

## In the free web of science

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A ghost is wandering around the web: it is called *open access*, a proposal to modify the circulation system of scientific information which has landed on the sacred soil of scientific literature. The circulation system of scientific magazines has recently started faltering, not because this instrument is no longer a guarantee of quality, but rather for economic reasons. In countries such as Great Britain, as shown in the following chart, the past twenty years have seen a dramatic increase in subscription fees, exceeding by far the prices of other publishing products and the average inflation rate.

The same trend applies to the United States.

Since World War II, the indiscriminate increase in the price of magazines has been weighing on libraries and research institutes.<sup>1</sup> This is why librarians have begun to consider scientific publishers “not in line with the concerns and the cultural expectations of the scientific community”.<sup>2</sup>

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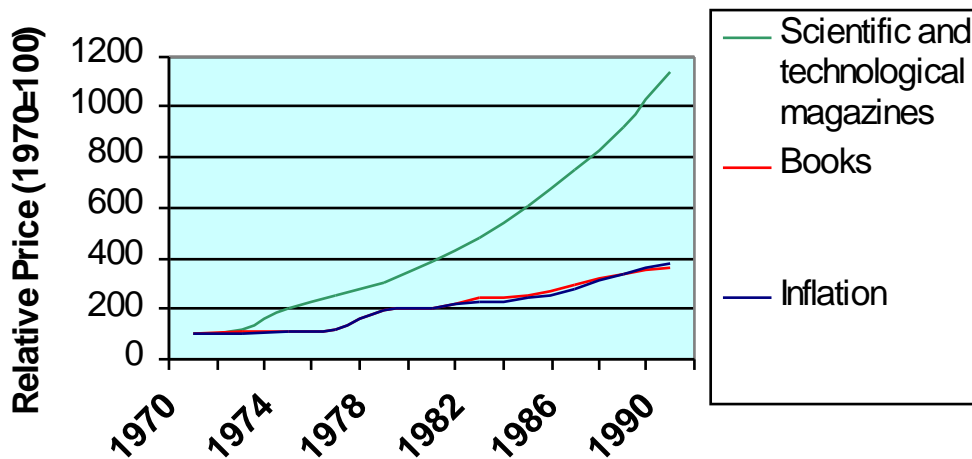
<sup>1</sup> Between 1960 and 1970 twelve major American universities saw an increase in the number of purchased magazines by 117% and in costs by 150%. In order to save space and money the institutes began to check on quantities purchased. However the total amount of costs did not diminish: the Association of Research Libraries (ARL) - the association for scientific libraries in the United States - has recorded an 8.8% annual average increase per unit since 1986 (see M. Case, *The impact of serial costs on library collections*, ARL Newsletter (218):9, 2001). From then until 1998, its 121 members spent 124% more, even if the amount of orders decreased by 7% (see T. J. Walker, *Free Internet Access to Traditional Journals*, American Scientist vol. 86, n° 5, September-October 1998 <http://www.amsci.org/amsci/articles/98articles/walker.html>).

<sup>2</sup> The Wellcome Trust, *Economic analysis of scientific research publishing*, London, 2003

**Tab. 1** Annual price increase for UK magazines<sup>3</sup>

Year	Inflation rate	Medicine	Science and Technology	Social and Life Sciences
1990	9%	13.5%	12.5%	11.9%
1991	6%	-1.9%	9.0%	18.3%
1992	4%	16.5%	14.1%	14.5%
1993	2%	5.9%	7.8%	6.9%
1994	2%	21.8%	23.5%	17.2%
1995	3%	8.8%	10.5%	7.3%
1996	2%	12.3%	13.5%	11.1%
1997	3%	10.7%	9.3%	7.4%
1998	3%	6.0%	2.4%	9.5%
1999	2%	5.9%	10.6%	9.4%
2000	2%	12.0%	10.0%	14.0%

**Fig. 1** Relative price increase of scientific magazines<sup>4</sup>



<sup>3</sup> The Wellcome Trust, *Economic analysis of scientific research publishing*, London, 2003

<sup>4</sup> D. Butler, *The Writing Is on the Web for Science Journals in Print*, in *Nature*, 397, January 1999

