

# CURRENT SCIENCE

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EDITORIAL

## Journals: Costs and Impact

Rupert Murdoch and his publishing empire have gained considerable notoriety in recent times. His enormously profitable enterprise has been subjected to a great deal of scrutiny. Publishing tabloids must be, or so I thought, a considerably more lucrative business than the stodgy world of publishing scientific journals. An article in the *Guardian* by George Monbiot (29 August 2011) drew my attention, instantly, since it boldly proclaimed, 'Academic publishers make Murdoch look like a socialist'. The column drew attention to one of my pet peeves – the costs of maintaining academic libraries, where science journals 'consume 65% of their budgets'. Scientists need journals and journals need publishers. Scientists are, most often, authors, readers, reviewers and editors. Publishers bear the costs of management and production, adding value in many ways to the final product. The *Guardian* article asks provocative questions and provides even more provocative answers: 'Who are the most ruthless capitalists in the Western world? Whose monopolistic practices make Walmart look like a corner shop and Rupert Murdoch a socialist? You won't guess the answer in a month of Sundays. While there are plenty of candidates my vote goes not to the banks, the oil companies or the health insurers, but – wait for it – to academic publishers.... Of all the corporate scams, the racket they run is most urgently in need of referral to the competition authorities.' This, rather dramatically worded, critique of academic publishing monopolies may be important, especially as Indian institutions appear to be spending larger and larger sums of money on journals, with little thought of strong and collective action against unreasonable journal pricing, even as the print medium rapidly gives way to electronic communication. The *Guardian* piece provides an interesting discussion of costs: 'You might resent Murdoch's paywall policy, in which he charges £1 for 24 hours of access to the *Times* and *Sunday Times*. But at least in that period you can read and download as many articles as you like. Reading a single article published by one of Elsevier's journals will cost you \$31.50, Springer charges €34.95, Wiley \$42. Read 10 and you pay 10 times. And the journals retain perpetual copyright. You want to read a letter printed in 1981? That'll be \$31.50.' On reading this the reactions of most readers would probably be one of puzzlement. After all, researchers almost never pay for reading single articles;

instead they rely on institutional libraries, both real and virtual. The *Guardian* critique anticipates this argument: 'Of course you could go into the library (if it still exists). But they too have been hit by cosmic fees. The average cost of an annual subscription to a chemistry journal is \$3,792. Some journals cost \$10,000 a year or more to stock... Though academic libraries have been frantically cutting subscriptions to make ends meet journals now consume 65% of their budgets, which means they have had to reduce the number of books they buy. Journal fees account for a significant component of universities' costs which are being passed to their students.' This concern about unreasonable journal costs is not widely shared in India, since public institutions and their libraries turn to government to continually cover escalating budgets. Publishing cartels are usually successful in convincing individual researchers and libraries about the importance of their journals and 'information products', with the result that there is very little user oversight in fighting rapidly increasing prices.

Is academic publishing a profitable business? The *Guardian* article notes that while newspaper and magazine publishers, Murdoch among them, pay journalists and editors and often pay for content, 'academic publishers get their articles, their peer reviewing ... and even much of their editing for free. The material they publish was commissioned and funded ... through government research grants and academic stipends. But to see it, we must pay again, and through the nose.' According to the *Guardian* critique 'Elsevier's operating profit margin was 36% (£724 m on revenues of £2 bn)' last year. Three commercial publishers, Elsevier, Springer and Wiley now publish nearly '42% of journal articles'. Interestingly, the profit margins in academic publishing have remained at about 35–40%, for well over a decade. The *Guardian* notes in an aside: 'Perhaps it's not surprising that one of the biggest crooks ever to have preyed upon the people of this country (UK) – Robert Maxwell – made much of his money through academic publishing.' Maxwell was the buccaneer publisher who, among other things, owned Pergamon Press which in the 1960s introduced *Tetrahedron Letters*, with camera ready copy prepared by authors for printing. The journal also fuelled the rush to publish shorter and shorter papers, eventually leading to discussions about 'least publishable units' of research,

especially in the area of chemistry. Maxwell was notorious for his business practices and after his death in 1991, the sum of £470 million was found missing from the company's pension fund account. Twenty years later a few commercial publishers have established a stranglehold on scientific journals, with only a few scientific societies holding out.

