Studies in Philosophy Politics and Economics

Emike Ahmed (2019) *How to Make Innovative Research the Norm*, Studies in Philosophy, Politics and Economics, 1(1), 19-23

How to Make Innovative Research the Norm

Emike Ahmed*

* Philosophy, Logic and Scientific Method, London School of Economics, Houghton Street, London, WC2A 2AE, UK. Email: emikepahmed@gmail.com. URL: www.linkedin.com/in/emike-ahmed-a47a96105

Abstract

Scientific mavericks go against the grain to conduct innovative, higher-risk research. However, a conservative bias against such unorthodox research in contemporary science causes researchers to conform to safer research. Adrian Currie (2017) argues that to rectify this bias, maverick thinking should become the norm, instead of simply encouraging more mavericks. This paper presents and evaluates Currie's case for making maverick thinking the norm through changing the incentives in scientific research, focusing on Currie's proposal to change the funding system from meritocratic peer review to Shahar Avin's (2015) lottery system, which randomly allocates funding. This paper argues that the lottery considerably reduces conformity, within limits.

Keywords: Science; Maverick; Funding; Lottery; Diversity

This paper presents and evaluates Adrian Currie's (2017) argument that maverick thinking should become the status quo in scientific research. The term 'maverick' refers to an individual who acts in an independent way, operating outside the status quo, shaping history (Currie 2017). Maverick thinking refers to the innovative thinking that mavericks exhibit. In scientific research, these mavericks shape history through their willingness to go against the grain with their innovative research. Currie explains that the status quo of scientific research is susceptible to bias against innovative projects. Instead of simply encouraging more brave mavericks to go against the scientific status quo, Currie argues that we should address the issue by promoting the innovative thinking we associate with mavericks as integral to scientific research. Innovation should no longer be seen as 'maverick', it should be the norm. First, I explain why the current state of scientific research is not as accommodating of maverick research as it previously was. Following this, I expand on Currie's argument that the current allocation of incentives in scientific research should be altered to make maverick thinking the norm and explain why Currie argues for this solution. I shall evaluate Currie's proposal for changing the current incentives through using Shahar Avin's (2015) lottery funding allocation system, by critically analysing this system's ability to make innovative research the norm.

Currie argues that the current state of science is not as accommodating of mavericks as it previously was, by comparing the contemporary scientific status quo to previous eras in

LSE Houghton St Press

© Emike Ahmed, 2019. This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

which mavericks, such as Newton and Buffon, adopted unorthodox methods to reach their conclusions. In the 1760s, Buffon deduced the time required for minerals to cool to room temperature using his sense of touch. Centuries before that, Newton developed his theory of optics by slotting a thick needle between his skull and eye to alter the shape of his eyeball (Currie 2017). In that era, anyone with money and time on their hands could conduct research. By contrast, to conduct successful scientific research today, one must have a degree, be published, peer reviewed, and granted funding (Currie 2017). Despite the value of these processes in upholding good scientific conduct and thereby enhancing the validity of research, Currie argues that, due to the conservative nature of science, these processes can lead to conformity and the standardisation of research output.

To illustrate this conformity, I shall outline the peer review system Currie mentions. Peer review consists of a panel of scientific peers who review research proposals and allocate funding on a meritocratic basis (Avin 2017: 2). Brezis (2007: 693) expands on the conservatism in science which Currie highlights by explaining that, due to funding resources being finite, a conservative funding bias can occur where reviewers favour safer, more conventional research over higher-risk innovative research. Under this system researchers are incentivised to conform to the preferred, safer research design standards to secure funding. The national Research Excellence Framework (REF) exemplifies this, using the peer review system to rate the quality of research UK universities produce, and allocating funding correspondingly. McCulloch's (2017) study of academic researchers' experiences under the REF found that some researchers face pressure from their employer universities to confine their research projects to more conventional topics, in order to receive funding, illustrating how the conservative funding bias leads to conformity. Additionally, in Murphy and Sage's (2015: 33) study of the implications of REF, some researchers note that their departments dictate what they research, turning down projects that are more interesting and relevant, but take longer to conduct. This behaviour by departments facilitates the production of more research within the REF timeframe to maximise funding. This evidence supports Currie's claims that systems such as peer review encourage conformity. This system differs from Newton and Buffon's era in which mavericks could operate without being susceptible to the conservative funding bias that exists in today's peer review system. Hence, conducting maverick research is currently more difficult than in the past.

