

What Is the Value of Publishing?

What is the purpose of publishing? This question is perplexing and continues to evolve. In its purest form, the purpose of publishing original research studies is to disseminate the results of experiments to inform the audience about a new concept or about advances in a technology or scientific field. By contrast, review articles summarize original studies in a particular field and provide direction to researchers by outlining the progression of research in that field. Lastly, perspective articles highlight the reflections and opinions of researchers on original research studies conducted by their peers. It is generally expected that the authors of such publications will have published sufficient original studies to be deemed experts in the field. Based on this “purist” view, the more papers a researcher publishes, the more productive the researcher is deemed to be. As a reward, the researcher is recognized for his or her work, and the volume of his or her publication record is regarded as supportive evidence of the researcher’s expertise in the field and as justification in grant applications of his or her ability to solve important scientific problems.

This “purist” concept and reward system are currently being challenged by the explosion in the number of new journals launched in the past decade. At times, it seems that new journals are started every week. By moving from a print to an online journal format, it is relatively cost efficient to start an online journal as the operational and start-up costs are minimal when compared to print publications. Although many fields that were previously un- or under-represented in print journals now have voices through online journals, we should remember that the start of new journals is a business decision for the companies or societies that run these journals. More journals mean more revenue. For example, companies can provide journal packages to potential subscribers. It is more profitable to sell a package of four different journal subscriptions for the price of one journal than it is to offer a single journal with four times more publications per issue—there is a perceived better value when receiving four journals for the price of one, so subscription rates increase. In this environment, the paradigm of using the volume of publications as an indicator of expertise or productivity is neither an accurate determination of the quality of research nor of the researcher’s productivity, as the growth in the numbers of journals far exceeds the increase in the numbers of independent faculty publishing their work.

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To market a journal, companies rely on impact factor, a number determined by the ratio between the number of citations to a journal’s articles and the number of papers the journal published. It follows then, that journals that publish fewer papers and have a high ratio of review/perspective

articles, which are cited more frequently compared to peer-reviewed original research articles, typically have higher impact factors. Another strategy to game the impact factor of a journal is to publish more papers on “graphene”, “batteries”, and “perovskites” because these topics have been considered hot areas of research in recent years and have significantly contributed to the impact factors of many journals. However, having such narrow topics is limiting as the world of research is much bigger than these areas and would hinder opening up new avenues of exploration.

Although journals have strategies to demonstrate impact, many academic researchers are also gaming the system for career advancement. For example, one of the more extreme strategies employed by some academics is to build a scientific reputation by publishing “review articles” to increase their citation numbers. The overwhelming number of journals has bred immense competition for top authors and has resulted in a shortage of qualified researchers. To address this shortage, some journals now allow non-experts to write review articles, and some of these non-experts have taken full advantage of the situation. These non-experts begin to establish their reputations in a field by publishing a series of review articles (despite having carried out few or no experiments in the area of their purported expertise) to boost their citations. After a few years, inexperienced editors who are unaware of this lack of expertise perpetuate this scheme by asking them to review more articles and then inviting them to write perspectives and/or news and views for higher impact journals, thus further cementing these individuals’ status as “experts”. Another strategy employed to demonstrate impact for the sake of career advancement is to publish a significant number of papers, for example, over 100 papers per year. When reading these studies, it is unclear how the findings advance the field because the researcher seems to be focused on maximizing the number of publications rather than solving a scientific problem.

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The problem of gaming from both the publishers and researchers shows no signs of abating if it remains unaddressed. We should seriously consider how this practice impacts the reputation of the academic research enterprise. A key selling point of academic research to the public is that researchers create new technologies and/or produce fundamental discoveries that become the foundation for many advances that positively impact the quality of human life. Is this actually reflective of our current reality? Do the majority of academic publications advance this goal, or do they prioritize career

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advancement at the expense of rewarding the public for its financial support? This new “gaming” paradigm creates research noise that drowns out real, sustainable, and reproducible discoveries. Reproducibility of highly publicized, flashy, and trendy research studies has already spurred significant discussion in academic circles in the past few years. We should ask ourselves what the goal of academic publishing is. If the purpose is not scientific advancement but rather career advancement, which encourages academics to “game” the system, then reproducibility of an experiment is not a concern. Sadly, in a world of information overload, misinformation, buzz words, and tag lines, careful thought, consideration, and reflection is lost in the noise. It is becoming increasingly difficult to discern the gamers from the researchers who actually care to advance scientific knowledge, and many trainees I have talked to are increasingly disillusioned with the academic enterprise when they see a pull toward hype and away from a focus on careful experimental design and discovery of new knowledge that can advance a field.

Academia is a calling, and publishing is a business. In the current paradigm, the editors of many journals control the academic fate of many researchers. It is clear that we must mitigate the disproportionate focus on publication numbers and impact factors when evaluating scientific advancement and academic success for career advancement. Publishing remains the bedrock of an academic career. Although the adage of “publish or perish” continues to ring true, to reward academic achievement and to repay the public for its investment in our research, we should strongly consider evaluating and promoting researchers not on the basis of a single study in a high impact journal or the absolute number of publications, but rather on their entire body of work that demonstrates a coherent contribution in their field of research with each new publication. Although this scholarly process takes more time, it provides a true evaluation of an individual’s productivity and scientific impact and justifies the value of publishing. It is important for every researcher to ask themselves: Why do I publish?



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Notes

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