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EDITORIAL

Who's afraid of impact factors

Being an editor of a journal is a difficult (and uncomfortable) business at the best of times. Nowadays, it is even harder thanks to the many precisely-defined measures for assessing journal quality. It is hard for an editor to escape the penetrating question – 'What is the impact factor of your journal'. Presumably, the editors of the glamorous journals (*Nature*, *Science* and *Cell* amongst them) smirk and preen when asked this question. (Indeed some of these journals proudly announce their ranks in colourful advertisements.) Those in charge of lesser known periodicals merely pretend not to have heard the question and heartily wish that their tormentors would one day be appointed as journal editors. It was thus comforting to read that impact factor calculations provoke even the editors of well established, highly regarded professional journals like the *Journal of Bacteriology* (see G. C. Walker, *J. Bacteriol.*, 1999, **181**, 1–3). A recent letter in *Current Science* quotes from the *J. Bacteriol.* editorial and calls attention to the many 'forgotten citations' which are excluded from the calculation of impact factors (J. Gowrishankar, *Curr. Sci.*, 1999, **76**, 1424). This letter further highlights the fact that a science establishment enamoured with impact factors forgets the real purpose of research and 'devotes itself not to making the important measurable but to making the measurable important.' (P. A. Lawrence, *Nature*, 1999, **397**, 487–489). Harsh comments indeed, about a parameter that is now an almost universally accepted measure of a journal's importance.

A little understanding of the formula used for impact factor calculations may help those who wonder why journals cannot easily enhance their ratings. The impact factors announced in 1999 will consider all citations (in journals covered by the *Science Citation Index*, of course) in the years 1997 and 1998, to papers published in the journal in 1995. The 'forgotten citations' are to those made to papers published in the same journal before 1996. Thus, there is an element of immediacy, a touch of fashion and maybe a bandwagon effect in operation, when impact factor counts measure short-term citation rates. Fast moving fields, areas where hundreds (and sometimes thousands) of groups hunt for gold must be well represented on a journal's pages, in order to assure instant citation success. In the recent past there have been many such rapidly moving fields of research, which have dramatically illustrated how 'hot areas' can explode and later subside. The physicists will recall the heydays of high temperature superconductivity; the fullerenes are still fresh in the memory of chemists; while biologists seem to have more long lasting fashions – apoptosis, signal transduction and cell cycle research staying at the top of the charts for some time. The high impact journals (particularly the interdisciplinary ones) must then carefully select the papers that they publish. Editorial decisions can then be guided by perceived importance in an immediate context. The more staid professional journals can hardly subscribe to a scientific fashion show. Not surprisingly, the *J. Bacteriol.* editorial emphasizes that the journal publishes 'truly the best papers in the field and does not bias "decisions by considering the perceived popularity of the topic"'. Since impact factor calculations use short-term citation counts in the numerator and the total number of papers published annually by a journal in the denominator, periodicals which publish a large number of papers are almost always at the bottom of the ranks. The moral, necessarily, is simple – publish fewer papers and try to publish the best (or at least the most 'attractive' papers) in rapidly moving fields in order to enhance impact factors.

In the Indian context, impact factors have assumed a larger-than-life role. All kinds of new (and poorly conceived) indices are being devised, not for evaluating journals but for assessing science and scientists. It is

common to see publication lists being scanned and a scientist's worth assessed by computing an 'average impact factor', based on the journals in which an individual's papers have appeared. In these calculations, the possibility is not even considered that some of the papers published in high impact journals may not be cited, while those in lower impact publications may in fact, have attracted attention. From individuals to institutions is only a short jump. Many analyses of publication profiles currently doing the rounds in scientific circles are characterized by a woeful lack of understanding of the databases used, the parameters derived and most importantly, a complete ignorance of the processes of science. Not surprisingly, ill-informed analysts then draw erroneous conclusions about the scientific health of institutions, departments and individuals. Scientometrics is a powerful tool, but trained practitioners are hard to find. In making decisions about where to publish, prospective authors are sometimes misguided into choosing journals based on 'impact factor criteria'. The simple rule is that papers should be published where they are noticed by others in the field. The discussion on citations and impact factors is never ending but an answer to the question posed in the title is clear – journal editors, of course.

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