Modern scientific journals can trace their origins to 1665 when the Royal Society produced *Philosophical Transactions*. In the 17th, 18th and much of the 19th century, science had not yet fragmented into well defined disciplines. Natural philosophy was a favoured term to describe the areas that were of interest to practitioners of science. Societies are today the publishers of some of the most influential journals in science. Yet many journals produced by societies in Europe and elsewhere have been brought under the fold of commercial publishers, who promise a degree of professionalism in production and marketing, guaranteed to increase a journal's visibility. American societies, especially the larger ones, continue to publish highly regarded journals. As more and more of the world's scientific output is brought under the umbrella of commercial monopolies, difficult and uncomfortable questions arise regarding costs of access. The Open Access movement has gained in strength as researchers and institutions realize that publishers add little value to papers during the production process. The *Guardian* article quotes a Deutsche Bank analysis: '...if the process really were as complex, costly and value-added as the publishers protest that it is, 40% margins wouldn't be available'. Publications have been the lifeblood of science; progress at every critical step in the history of modern science has been marked by the appearance of a paper that, in retrospect, marks a turning point in the discipline. Today publications are a measure of scientific output; a tangible outcome of research carried out, invariably, with public funds. As the scientific enterprise has expanded, so too have the number of journals.

In the last few years the rise of scientometrics and the growing use of quantitative indices, necessarily derived by analysing publication output, have transformed the way scientists view the world of journals. There is intense pressure to publish and to 'target' journals based on impact factors. There is a growing desire amongst individuals to maximise their *h*-indices; a convenient and easily measurable parameter that may be likened to a personal impact factor. Citation counting lies at the heart of many quantitative assessments. Individuals, institutions and even journals have now become part of a game to boost citation statistics. Since rewards for individuals, rankings for institutions and sales figures for journals hinge on quantitative parameters, there are almost no options available to escape from avaricious publishers, who 'have rounded up the journals with the highest academic impacts factors'.

The tyranny of impact factors has begun to have an effect on 'scientists working in small under-researched non-lucrative fields'. In an editorial appearing in 2007 in the journal *Folia Phoniatrica et Logopaedica (FPL)*, 2007, **59**, 281), H. K. Schutte and J. G. Svec cited 66 of the articles published in 2005–2006 in the same journal. They successfully drove up the impact factor from 0.655 in 2005 to 1.439 in 2007, demonstrating that strategies for doubling impact can be readily devised. As a journal catering to a specialized research community in the area of 'phoniatrics, speech therapy and communication pathology', the authors appear to be registering a protest. Their reward was swift in coming. Thomson Scientific, the publishers of *Journal Citation Reports*, removed *FPL* from its 2008 listing. A more recent example of a journal's meteoric rise in the rankings is the case of *Acta Crystallographica Sect. A*. The journal rose to the second position, with an impact factor of 49.9 in 2010, a phenomenon that appears to have surprised even the analysts at Thomson-Reuters. Writing on the website of the Citation Impact Centre, M. McVeigh traces this remarkable rise to a single paper by George Sheldrick, which amassed an extraordinary 6,436 citations in a two-year period. The conclusion: 'Without another important article in 2010 *Acta Crystallographica Sect. A* is likely to return in 2011 to its prior journal impact factor of between 1.5–2.5.' The champion article, entitled 'A short history of SHELX', describes the evolution of a widely used program for crystal structure determination. The paper attempts 'to understand how a program originally designed for photographic intensity data, punched cards and computers over 10,000 times slower than an average modern personal computer has managed to survive for so long' (Sheldrick, G. M., *Acta Cryst.*, 2008, **A64**, 112–122). Curiously the article carries an invitation to cite: 'This paper could serve as a general literature citation when one or more of the open-source SHELX programs (and the Bruker AXS version SHELXTL) are employed in the course of a crystal structure determination.'

Most journals and the bibliometric databases like Thomson's *Web of Science* and Elsevier's *Scopus* are in the hands of commercial publishing houses. Scientists and administrators the world over, and India is no exception, have succumbed to the temptation of using single number parameters for assessment of individuals and institutions. A recent advertisement from a government funding agency asked applicants to provide 'their *h*-index for the past five years'; a sharp reminder that bibliometrics has spread like a cancer in the corridors of the science departments in Delhi. As the number of scientific institutions grows rapidly in India, there is an urgent need to review journal pricing policies of commercial publishers and to adopt a more informed and tempered view of bibliometric indices in assessments of scientific research.

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