearly a good discussion point/seed for future cognitive science.

5. Moral Weights of Animals, Considering Viewpoint Uncertainty (article)

- Authors: Richard Bruns, Jim Davies
- Date: July, 2022

This is an attempt to quantify suffering in a few selected animals using a statistical analysis based on different moral conceptions. Though the authors freely admit to adopting a utilitarian approach, it seems to me that fundamental to their whole project is the moral status of animals, a question they themselves pose in the introduction. What the authors do not point out is that we have no good reason to assume this moral status can be understood solely within a utilitarian framework and indeed it is clearly open to interpretation in other ways, for example with deontological animal ethics - 'The Case for Animal Rights' Tom Regan 1983. (Though deontological animal ethics itself can have severe practical problems, even absurdities in terms of absolutist tendencies).

So for me this 'meta' level of deciding the moral status of animals is crucial, for if we concentrate or promote a biased interpretation, subsequent efforts may be futile. I appreciate of course that this might have led to a much lengthier and different kind of paper though.

The authors deftly avoid the paper becoming a dry accounting exercise by the inclusion of a broad and fascinating list of variables, some of which are claimed as unique to this paper, for example the inspired 'Tinker Bell Theory' (which is so good it deserves to be true!)

Overall I feel there is a danger in using statistics that are based on some fairly generalised assumptions about how to classify animal suffering, and to draw the conclusion that such surveys are 'better than nothing'. The danger here being that poor welfare standards or even inflicted harm can conceivably be legitimised or gain credence by a purported metric of suffering.

Despite these misgivings I felt it was a fascinating paper with complex statistical analysis presented in a very understandable way and consequently have no hesitation in recommending publication.