According to publishers, this type of situation results from a series of factors, namely high distribution costs, considerable investments in prestigious editorial boards and low revenues from the subscriptions to highly specialized magazines. All these factors inevitably lead to the above-mentioned state of things, even though financial reports show a different picture. Between 1999 and 2002, the global scientific and medical publishing sector grew by 20% with a total turnover of 2.69 billion dollars.<sup>5</sup> A study on four of the major scientific publishers carried out in 1989 on behalf of the Association of Research Libraries (ARL) showed that between 1973 and 1987 the margins of profit had increased from 40% to 137%.<sup>6</sup>

When, in the mid 90's, digital technology was developed enough to create electronic versions of newspapers, many believed this would be a new opportunity. Some libraries, such as Lyngby in Denmark, decided to purchase electronic newspapers only, thus expecting to increase the number of titles by 25% thanks to the money spared.<sup>7</sup> In 1994 only 306 magazines were available on the Internet and only a few of the scientific publications had text and graphics, whereas today there are thousands of them.

The hopes that magazines would migrate to the Web were almost immediately shaken, as access to the on-line editions of major publications depended on a high subscription fee. Quite paradoxically, during the first years of the digital revolution of "free information", libraries were forced to pay more for scientific magazines than they used to do in the past, as they normally had to purchase two versions of the same magazine.<sup>8</sup>

It did not take long for the scientific community to react. Among the most important initiatives that can be placed under the most celebrated open access<sup>9</sup> label is the Open Archives. Open Archives are digital databases where standard articles can be stored alongside with preprints - articles that have not been published in scientific magazines, yet. This system does not aim at eliminating traditional magazines, on the contrary, their role in coordinating the peer review is legitimised.

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<sup>5</sup> P. Tamber, *Is scholarly publishing becoming a monopoly?*, BMC News and Views 2000

<sup>6</sup> M. Rambler, *A New Solution to the Journal Crisis*, in *The Journal of Electronic Publishing*, December-January 1999 <http://www.press.umich.edu/jep/04-03/rambler.html>

<sup>7</sup> D. Butler, *op. cit.*

<sup>8</sup> T.J.Walker, *op. cit.*

<sup>9</sup> P. Tamber, F. Godlee, P. Newmark, *Open Access to peer-reviewed research: making it happen*, *Lancet*, 362, 2003

Another initiative aimed at supporting the circulation of scientific information is *SPARC*<sup>10</sup> (set up in 1998 with the slogan "Returning Science to the Scientists."), a network of libraries and research institutions from all over the world. The goal is to encourage scientists to create magazines that will compete directly with the expensive ones. We must also mention *PubMed Central*,<sup>11</sup> founded by America's National Institutes of Health, a centralised digital library with free access to already published articles in the sector of life sciences, essentially a complete version of the older *PubMed* that deals exclusively with abstracts.

Other initiatives have gone so far as to suggest the total elimination of any charge to have access to articles. Among these radical attempts the most popular is the *Public Library of Science*.<sup>12</sup> The history of *PLoS* began at the end of 2000 with a document signed by 30 thousand researchers from 180 countries asking their publishers to allow free access to all scientific works a few months after publication. The publishers did not respond positively and *PLoS* supporters decided to pass from a "paying-to-read" to a "paying-to-publish" strategy. The objective is to create new magazines whose publishing and peer review costs are paid for by the scientists themselves through the financial support of the institutions they work for. Thus, in October 2003 *PloS Biology* was created and by mid-2004 *PloS Medicine* will be launched. This will lead to the creation of free high-quality magazines that compete with the already existing ones. Foundations such as Wellcome Trust<sup>13</sup> stated that they are willing to cover the sum (1500 dollars) required for the publication of each article written by researchers lacking the necessary funds.

These initiatives have been only recently implemented and are still at an experimental level, that is why it is not possible to predict which of these models will eventually prove successful. Within the scope of free circulation of information, the scientific community seems to be considering the possibility of defining new methods for the development of scientific knowledge or confirming the old ones.

*Translated by Eurologos-Trieste*

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<sup>10</sup> <http://www.arl.org/sparc>

<sup>11</sup> <http://pubmedcentral.nih.gov/>

<sup>12</sup> <http://www.plos.org/>

<sup>13</sup> <http://www.wellcome.ac.uk/>