

BioMed Central: Taking a Fresh Look at Scholarly Publishing

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In the last few years, e-businesses have set up left, right, and center, speculative demand has inflated share prices, and every other advertisement seems to end with the words “dot com”. Recent months, however, have brought realism to the Internet mindset; some retailers have closed their online operations, and stock-market enthusiasm has cooled. People are beginning to ask, “Just because we have it, does it mean we should use it?”

The publishing industry has definitely decided to use it—most journals are now online, and you can buy access to many journals from a publisher by paying a combined price. But all this is simply adding dimensions to the paper-based world of publishing. BioMed Central is an online-only biomedical publisher that is using the Internet to completely rethink how we communicate original research.

Copyright

Traditional journals review, edit, print, and distribute original research papers. Historically, to cover the cost of all this, journals charged their readers a subscription price. To protect their income, they had to ensure that authors did not distribute their work once it was published—so they insisted that authors hand over the copyright. All this made sense in the past, if only because there were no alternatives. Publishing only online reduces printing and distribution costs substantially. If these savings were passed on to readers, it could reduce subscription prices, if not abolish them. However, for publishers, subscription prices are no longer simply about covering costs.

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Researchers need to have their work published to distribute their data. Readers need to obtain the data to conduct further research, so they have no choice but to subscribe (either personally or through an institution). What compounds all this is that the prestige of a journal (as measured by its “impact factor”) is used as a guide to the quality of the research papers published in it. Therefore, authors want to be published in the more prestigious journals. By owning prestigious journals, publishers have been able to hold the scientific community for ransom, in some cases raising prices into thousands of dollars. These prices are not to cover production costs, but simply for profit.

In addition to profiting from the community’s need for prestige, they are selling an intellectual product that they do not own. Scientists think of the research, conduct the research, write the papers, and peer-review them (usually without charge). Publishers simply mediate the process and produce a glossy journal. If anyone “owns” research, it is the public, inasmuch as government money often funds research.

The Internet, especially e-mail, has made it easier to mediate the process. No longer does a manuscript need to be outsourced to publishers. This, combined with reduced production costs, should enable authors to keep copyright and to distribute their papers at will. At BioMed Central authors retain copyright, and all research papers can be accessed free.

Journals That Aren’t “Journals”

In the paper-based world, journals are limited to set numbers of sections and pages and a set frequency of issues. Within each issue the sections must be filled. There are often more articles than space, so either the length or the number must be cut. In the online environment, there is no need to stick to any of those constraints.

Articles can be of any length, and they can be added to the journal when they are ready. Because there are no space constraints, additional pieces of information can be added, such as supporting data, images, or videos. Authors could even go so far as to use multimedia tools to display their work.

BioMed Central accepts original research in any field of biomedicine. When an article is accepted after peer review, it is placed in a “journal” on the Web site for the specific field. There are over 50 of these “journals”, each with an editorial board of international experts; they do not have a set number of pages or issues, and they are not updated with any formal regularity. Articles are added when accepted.

Taking this a step further, BioMed Central will publish any paper deemed by peer reviewers to be scientifically sound, regardless of relevance or level of interest to a particular audience. This means that BioMed Central will publish papers that other journals are less willing to consider, including confirmatory or negative studies. Most journals do not accept such studies because they offer nothing new to the wealth of biomedical information. Given the space constraints in printed journals, editors have to decide between the relative merits of the papers submitted to them—hence these studies lose out. In contrast, and because there are no space constraints on the Web, BioMed Central believes that as long as a paper presents good science, it should be published.

This “bias to publish” will be especially important for those conducting systematic reviews in the future. The trend toward publishing only positive results skews systematic reviews, making them less reliable. At BioMed Central we believe that if the research has been conducted well (and passes our peer review), the data should be available for consumption.

*BioMed Central continued***Peer Review**

Traditional peer review has been described as being highly subjective, prone to bias, easily abused, poor in detecting gross defects, and almost useless in detecting fraud. But even with so many faults, it remains the best form of quality control that we can offer biomedical literature. Given its importance, it is essential that new publishers investigate ways to improve the process.

One criticism is that editors tend to ask the same people for reviews, potentially limiting the type of feedback available to them. Physics and mathematics have addressed that by having most of their papers posted onto a preprint site for the wider community to comment on before the papers are submitted to a journal. This enables the authors to collect as many varied opinions as possible so that a paper is in its best form when submitted.

Biomedicine has yet to embrace such steps, but many journals, including BioMed Central, are using Internet-based resources such as PubMed to widen their source of referees.

The medical “journals” in BioMed Central are taking the next step by having “open” peer review; that is, the referees’ signed reports are published alongside the paper. This is aimed at making the peer-review process more accountable and giving credit to the unsung heroes of scholarly publishing, the referees.

Using the Web Rather Than E-Mail

During peer review, communication between editors and authors or between

editors and referees accounts for a large proportion of time. E-mail with attachments has been able to reduce this communication time, but even sending attachments can go wrong. Research papers—including abstracts, figures, and covering letters—are submitted to BioMed Central via an online form. The manuscript is then automatically made into a PDF file, accessible to anyone via a URL. Because the URL is made known only to those involved in the peer-review process, the submitted paper does not enter the public domain. This has enabled us to reduce our submission-to-publication time to about 7 weeks.

Global Information Flow

In addition to author retention of copyright, reduction in production costs, and quicker publication, the Internet enables online publishers to reach all corners of the globe at the same time. Many developing countries continue to rely on outdated textbooks for their education and practice. These countries can now be part of the current global biomedical consciousness provided they have Internet access. Whereas most journals restrict access to their original research papers by using “financial firewalls”—subscriptions—there are no such restrictions at BioMed Central.

Niche Journals

Developing the technology behind BioMed Central is a huge task. But once it is developed, there is no reason for it to be used only within the four walls of its London office. For years specialists in small fields have been unable to set up a journal because their subscription base would not be large enough to generate the income required to

operate a journal. But now, with reduced costs and automated processes, there is no reason that these super-subspecialty journals cannot exist. Niche journals can be run by groups of researchers under their own editorial control while BioMed Central supplies the publishing expertise and technology. We have a number of groups interested in setting up such journals.

Challenges Ahead

There is no doubt that we are entering uncharted territory. Restructuring biomedical publishing and tackling some of the problems with peer review are not hurdles to be taken lightly. As with all new publications, we are jostling for recognition among those who index citations and calculate impact factors. We have the added concern of whether institutions consider online-only publications to be of equal standing with paper-based ones, although early anecdotal evidence suggests that they do. And although I may have disparaged the monopolistic practices of publishers, we too must sooner or later consider formulating a revenue stream that remains true to our goals. For now we remain protected under the wing of the publishing company that we are part of, the Current Science Group. Handing biomedical science back to scientists will be a long, painful fight. Whatever happens, BioMed Central has taken the first step in the ring. 🔥