



Opinion: Research: too many indices, too much bureaucracy

J. Adolfo de Azcárraga, Valencia Univ. and IFIC (CSIC-UV)
President of the Spanish Royal Physics Society

The San Francisco Declaration (2013) and the Leiden Manifesto (2014) rightly highlighted the abuse of numerical indicators for measuring the worth of scientific papers or researchers' projects. In itself, this is an almost obvious observation, since papers are meant to be read and appreciated on their own merit; their evaluation should rely on expert judgement, not on indices. The 'scientometric mania' has grown so much that even a PC could now select a candidate if told what to *count*. Another example is the trend of requesting authors to quantify their contributions in papers with multiple authorship. Impact factors and metrics, originally meant to favour research, may now hamper it. They could *e.g.*, discourage long-term or ground-breaking research as being too risky to undertake, something unthinkable when Planck was at the helm of *Annalen der Physik* and accepted Einstein's 1905 relativity paper.

On the other hand, ignoring these indices altogether may run into unexpected undesirable effects. For instance, in an ideal world selecting committees, all very competent, would easily appreciate the merits of candidates by reading their papers and considering their contribution to them. But committees may be overloaded with work and prone -even required- to apply pre-established numerical criteria. Thus, removing all impact factor

considerations could provide, in the absence of a proper analysis, a perverse rationale for considering all papers of essentially equal value. At least, in a first order approximation, a good impact factor allows a not-so-good committee to rely on the presumably better judgement of the journal referees who accepted the paper. But low-impact journals also contain very good articles; therefore, a healthy skepticism towards indices is essential. There is no good substitute for scientists delving into papers, reading carefully grant proposals, and interviewing candidates.

The rise of numerical indicators, supposedly providing 'objective' criteria to judge, is not unrelated to the increasing prominence of 'Research Administrators', high-level bureaucrats whose procedures are not always in the best interest of research. Of course, today's Science is a huge, costly and complex enterprise requiring (good) management, and scientists are accountable for the funds they receive. But although metrics and other initiatives may please some administrators, reality is more nuanced. For instance, is it really necessary to force publication in Open Access Journals when in many areas such as physics we have the 'golden access-like' arXiv repositories since 1991? Further -there is no free lunch- OA merely shifts publishing costs. Thus, does OA promote good refereeing? What does 'measure' better a country's excellence in

What does better 'measure' a country's excellence in Science: the yearly number of research papers or its Nobel prizes?

Science, the yearly number of research papers or of its Nobel prizes? Science Administrators frequently develop rules – often changed at their whim – more suited for them than for research (or for having the general public properly informed). Pierre-Gilles de Gennes, in his delightful *Petit Point: A Candid Portrait of the Aberrations of Science*, gives an example of the negative effect on research of Polymorph, a high ranking Science Administrator. Polymorph prefers large laboratories because they are easier to manage – and control – than many smaller groups. Therefore, he forces productive but fiercely independent teams to merge and to collaborate against their will. Soon group A starts feuding with group B with disastrous consequences, but Polymorph is happy because his workload is lighter.

Science is advanced by human beings. Well-meant or 'politically correct' regulations ignoring this obvious fact and the realities of research will not foster it. Further, detailed regulations and controls often cost time and much more money than they pretend to save; analytical accounting would produce here quite a few surprises. Thus, although the degree of nonsensical bureaucracy is different in every country and national Scientific Councils may help restraining it, some de-regulation in research administration is urgently needed. Because, as always, the devil lurks in the detail. ■