I shall now expand on Currie's argument that maverick research should become the norm. Currie argues that we should not tackle the difficulty of being a maverick under the current system by simply encouraging more individual researchers to become mavericks. Instead, the entire system should change such that riskier, unorthodox research becomes the status quo (Currie 2017). Currie urges us to move away from romanticizing mavericks, such as Newton and Buffon, as solitary fighters moving against the status quo. Rather than encouraging more mavericks to go against the tide, the tide itself should change – higher-risk innovative research should be integral to science. Currie's key reason for arguing that the entire system should change is the issue of diversity, which will persist if innovative research is left solely to mavericks.

The conservative funding bias causes the diversity problem because wealthy, white men tend to have greater emotional, financial and physical support than other demographics. This support is required to pursue high-risk research, thereby making these men less constrained by the conservative bias (Currie 2017). Additionally, institutional bias may occur within peer review where panellists may prefer research from prestigious institutions or individuals (Brezis 2007: 693). This bias also disproportionately affects people from more disadvantaged socioeconomic backgrounds due to the correlation between educational and economic inequality. For example, the proportion of pupils on free school meals that attend university is 21%, compared to the 85% who attend from private schools (Teachfirst 2019).

This foundational inequality causes a disparity in the institutions students from these lower socioeconomic backgrounds can access, compared to their wealthier counterparts. Consequently, the institutional bias in peer review contributes to the diversity issue as it disproportionately affects researchers from less advantaged backgrounds. The diversity problem will persist if we simply encourage more scientific mavericks without changing the norm.

Not only is this a moral issue of injustice against disadvantaged demographics, it also leads to less innovative outcomes. Diversity proves useful in reaching optimal outcomes, due to the breadth and quality of output that accompanies diverse perspectives and ideas in research (Currie 2017). The benefits of diversity are not exclusive to science - they are also evident in business. According to McKinsey, a management consultancy firm, companies in the top 25% of executive-board ethnic diversity were 35% more likely to outperform their peers financially (Hunt et. al. 2015). The diversity issue in scientific research leads to sub-optimal innovation outcomes, because the lost value of having multiple perspectives and ideas hampers the creativity of research output. Furthermore, this issue places a wedge between the helper and the helped. Currie argues that these frontrunners are not accountable to the wider population, whom their research affects. They are at liberty to apply their resources to conduct whatever research they see fit, which may not be in the general public's interests. In other words, entrusting innovative research to individuals from a certain demographic leaves the general population vulnerable to the whims of these mavericks (Currie 2017). Thus, Currie advocates for making innovation the norm within scientific research by making maverick thinking more accessible, instead of simply encouraging more mavericks which reinforces the diversity issue.

To make scientific research more accommodating to maverick thinking, Currie proposes to change the way incentives are allocated within science in order to remove conformity, which results from the conservative bias against innovative research projects (Currie 2017). To this end, he suggests that science should diversify the indicators that determine scientific success thereby incentivising researchers to be more innovative, preventing conformity. Additionally, more institutions should be dedicated to conducting exploratory research. A key change he proposes is a system where funding is allocated through a lottery, to eliminate the conservative funding bias against innovative research. Currie draws on Avin's (2015) lottery proposal, in which experts filter out the worst research proposals, select the best research, and randomly allocate funding to the remaining proposals through a lottery. Avin recognises that this filtering process may still contain bias. However, he claims that more innovative proposals will get to the lottery stage, thus funding is allocated through a less biased mechanism than the current system allows (Avin 2015: 176). Currie argues that using a lottery reduces the peer reviewers' power over researchers, thus reducing the current conformity that occurs when researchers strive to please the panel to gain funding.

For innovative scientific research to become the norm, the ability to conduct maverick research must be accessible to all, rather than to predominantly rich, white, male scientists. Avin's lottery is undoubtedly an improvement on the peer review system in this regard. The randomized element of the lottery contributes fairness to the funding allocation, limiting the conservative bias against innovative projects. This system also, to an extent, considers the institutional constraints that prevent certain demographics from even entering the lottery. Certain conditions are required of funding applicants, such as having a PhD from certain institutions. Avin recognises the diversity issue that arises from such criteria, and therefore calls for a reformation of the indicators that make up the conditions for applying for funding (Avin 2015: 174). Avin argues that indicators should include the minimal possible level of qualification required for research, to create fairness and representation by increasing the pool of applicants accepted to participate in the lottery. This way, more diverse, innovative

research can be considered, and entered into the lottery, thereby altering researchers' current incentives to choose safer research topics.

