

# Tell me about the science, not the prizes!

*The more we focus on awards and advertise career building, the more we attract people seeking awards and glamorous careers, and the bigger the burden on the peer review system.*

The independent and critical assessment of data and of analysis is at the core of the scientific method. Yet, the rapid growth of the scientific enterprise and the explosion of the scientific literature have made it not only hard but impossible to read, think deeply, and assess independently all published papers, or even the subset of all papers relevant to one's research. This is alarming. It has alarmed many people thinking of creative and effective ways to evaluate the quality of scientific research. This exceptionally hard endeavor has attracted much needed attention and I am hopeful that progress will be made.

In this essay, I suggest another approach to alleviating the problem, starting with two related questions: Why is low quality "science" written up and submitted for publication and what can we do to curb such submissions? These questions touch upon the poorly quantifiable subject of human motivation. Scientists have a complex set of incentives that include understanding nature, developing innovating solutions to important problems, and aspirations for social status, prestige and successful careers. All these incentives are part of our human nature, have always existed and always will. Yet, the balance among them can powerfully affect the problems that we approach and the level of evidence that we demand to convince ourselves of the truths about nature.

In my opinion, scientific culture can powerfully affect the incentives of scientists and in the process harness the independent thought of the individual scientists – not only the external reviewers – in raising the standards and rigors of their own work. I see a culture focused on prizes and career building as inimical to science. If the efforts of bright young people are focused on building careers, they will find ways to game the system. Many already have. As long as the motivation of scientists is dominated by factors other than meeting one's own high standards of scientific rigor, finding the scientific results worthy of our attention will remain a challenge even with the best heuristics of ranking research papers. However, if "the pleasure of finding things out" – to use Feynman's memorable words – is a dominant incentive, the reward, the pleasure, cannot be achieved unless one can convince oneself of the veracity of the findings. The higher the promi-

nence of this reward intrinsic to scientific discovery is, the lower the tendency to game the system and the need for external peer review.

A scientific culture that emphasizes the research results – not their external reflections in prizes and career advancement – is likely to diminish the tendency to use publishing as a means of career advancement, and thus enrich the scientific literature of papers worthy our attention. We know that racial stereotypes can be very destructive and we have lessened their destructive influences by changing the popular culture. How can we apply this lesson to our scientific culture to focus on the critical and independent assessment of research and thus lessen the negative aspects of career building and glamour seeking?

A great place to begin is by replacing the headlines focused on distinctions and building careers with headlines focused on factual science. For example, the “awards” section in CVs, faculty profiles and applications for grants and tenure-track faculty-positions can be replaced by a “discoveries” section that outlines, factually, significant research findings. Similarly, great scientists should be introduced at public meetings with their significant contributions rather than with long lists of prizes and grants they received. One might introduce Egon Moniz as the great Nobel laureate and Dmitri Mendeleev as a chemist with few great awards. Much more informatively, however, one should introduce Egon Moniz as an influential protagonist of lobotomy and Dmitri Mendeleev as the co-inventor of the periodic table of elements.

Admittedly Mendeleev and Moniz are prominent outliers but they are far from being the only examples of discrepancy between awarded prizes and scientific contributions. Still the worst aspect of focusing on prizes, grants and career building is not only the reinforcement of political misattribution of credit; far worse is the insidious influence of excessive focus on prizes and career building on the scientific culture. The more we celebrate awards, the more we attract people seeking awards and glamorous careers, and the bigger the burden on the peer review system.

We should celebrate works and examples like those of Einstein and Feynman, not the prizes that purport to reflect such works. Focusing on the work and not the prize would hardly diminish the credit. Indeed, the Nobel prize derives its prestige from scientists like Einstein and Feynman and not the other way around. A prize may or may not reflect significant contributions and we should be given the opportunity to evaluate independently the contributions. Only such a culture of independent assessment can give the best ideas a chance to prevail over the most popular ideas.

The next time you have a chance to introduce an accomplished colleague, respect their contributions with an explicit reference to their work, not their prizes. With this act of respect you will help realign our scientific culture with its north star: the independent and critical evaluation of experiments, data, ideas, and conceptual contributions.