

(180–181) Report of the Special Committee on Electronic Publishing with two proposals to amend the Code

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At the XVI International Botanical Congress in St. Louis in 1999, a “Special Committee on Electronic Publishing” was re-established (Barrie & Nicolson in *Taxon* 50: 893–896. 2001) with a charge to report to the XVII International Botanical Congress in Vienna in 2005 on the impact of electronic publishing on the *Code*. This followed approval of Gen. Prop. A, which authorized continuation of the Electronic Publications Committee established at the Tokyo Congress (Englera 20: 17–18. 2000).

The convener was K. Wilson (NSW, Australia), the secretary R. Zander (MO, U.S.A.), with J. McNeill (E, U.K.), Rapporteur-général, and F. Barrie (F, U.S.A.), Secretary of the General Committee, as ex officio members. Committee members (additional to the convener and secretary, and restricted to those actually voting) were B. Baum (DAO, Canada); A. Chapman (CRIA, Campinas, SP, Brazil); M. Crosby (MO, U.S.A.); T. Daniel (CAS, U.S.A.); E. Farr (US, U.S.A.); N. Hind (K, U.K.); V. Hollowell (MO, U.S.A.); P. Kirk (IMI, U.K.); J. Kirkbride (USDA U.S.A.); P.-A. Loizeau (G, Switzerland); R. Moe (UC, U.S.A.); A. Orchard (A.B.R.S., Canberra, Australia); P. Philipson (RUH, South Africa); D. Triebel (M, Germany); and J. Zarucchi (MO, U.S.A.). The acronyms are the herbarium abbreviations from *Index Herbariorum* (<http://www.nybg.org/bsci/ih/ih.html>).

The Report of the previous Committee (Zander & Wilson in *Taxon* 47: 175–177. 1998) to the St. Louis Congress examined, among others, the following important questions:

1. How can an electronic publication be archived in a form that will remain readable by future hardware and software?
2. How can an original version be protected from changes?
3. How can each publication be uniquely identified for access purposes?

The Report indicated that these questions were being answered by librarians, archivists, and publishers, in concert with computer experts, but the solutions had not yet been widely implemented. Time was needed for those with appropriate expertise to formulate long-term guidelines. The Committee recognized that the pace of biodi-

versity loss demanded that nomenclatural publication be facilitated, but most members thought that it was premature to allow electronic publication of new names. Several proposals for possible interim solutions were put forward (Greuter & Hawksworth in *Taxon* 48: 69–128. 1999), but these were not accepted by the St. Louis Congress as changes in the *Code*.

The members of the St. Louis incarnation of the Committee included practising botanists, librarians, and database experts. Many subjects were discussed including archiving, databases, digital longevity, effective publication, indexing centres, leaving full responsibility for e-publication to journal publishers and editors, possibility of malicious or inadvertent modification, notification and registration, PDF/X and other formats, CD-ROM and DVD form factors, the fact that registration and databasing are different problems from the Committee's charge, and whether to require two or more hardcopy depositions, and a transition period. The discussions included extensive exchange of WWW URLs as links to various up-to-date, technical expositions on aspects of electronic publication.

Preliminary ballots demonstrated that most of the Committee agreed that the time has come for the *ICBN* to permit electronic publication of new names. Only three of the 14 voting were fully against electronic publication at this time. Of the 11 positive voters, however, there was no clear agreement on means of publication, with 6 voting support for WWW journals only, 2 for distributable media (compact discs) only, and 3 voting for both WWW journals and distributable media. The lack of general agreement on one recommendation may be because the Committee was not a random subsample of systematists, but a group with strong and disparate visions. Despite the split, the overwhelming agreement on the part of the Committee was that the time for effective publication of new names in electronic media has arrived. So it was suggested as a compromise that one Web proposal and one distributable media proposal, each thought to have a good chance of approval, be included with this Report as Committee Proposals. The vote of support for this compromise (with 17 voting) was 13 yes and 4 no, which is sufficient to support a change in principle by a 76% majority. If both proposals given below

are accepted by the Congress, the Editorial Committee can combine them with appropriate wording.

