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EDITORIAL

Publishing Wars

The birth of a new science journal should normally have been an unremarkable event; after all, there are already thousands of journals representing the diverse areas of science. But the journal *PLoS Biology* which came into being in October, attracted unprecedented media attention; its launch preceded by a blitz of publicity, including a television commercial. The journal has a curious name, deriving its acronym from its publishers, the Public Library of Science (PLoS), a California-based organization which was founded in October 2000. The stated goal of PLoS was to make the 'world's scientific and public literature a public resource'. The efforts of the organization 'to encourage scientific publishers to make the archival scientific research literature available for distribution through free online public libraries of science', did not appear to meet with enthusiasm from the science publishing industry; their responses falling 'short of the reasonable policies' advocated by PLoS (www.plos.org). Armed with a \$ 9 million grant from the Gordon and Betty Moore Foundation, the organization has now launched *PLoS Biology*, in a dramatic attempt to hasten the 'open access' revolution.

Physicists have, for over a dozen years, used the electronic pre-print bulletin board, established by Paul Ginsparg in 1991, to post their manuscripts in advance of formal publication. Initially founded to link the high-energy theoretical physics community, the e-print archive has grown to other areas of physics, recently expanding even into biology. Despite the growth of Internet connectivity worldwide, a 'pre-print bulletin board' concept has not found general acceptance in other areas of science. Many journals in chemistry and biology, including those published by scientific societies disqualify manuscripts which have been previously 'pasted' on electronic bulletin boards. The major criticism of this approach is that it permits display of manuscripts before peer review; uncritical acceptance of results and conclusions may hinder rather than hasten progress of an area. The physicists would argue that readers are the best judges; presumably able to sift fact from artifact. This may indeed be true in physics, where the readership may be confined to a group of closely knit specialists. But, the sprawling area of the

biomedical literature has many non-specialist readers, searching, at times desperately, for the latest medical research advance. While peer review does not guarantee correctness of published research, it does provide a deterrence to making extravagant claims that are not based on scientific evidence. This is particularly important in many areas that are of direct public concern. Over the years the growth of the literature of biology has been explosive. Journals have multiplied, grown thicker and glossier and, of course, become more and more expensive. A situation is now being reached where most institutions can no longer afford to subscribe and maintain full print collections. Electronic publishing promised to be a revolutionary solution, but the growing costs of electronic access are beginning to prove inhibitory. In this scenario, the birth of *PLoS Biology* (despite a name singularly lacking in felicity) is an event that may mark the beginning of a new approach to science publishing.

It is only three years ago that PubMed Central was launched by the National Institutes of Health in the United States, spearheaded by its then director, Harold Varmus. PubMed has grown into a wonderful electronic resource invaluable to biologists and medical researchers worldwide. However, only a limited number of journals permit access to text of papers or even abstracts, limiting PubMed's utility for accessing scientific literature. Varmus has now thrown his considerable scientific reputation and organizational talents into the launch of *PLoS Biology*. The first issue is an attractively produced journal which carries a range of cutting-edge papers spanning wide areas of modern biology. Who will pay for *PLoS Biology*? Free electronic access will necessarily reduce print subscriptions. Producing the journal will, of course, cost a great deal of money. For a short while the journal might be subsidized by private foundations; the war with profit-making private publishers is a politically correct cause. But, eventually the journal must pay its way. The founders of *PLoS Biology* suggest that authors must pay a publication fee of \$ 1500 per paper; at prevailing exchange rates in India this would be approximately Rs 70,000, a very large sum of money by any standard. In assessing the challenges of open access publishing

Declan Butler suggests that this figure underestimates the costs 'of producing a journal of the highest quality', (*Nature*, 2003, **425**, 554). The PLoS initiative is an attempt to transfer the costs of publishing journals from readers to authors, operating on the assumption that organizations which fund research will also pay for its publication. To a limited extent this already happens with journals which levy page charges, although in most cases the rates cover only a limited portion of the true cost. Many journals charge exorbitantly for colour reproductions; presumably an attempt to recoup some costs from authors. But, at present, it is libraries who pay high subscription costs on behalf of their readers. The electronic revolution has complicated journal access issues; many times subscriptions for institutional electronic access are hugely expensive. Divesting print subscriptions has meant that journal access is limited to those who have accounts on institutional computers, converting libraries, which once were public resources into limited facilities catering to specific institutional needs.

The 'open access' war appears to have two major combatants. On one side are the white knights in shining armour, who seek to provide the results of science without any cost to readers. Ranged against them is the evil empire of science publishers; the flagship of this armada is the Reed Elsevier group based in Amsterdam, which offers expensive packages to libraries, including a number of indifferent journals, inextricably linked to a few key journals. The charge is that science publishers price their products exorbitantly, making profits out of publicly funded research and depriving readers who cannot pay, an opportunity to access research results. Scientists, of course, double as both authors and readers. Simple economics dictates that someone must pay the costs; a conclusion that is succinctly summarized in that wonderful American saying – 'there's no such thing as a free lunch'. Interestingly, journals run by scientific societies have often passed on the costs both ways; high subscription rates and page charges have operated simultaneously. The war has heated up with two biologists at the University of California at San Francisco circulating an e-mail calling for a boycott (refusal to submit and referee papers and to do editorial work) of the journal *Cell*, currently one of the most prestigious outlets for biological research. For years, prominent scientists have courted the editors of the best journals in order to showcase their

results in the publications with the highest impact. And over a period of time the best journals have acquired a prestige and importance which has permitted their publishers to steadily raise the costs of access. It is hard to see scientists readily follow the move away from commercial publishers. The best known journals will still attract authors, who need to make their reputations. They will be more concerned with the impact factor of the journal where their work is published, than with issues of whether their article is accessible to those who cannot pay.

For researchers in India and the developing world the PLoS initiative may be fundamentally flawed. It will be nearly impossible to pay high publication charges from limited research grants. In the West, the Howard Hughes Foundation, the Wellcome Trust and the Max Planck Society are gearing up to absorb publication costs. Researchers in the Third World may eventually be left to beg for 'waivers', converting them into supplicants for largesse from 'open access' publishers. The situation is murky; as authors we might prefer commercial publishers, while as readers we might opt for the champions of 'open access'. For readers the difficulties of access may be overcome, as attempts to use the Internet to connect 'reprint archives', without copyright violation, become more widely usable.

The ongoing turmoil in the world of science publishing should catalyse some thinking on the state of journals in India. It might be useful for the Academies and the Council of Scientific and Industrial Research to take a hard look at their stable of journals and at the economics of publishing them. Our journals seem to cater more to the needs of authors; the nature of the readership is generally not an important issue. Several journals which are published with significant government subsidy are of indifferent quality and even more importantly, appear with a limited frequency, diminishing both their visibility and utility. The time may be opportune to make one more effort to revamp science journals in India, consolidating, pruning and restructuring, in order to enhance their competitiveness in the international scene. Issues of access will be irrelevant unless there is a concerted attempt at quality improvement.

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