

CURRENT SCIENCE

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GUEST EDITORIAL

The obsession with being number one

As I travel around the world, increasingly I have found that assessment and evaluation systems are getting in the way of why one should pursue a career in the sciences. So many scientists and institutions are striving to be at the very top of their fields, but do not realize that being the best is often the enemy of doing better. For these scientists, good is never enough; there is always more to do. They must outscore and outperform all their peers. All this leads to nothing but a vicious academic rat race. It is too easy to forget that if you win the rat race, you are still a rat.

If it were possible to rank everyone, only one person can be number one. What is to become of the others who rank below? In sports, many competitions have a clear number one. For example, Usain Bolt is the fastest runner in the world in the 100-m dash, but there is no telling where he would place in a marathon. Much like the disconnect between the 100-m dash and a marathon, science works differently. We all are not running the same race; so rankings become questionable.

Let us think about why we do science? Of course, there are many personal reasons. From a societal perspective, however, it is because science liberates us to understand the world better and take care of important social needs. These social needs range from improving our standard of living and health and medical care to ensuring our safety and the sustainability of our environment. Science even helps us provide an engine to drive a nation's economy.

With these objectives in mind, then why do scientists and science administrators impose metrics upon themselves that are unrelated to these praiseworthy goals? We place emphasis on the number of publications and the impact factor of the journals in which the publications appear. We should be judging the impact of a published article on science and society rather than incorrectly judging it by the name of the journal in which it appears.

Another metric that is given undue attention is the amount of funds brought into a scientist's institution. It fosters the false impression that all types of research require the same resources. Also, unnecessary attention is given to awards and other external distinctions. Some of this does stand for meeting societal needs, but often, not in a direct way.

A wise society has a balanced portfolio of supporting research, both short term for specific goals and long term for acquiring the knowledge that allows for revolutionary breakthroughs. It is not surprising that more attention

will, and should, be given to the short term. However, unless the portfolio has a proper balance of both types of activities, the scientific enterprise is in deep trouble. I do not wish to speak at length about what might be called 'unification pseudoscience', in which all great scientific advances are wrongly attributed to one country or one people. A smart society recognizes that science is a global effort in which everyone can benefit from its advances rather than something that is done successfully only within the confines of one grouping.

Particularly troubling to me has been the number of graduate students I have met who are stressed out because of the demands placed on them that are only loosely connected to societal goals. Graduate students are the future of the scientific enterprise. If we are losing graduate students by placing in front of them the wrong goals, we are doing harm. Of course, a Ph D programme and a career in science are intrinsically stressful. However, I worry, that in some research groups the atmosphere is worsening. Some Ph D supervisors make students feel that they are failures unless they have published at least 20 papers, of which at least one appears in a high-impact journal. Not everyone can, or should, achieve this goal. We are making many graduate students spend unnecessary extra time in school or even dropout, which makes us lose out on those who have the talent to contribute significantly to the quest for knowledge. In many places, a supportive network of counselling and mentoring seems to be lacking because supervisors are too busy pursuing the wrong metrics for measuring success.

We should all strive for excellence, but chasing after the status of number one can blind us to what should be the real goals of a life spent in pursuit of knowledge. We must take care not to fall prey to this obsession. There is a pressing need to re-examine the ways in which the output of scientists is judged by funding agencies, university administrators, prize committees and the greater scientific community. We all benefit from a proper assessment of the quality and impact of scientific output, but these involve much, much more than simple-minded metrics. The present evaluation system is largely failing us. We need to call for major reforms.

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