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Publishing on the WWW. Part 4 - Pubmed Central: a publishing paradigm shift

V Grech*

Editor-in-Chief, Images Paediatr Cardiol

Contact information: Dr. Victor Grech, Editor-in-Chief, Images Paediatr Cardiol, Paediatric Department, St. Luke's Hospital, Guardamangia - Malta ; Email: victor.e.grech@magnet.mt

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Abstract

This article discusses the environment leading to the founding of the Pubmed Central database, and its likely effects on publishing as we know it.

MeSH: Medical Illustration, Publishing, Internet

Conventional publishing

Journal publishing costs continue to spiral upwards, year after year, and libraries have to pick and chose as to which journals to continue to subscribe to. Increasing journal subscription prices lead to a falling subscriber base, inevitably creating a feedback loop. This results in research grants funding research libraries that in turn fund publishers. A suitable alternative within the paper medium is difficult to imagine as conventional journals are difficult to produce and distribute, and need to be duplicated at many libraries.

On-line publishing

On-line publication has many advantages and these can be summed up:

1. The distribution of a printed journal is inherently restricted, and may unintentionally exclude potential readers who are unaware of the publication or unable to obtain it within reasonable time.
2. Subscriptions for a conventional journal are expensive because articles must be edited, reviewed, copy-edited, printed, mailed – and yet remain profitable. An exclusively online journal is much cheaper to produce. This is especially so if the journal relies heavily on graphics; the Internet constitutes an ideal medium for disseminating graphical information because of the ease and low cost of producing images online.¹

3. The Internet allows journals to be more versatile in presentation, with the ability to publish multimedia presentations, including audio and video clips.

Costs

One would have thought that the internet would facilitate access to journals and diminish publishing costs, and hence subscription costs. This is not the case as publishers of conventional journals tend to offer licenses to electronic versions as add-ons to ordinary subscriptions to the conventional printed format. The on-line version of such journals is invariably more attractive than the printed journal, as such websites often have extra material, the most important being indexing and search functions and multimedia presentations.

It has been claimed that the per-page costs of electronic publishing are only 20 to 30% less than those of paper publishing.² However, if the publishing of a journal is going to be solely electronic, the saving is at least 70%.

In 1999, Dr. Harold Varmus, the then Director of the United States National Institutes of Health (NIH), proposed the setting up of E-Biomed, a single central electronic database and full text repository for peer-reviewed biomedical research papers, as a natural extension of the National Library of Medicine's PubMed service. This database would provide freely, peer-reviewed papers and preprints. At this stage, it was suggested that the project would be overseen by a board of editors and authors, assisted by information technology specialists and the responsible funding agencies. It was also suggested that authors would retain copyright to their work.³

Through the National Library of Medicine's Web site (www.nlm.nih.gov) NIH already provides access to many databases, including PubMed, a search engine for bibliographic listings and abstracts of medical literature. But in order to download the full text of listed articles, users must obtain online access to the databases of the journals that originally published the articles. Many journals restrict access to paying subscribers or charge fees for the service. It was proposed that NIH would provide hosting and funding for E-Biomed, as it currently does for Medline.

Dr. Varmus ably summed up the E-Biomed concept: "In this essay, we propose a system for electronic publication of new results and ideas in the biomedical sciences. We do this with the conviction that such means of publication can accelerate the dissemination of information, enrich the reading experience, deepen discussions among scientists, reduce frustrations with traditional mechanisms for publication, and save substantial sums of public and private money."³

This was not a new concept. The physics community has Eprint Archive such a server (<http://xxx.lanl.gov>). The server currently handles handles 25,000 submissions annually at a cost of no more than \$15 per paper including overhead,⁴ and 35,000 users daily. This site is just not a research exercise, and is cited by the physics community.^{5,6}

PubMed Central

E-Biomed has become PubMed Central. "PubMed Central is a web-based archive of journal literature for all of the life sciences ... being developed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM) ... taking the lead in preserving and maintaining open access to the literature in electronic form ... We may not have all the answers to this grand challenge, but we invite all journals to join those that have already committed to creating this resource for people all over the world."

PubMed Central is free and promises to be the most revolutionary change in scientific publishing since the appearance of the first peer reviewed publications. Such a proposal would not only be of tremendous benefit to researchers, but would

also free up the budgets of libraries worldwide. Such a repository would force most journals to move exclusively online in order to exist on budgets diminished by subscription losses. It would also mean that authors would retain copyright rather than relinquishing it to publishers.⁷ However, others have argued that the publishing industry is inextricably linked with the research establishment and that the publishing lobby is too powerful to fall prey to the NIH proposal.^{8,9}

At this time, it seem inevitable that the biomedical community will migrate to electronic publishing. At *Images Paediatr Cardiol*, we wholeheartedly embrace this concept and hope to participate in PubMed Central in the future.

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