Before addressing the pros and cons of these proposals, arguments against allowing electronic effective publication need to be addressed:

(1) *Electronic media are relatively impermanent in taxonomy's time frame.* **Response to this argument:** It can be pointed out that, as with digital media, sulphite paper and xerocopy toner both degrade over time, while distributable media (CD-ROM, CD-R, CD-RW and DVD discs) now have rather long shelf lives (Besser at <http://www.nedcc.org/digital/ix.htm>), and, for the nonce, Web publications can be archived in hardcopy or as distributable media until librarians archive Web publications as a matter of course.

(2) *It is easy to make modifications or new versions incorporating small but significant changes to electronic files.* **Response:** Pending widespread implementation of protection from modification such as digital certificates and signatures, present Web journal publishers and Web-based distributors can be relied on to archive unmodified copies;

(3) *New electronic publication standards will arise, perhaps combining the best of PDF and XML file formats.* **Response:** Certain protocols and media are now entirely standard and non-proprietary, including the ISO PDF/X file format (see discussions by Adobe at www.adobe.com/products/acrobat/pdfs/pdfarchiving.pdf and ANSI at www.npes.org/standards/ISO/ISOBulletin-PDFX-Jan02.pdf), and compact and DVD discs.

(4) *Effective electronic publication is unnecessary:* The old argument that paper publication restricts distribution of information is obviated by the fact that many hardcopy systematic journals now provide electronic reprints, and these are widely distributable and searchable on the Web, e.g., of a total of ca. 10,000 electronic journals (mostly parallel-published) worldwide (Maclenan in J. Electronic Publishing 5(1), 1999 <http://www.press.umich.edu/jep/05-01/macclennan.html>), the University of Guelph library provides full text WWW access to electronic versions of 105 parallel-published botanical journals. **Response:** Provision should be made for the increasing number of journals that now are entirely electronic, this probably being the way of the future for data-intensive scientific publication (Lenaes at www.ala.org/Content/NavigationMenu/ACRL/Events_and_Conferences/lenares99.pdf; Mari Mutt in Caribbean J. Science, 35: 160–164. 1999), and for additional discussion see Journal of Electronic Publishing <http://www.press.umich.edu/jep/>.

(180) New proposal permitting effective publication in electronic journals on the WWW with PDF.

Add to Art. 29, a new paragraph, Art. 29.2:

“29.2. Effective publication on or after 1 January 2006 may be in electronic format in an all-electronic journal (i.e., a journal not formally issuing a paper version) if the following criteria are met: (1) the journal must have its own ISSN number, (2) it must publish on the World Wide Web, (3) identical copies (electronic or both electronic and paper) must be deposited by the author or the journal in three libraries accessible to botanists generally and the identity of such libraries must be cited in the publication, (4) the date of publication must be cited in the publication, and (5) the publication must be in Portable Document Format (PDF), preferably following the ISO PDF/X specification. Effective publication in such all-electronic journals is by the online electronic version, not by any paper issues no matter when issued, which are considered later publications or reprints, nor by electronic forms other than the World Wide Web such as CD-ROM's.

Note 1. Subscription to the all-electronic journal by a library will be equivalent to deposit of a copy.”

In consequence Art. 29.1 must also be changed to read (changes in *italics*):

“29.1. Publication is effected, under this *Code*, only by distribution of printed matter (through sale, exchange, or gift) to the general public or at least to botanical institutions with libraries accessible to botanists generally, *or electronically as provided by Art. 29.2*. It is not effected by communication of new names at a public meeting, by the placing of names in collections or gardens open to the public, by the issue of microfilm made from manuscripts, typescripts or other unpublished material, [*'by publication online,'* deleted] or by dissemination of distributable electronic media.”

and Art. 31.1 changed to:

“31.1. The date of effective publication is the date on which the printed *or electronic* matter became available as defined in Art. 29 and 30. In the absence of proof establishing some other date, the one appearing in the printed *or electronic* matter must be accepted as correct.”

