

Open Access and the Future of Scientific Publishing

It has been a few years now since the subject of open access publishing started being hotly debated. More generally, the evolution of the research result dissemination process has become a topic of continuing discussion. The issue is complicated by the fact that it affects multiple parties including publishing companies, funding agencies, universities, and of course the individual researchers who produce the knowledge itself. I have personally found the debate to be at times utterly confusing, as two aspects of it are often interlinked: the finances of publishing on one hand and the reviewing process of scientific papers on the other.

On the financial side, the term “open access” refers to a mechanism that eliminates the restrictions imposed by copyright so as to make access to a paper open to all, not just those who purchase the publishing vehicle that owns the copyright for that paper. Moreover, it allows the author to make whatever use of a paper he/she wishes without the usual restrictions such as reproducing material in another publication that does not own the copyright of the original paper. The problem here comes down to determining who carries the publishing cost: is it the organization willing to incur this cost for the sake of acquiring a copyright (as is the currently prevailing business model) or is it the author? Adopting the latter (author-financed) approach is a significant change for the typical academic researcher [like

most of us in the IEEE Control Systems Society (CSS)], since it implies that this researcher must supply for each paper he/she wishes to publish an amount which currently varies between US\$1500 and US\$3000. Needless to say, for a productive researcher this is a significant addition to the person’s annual budget. For students, postdoctoral fellows, and even junior faculty members, such a change could be simply infeasible unless some dramatic transformations take place in the way universities and funding agencies approach the whole process. Already, several leading academic institutions worldwide are taking steps in this direction. One approach is to divert resources currently used for libraries to a fund intended to support faculty wishing to publish their work through new open access venues.

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IEEE Control Systems Society Executive Committee members and editors after an all-day meeting in Beijing, May 2012. Front from left: R. Middleton, T. Parisini, A. Astolfi, P. Antsaklis, C. Cassandras, E. Chong, Y. Yamamoto, and M. Fujita. Back from left: S. Ge, F. Doyle, F. Bullo, M. Egerstedt, and W. Dixon.

Another interpretation of open access is related to the way papers are reviewed. Regardless of whether the publisher-financed or author-financed model is used, one argument is that open access means making a work available to all without going through the usual peer reviewing process. Proponents of this approach cite the immediacy of knowledge dissemination and the elimination of the excruciating process that an author is sometimes subjected to during a rigorous review process supervised by an editor. Opponents argue that the peer reviewing process is the best mechanism for ensuring quality.

Some are also arguing that researchers in a particular field should simply establish a Web site for electronically publishing papers, completely bypassing commercial publishers and expensive fees. Indeed, it is no longer unreasonable to envision, for example, the entire editorial board of a leading journal reproducing its volunteer-based editorial and reviewing work through a public Web site with no copyright, no publishing fees, and minimal cost for simply maintaining the Web site. I am aware of at least one scientific community that is operating in this mode with no apparent major obstacles reported so far.

Although the financial and quality-related aspects of the open access debate appear to be unrelated, there is at least

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one thread that connects them: several commercial publishing companies provide compensation to their editors. Should an author-financed publishing model emerge, it is unclear what its effect would be on such compensation.

An additional question that can be raised is the effect of an open access system to our conferences. Are conference proceedings to be dealt with the same as journal publications? If so, then a US\$1500–US\$3000 fee may also apply to every paper that an author wishes to include in that conference proceedings. On the other hand, the content of such papers is often virtually identical or very similar to that of a paper the author submits to a journal. Currently, this is frowned upon by publishers who see the same “product” being offered to their “clients” with no clear differentiation. It is also questioned by some academic circles arguing that there should be no duplication of research results, thus raising a fundamental question about the very role a conference should

play in the whole process of knowledge dissemination.

Within the CSS community, the open access debate is ongoing and some confusion along the lines discussed above still persists, understandably so. The purpose of this “President’s Message” is only to raise everyone’s awareness with an attempt to identify the key issues involved. It seems inevitable that drastic changes in the scientific publishing process are forthcoming. It remains to be seen whether a new model uniformly applied across all scientific disciplines will emerge or whether different versions will appear and be subjected to the test of time. If some major change is inevitable, then the true challenge for us will be to handle the transient phase from the status quo to a new reality where the finances of publishing may be different and the peer-review system may not survive, at least not as we now know it.

Christos G. Cassandras



“Natural” Continually Changes

There are equally important psychological implications to incorporating new technologies into everyday life. The experiences that seem natural to children today are radically unlike those of 200 years ago. A green lawn seem “normal” but it is artificially flattened, fertilized, and clipped, and could scarcely be found anywhere in 1805. The “normal” home in Western society invented since then has expanded to include indoor plumbing, central heating, hot running water, electric lighting, radio, refrigeration, television, and much more. The world that seems natural at our birth has been continually modified. One should be skeptical about claims that people can be easily or radically altered because they watch television, use the Internet, acquire a mobile phone, or purchase an intelligent machine. Nevertheless, the cumulative effect of continual innovation has encouraged people to see the world less as a shared dwelling than as a stockpile of raw materials. Technological peoples can unconsciously assume that the world exists for their convenience. The typical motorist assumes that gasoline at reasonable prices is “natural,” and on the evening news it has become regrettable but “natural” to see a target from the vantage point of the nose cone of a missile, just as it has become “natural” to see bloody civilian casualties.

—From *Technology Matters, Questions to Live with*,
by David E. Nye, The MIT Press, Cambridge, Massachusetts, pp. 222–223.