Despite the merits of Avin's proposal in fostering innovation as a norm, more can be done to make maverick status attainable for a diverse demographic of researchers so that innovation is the status quo rather than only attainable for a select few. For example, to bridge the educational inequality at a foundational stage, more diversity and inclusion initiatives should be run to encourage students from disadvantaged socioeconomic backgrounds to pursue careers in scientific research. This should bring a broader variety of perspectives into scientific research, thus fuelling innovation. Additionally, diversity should be enforced within the panel of peers who conduct the pre-lottery research proposal filtering. The panel should be made up of scientists from varied academic backgrounds, who specialize in a range of disciplines and have attended a broad selection of universities. There should also be gender and ethnic diversity within the panel to prevent the maverick status from being exclusive to rich, white men. This will provide multiple perspectives on the panel, ensuring that decisions in the pre-lottery process are based on merit, and not on a unilateral view amongst peers of how innovative research should look.

In conclusion, Avin's lottery proposal is an improvement on the current meritocratic peer review system, as it helps to reduce the conservative bias against innovative research, thereby weakening conformity. However, I have argued that this solution does not completely alter the status quo, as educational inequality at foundational stages cause the diversity issue to persist. Thus, the panel of peers who filter through the research proposals should be more diverse, and initiatives to encourage students from disadvantaged socioeconomic backgrounds to pursue scientific careers should be implemented. This would be a further step towards making maverick thinking the status quo in scientific research.

References

Avin, S. 2015. Breaking the grant cycle: on the rational allocation of public resources to scientific research projects (Doctoral thesis). University of Cambridge. URL: https://doi.org/10.17863/CAM.16172

Avin, S. 2017. "Science funding is a gamble so let's give out money by lottery." Aeon. URL: https://aeon.co/ideas/science-funding-is-a-gamble-so-lets-give-out-money-by-lottery

Brezis, E. 2007. "Focal randomisation: an optimal mechanism for the evaluation of R&D projects." *Science and Public Policy* 34(10): 691-698. URL: https://doi.org/10.3152/030234207X265394

Currie, A. 2017. "Does science need mavericks or are they part of the problem?" Aeon. URL: https://aeon.co/essays/does-science-need-mavericks-or-are-they-part-of-the-problem

Gomensoro, A. and C. Bolzman. 2015. "The effect of the socioeconomic status of ethnic groups on educational inequalities in Switzerland: Which "hidden" mechanisms?" *Italian Journal of Sociology of Education* 7(2): 70-98. URL: http://ijse.padovauniversitypress.it/2015/2/4

Hunt, V., D. Layton and S. Prince. 2015. "Why diversity matters." McKinsey & Company. URL: https://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters

McCulloch, S. 2017. "The importance of being REF-able: academic writing under pressure from a culture of counting." LSE Impact Blog. URL: https://blogs.lse.ac.uk/impactofsocialsciences/2017/02/09/the-importance-of-being-ref-able-academic-writing-under-pressure-from-a-culture-of-counting

Murphy, T. and D. Sage. 2014. "Perceptions of the UK's Research Excellence Framework 2014: a media analysis." *Australian Universities Review* 57(2): 31-36. URL: https://doi.org/10.1080/1360080X.2014.957890

Nicholson, J. and J. Ioannidis. 2012. "Research grants: Conform and be funded." *Nature* 492: 34-36. URL: https://doi.org/10.1038/492034a

Ó hÉigeartaigh, S., H. Price, H. Hunt, A. Currie, C. O'Connor and H. Douglas. 2019. "Existential risk and maverick science [podcast]." The Naked Scientists. URL: https://www.thenakedscientists.com/articles/interviews/existential-risk-and-maverick-science

Rock, D. and H. Grant. 2016. "Why diverse teams are smarter." Harvard Business Review. URL: https://hbr.org/2016/11/why-diverse-teams-are-smarter

Russell, A. and L. Vinsel. 2016. "Hail the maintainers." Aeon. URL https://aeon.co/essays/innovation-is-overvalued-maintenance-often-matters-more

Teach First. 2019. "Income defines how well children do at school." Teach First. URL: https://www.teachfirst.org.uk/our-mission/the-issue

Zalis, S. 2017. "The truth about diversity - and why it matters." Forbes. URL: https://www.forbes.com/sites/shelleyzalis/2017/11/30/the-truth-about-diversity-and-why-it-matters/#628ec2fd66e7