

EDITORIAL

The end of printed *reprints*

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The development of personal computers and Internet has produced important changes in the way that scientific information is distributed, but had little effect on the way it is written and interpreted. For example, a five-year study comparing patterns in biomedical journals showed that Internet's impact on the structure of scientific papers and on the publication of printed editions was much lower than expected (Delamothe 2002).

The greater changes are still theoretical. Radical changes include the elimination of intermediaries and the absence of a "final version" (Delamothe 2002). According to the "no-intermediary" model, journals could disappear, and with them would also disappear the huge business they represent for companies such as Elsevier, Springer and Pergamon (Abbasi *et al.* 2002). In this scheme, researchers would simply publish and would communicate directly with the public in a model still more radical than BioMed Central (www.biomedcentral), an organization that has begun to publish papers without previous scientific editing (Delamothe 2002).

This model has been criticized because it would expose readers to low scientific quality reports; the reason: lack of the peer-reviewing that traditionally distinguishes scientific journals (Abbasi *et al.* 2002). The danger of this model in fields such as health is obvious. Currently there is a large amount of free, incorrect information in Internet, but professionals know that they must limit themselves to academic websites for reliable information.

The other radical change, the non-existence of a definitive version in the form of printed journals and reprints, refers to the publication of scientific papers in Internet. These can be corrected and expanded at any time, so there would be no final version, in contrast with traditional printed material (Delamothe 2002). This option has ethical problems because it would allow authors to hide errors and evade responsibility. It is more likely that there would be a procedure to add marginal notes to correct errors in Internet reports, thus maintaining a record of changes, as befits a scientific publication. This possibility is not exclusive of Internet: the printed literature has had this option for centuries, with the publication of "corrected and enlarged" editions, albeit it is more common in books than in journal articles.

Nevertheless, the last decade has seen smaller changes that can be attributed to Internet. These include hyperlinks to find additional information with a single "click", raw data files -in journal web sites- that anybody can download for new analyses, fast and cheap exchange of comments and replies between readers and authors, short printed versions complemented by longer electronic versions, inclusion of sound and movement when these are needed to transmit the scientific information (Delamothe 2002) and the substitution of printed reprints with electronic reprints in HTML (Hypertext Markup Language) or, more frequently, PDF (Portable Document Format) format. HTML is public domain

technology and can be read with many free programs such as Netscape, Opera and MS Explorer (Explorer will probably stop being free in the future).

PDF is the most popular option because it conserves the graphic lay-out of the document, despite the fact that it is not a public domain program. PDF belongs to the American company Adobe, which allows free use of the reader software (Acrobat reader) but sells the program needed to generate PDF (Acrobat). This is considered a danger because it has the potential to create a commercial monopoly controlling scientific communication if the company could charge for any use of PDF in the future. Nevertheless, there are currently free programs that generate (*e.g.* PDFCreator, PDF995, 602PCSuite) and read PDF (*e.g.* PDF Reader OCX; see web addresses under References).

In the middle of the previous century, the *Revista de Biología Tropical* sent 25-50 free reprints to its authors. In 1998 the number was raised to 75 with two goals: to facilitate the distribution of new knowledge published in the journal and to reduce the number of requests for additional reprints, which were expensive (the real cost was never covered by the fee charged to authors). Despite this practice, authors from organizations such as the Smithsonian Institution, which normally sends about 250 reprints to a pre-established list of institutions and specialists, continued to pay for additional reprints during all these years.

The publication and distribution of paper reprints has disadvantages. Paper production technology has negative environmental effects (paper factory refuse damage in Lake Baikal is a well publicized example) and its transportation depends on fossil fuels. In addition to this, paper reprints need weeks or months to arrive through the mail. In contrast, electronic reprints can be sent anywhere in the world in seconds and for a very low cost.

After considering all of the above, we sent a survey to our authors (Monge-Nájera *et al.* 2003) and most answered that they prefer electronic reprints (Fig. 1). Beginning July, 2004, the *Revista de Biología Tropical* will no longer provide printed reprints to authors and will send them electronic reprints that they can distribute at will. These reprints will be provided free of charge for as long as possible, because it has been found that papers for which more reprints are distributed receive more citations (Drenth 2003). We hope that our authors will take full advantage of this technological innovation to email their reprints to all the people who can have some interest in their work. In this way, research in the important area of tropical biology will be appreciated, cited and used by a wider public, benefiting the study and the conservation of the tropics.

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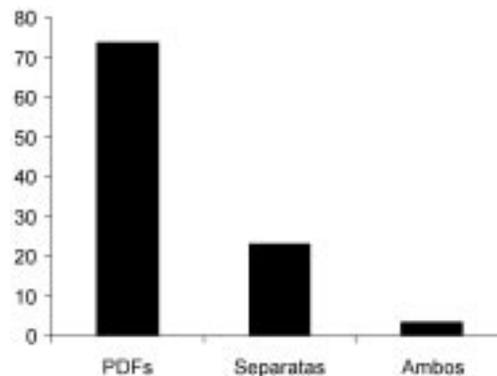


Fig. 1. Proportion (%) of surveyed researchers who said that they preferred digital reprints (PDF), traditional printed reprints or both (sample: 152 tropical researchers).

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