Discussion:

Several new all-electronic scientific journals that could benefit science in being able to effectively publish new names are now available only on the WWW. These include *Insight* <http://www.mpm.edu/cr/insight/insighthome.html>; *Palaeontologia Electronica* on the World Wide Web <http://palaeo-electronica.org/>; and *Phyloinformatics* <http://phyloinformatics.org/index.php>. Generally, the number of electronic journals increased 15-fold between 1991 and 1996 (Mari Mutt in Caribbean J. Science, 35: 160–164. 1999), with almost 2500 all-electronic journals in 1997 (Lenaes at www.ala.org/Content/NavigationMenu/ACRL/Events_and_Conferences/lenares99.pdf). During the next seven years (from the

publication of this Report in *Taxon*) until the Congress following that in Vienna, many more journals will appear only in electronic form. One positive element is that some of these journals can afford to be entirely free to subscribers. The requirement of deposition of copies at three cited libraries is a stopgap measure ensuring library-level archiving that may be repealed at a future Congress as electronic journals become widely and professionally archived. The PDF format is now quite standard for distribution of scientific electronic material on the Web, allowing exact reproduction of a virtual hardcopy with all hardcopy elements including pagination and quality illustration in a single file; all journals now available as reprints on the Web are offered at least in PDF format, as well as HTML and proprietary (usually faster loading) formats. The ISO PDF/X protocol is public domain and is widely used in commerce, especially in the advertising business.

(181) New proposal permitting effective electronic publication by Compact Discs (CD-ROM, CD-R, CD-RW) and DVD discs.

Modify Art. 29.1 (changes in *italic*):

“29.1. Publication is effected on or after 1 January 2006, under this *Code*, only by distribution of printed matter *or by dissemination of distributable electronic media, namely compact discs (CD-ROM, CD-R, and CD-RW) and DVD discs* (through sale, exchange, or gift) to the general public or at least to botanical institutions with libraries accessible to botanists generally. *For a name to be effectively published through electronic media, the medium must have been produced in an edition containing simultaneously obtainable copies by a method that assures numerous identical copies, and it must contain a statement by the author that any new name or nomenclatural act within it is intended for publication under provisions of Art. 29.1 Of the Code, and is intended for permanent, public, scientific record.* It is not effected by communication of new names at a public meeting, by the placing of names in collections or gardens open to the public, by the issue of microfilm made from manuscripts, typescripts or other unpublished material, or by publication online.

Note 1. Publications of names in an electronic journal are effectively published only through dissemination of printed copies, or electronic media as laid out in the provisions of Art. 29.”

In consequence, Art. 31.1 must be changed to:

“31.1. The date of effective publication is the date on which the printed *or distributable electronic* matter became available as defined in Art. 29 and 30. In the absence of proof establishing some other date, the one appearing in the printed *or electronic* matter must be accepted as correct.”

Discussion:

This would permit publication on CD and DVD discs, which are now standard media for long-term archiving of digital information (Erlanger in *PC Magazine* 63, January 20, 2004), and is a minimum implementation that will allow us to examine where the technology is likely to advance in on-line publication and archiving in the future. As to aspects of archiving distributable media, at present we do not have provisions for printed publications to be published on archival paper, with archival inks, etc., and some of these could easily be unreadable in quite short periods. We should not try to force archival provisions onto CD-ROMs, and DVDs that we do not require for print. Gold-dye CDs are reputed to have a life of at least 100 years, and it is far easier to maintain copies by reproducing them than it is to continually reprint printed copies in archival form. This Proposal also brings the *ICBN* into line with similar provisions of the most recent (fourth) edition of the *ICZN* (International Commission on Zoological Nomenclature 1999).