

Conference Proceedings at Publishing Cross-Roads

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2003

SUMMARY: The potential intrinsic to electronic publishing provides conference conveners with the opportunity to position the papers presented to greater advantage of both authors and readers. Unfortunately, conference papers are being increasingly published in the most expensive vehicle, the formal peer-reviewed journal. This circumstance is counter-productive to the legitimate role of conference papers in scholarly communication. The experience at Caltech in electronically publishing the proceedings of an international conference shows that conference papers can be more effectively published online at significantly less cost thus increasing dissemination and access.

KEYWORDS: Conference proceedings, scholarly communication, publishing, peer-review, journal subscription costs, Elsevier, priority, E-Prints, digital repositories, Open Archives Initiative, electronic publishing, Caltech, cavitation

Role of Proceedings in Scholarly Communication

Scholarly communication consists of a multitude of vehicles to achieve different purposes. There are peer-reviewed articles; there are letters and notes; there are technical reports and preprints and there are conference papers. So much attention has been paid to

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the peer-reviewed article genre of late that any discussion regarding the dissemination of conference proceedings papers has electronically been nearly drowned out. Yet, as sci-tech librarians know, conference papers remain an integral part of the scholarly communication process. After all, Malinowsky wrote "Papers ... at ... meetings are original; very often they formulate hypotheses and syntheses of the first order of importance. Thus ... they constitute primary sources. They are perhaps not of equal significance to the periodical article or the technical report, but still their import cannot be denied."²

The fundamental purpose of conferences is the exchange of new research results with the opportunity for immediate peer input. There's no substitute for a conference to energize creative thinking and new research approaches. Specialists and students gather together and create synergy, a natural result of direct human interaction. Tangible excitement of discovery, and learning and unfettered exchange of ideas is the lifeblood of conferences and no active researcher can maintain momentum or energy without such participation. Indeed, scientists are known to bemoan the proliferation of conferences while at the same time recognizing the proceedings as valuable.³ In his paper ten years ago, Barschall appeals to his colleagues to hold fewer conferences so that resources could be applied in a more concentrated fashion. Fewer conferences would lead to higher attendance and fewer proceedings to publish would reduce costs while increasing coverage for libraries.

² H. Robert Malinowsky, Richard A. Gray, Dorothy A. Gray, *Science and Engineering Literature*, 2nd ed. (Littleton, CO: Libraries Unlimited, Inc., 1976). p. 30.

³ Henry H. Barschall, Willy Haeberli, "What's Wrong with These Conferences?," *Physics Today*, no. December (1992). p. 79.

That was ten years ago and the problem remains. In fact Barschall's parting recommendation is that organizers of conferences "will examine the need for publishing proceedings and that, if they do wish to publish proceedings, they won't publish them in a journal unless libraries have the option not to purchase the proceedings."⁴ Quite the opposite has occurred. The inclusion of conference papers in pre-paid journal subscriptions is becoming the rule. Allen⁵ describes the vicious circle very clearly. Science libraries have less discretionary funding for books or any singly purchased items because the serials or journals budget commands an ever-increasing portion of the available funds, particularly in science libraries. Libraries purchase fewer monographic proceedings, and publishers respond by including proceedings in the journals to reach a guaranteed market, much larger than the conference on its own might attract. Conferences also provide an automatic theme, probably a "hot" one at that, for the journal, which is another marketing plus.⁶ While it may be a good business decision and makes money for the publisher, it is not good for the information exchange necessary for quality research.

⁴ Ibid. p. 81

⁵ Robert S. Allen, "The Magnitude of Conference Proceedings in Physics Journals," *Special Libraries*, no. Spring (1995). p. 142

⁶ Ibid. p. 143. Allen points out the very real fair-use problems with this kind of packaging. Whole issues cannot easily be borrowed or otherwise acquired through interlibrary loan.

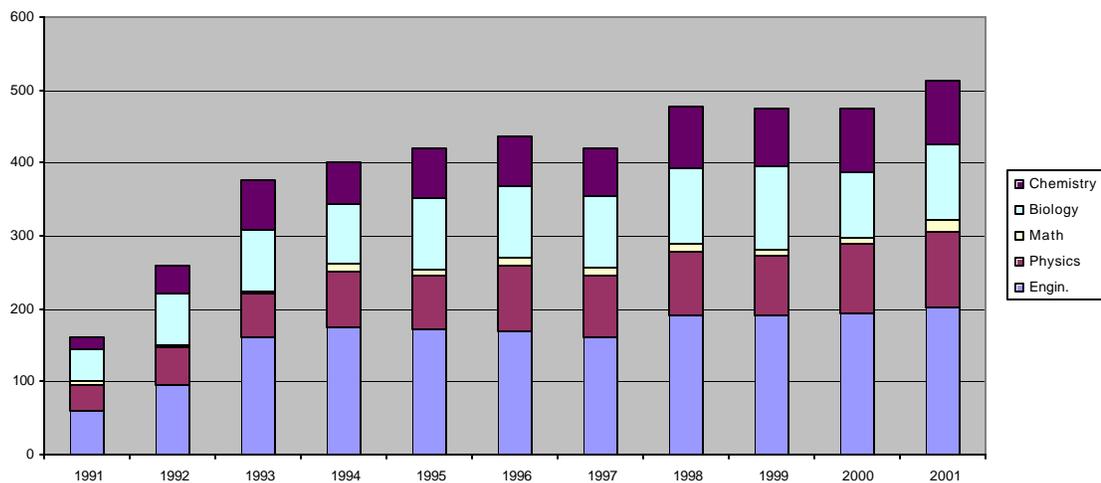
Access to Proceedings in Library Catalogs

It has been policy for many years at Caltech to add entries⁷ or “analytics” to the library’s catalog for conferences that appear in research journals. Conferences have been of sufficient interest to the Caltech community to warrant this extra work for two reasons: 1) Conferences generally remain illusive and difficult to track down and 2) Indexing services were not reliable in describing the conference content of a journal. In addition Caltech adds a fixed field code to cataloging records to indicate whether the item described is a conference publication. This is done primarily to aid discovery in the online catalog. Journals at Caltech are housed roughly by subject orientation: biology, chemistry, physics, math, and engineering creating a workable subject breakdown for studies of this kind. While Caltech is not a member of the Association of Research Libraries, it is most certainly a major research university for the sciences and its journal collection responsibly and consistently reflects the publishing record in those areas.

When a study (See Figure 1) of the presence of conference proceedings in the Caltech Libraries collection over the last ten years was conducted, we found that the publication of conferences in the science and engineering journal issues had grown 221% in the years from 1991 through 2001. This increase has occurred most severely in the subject areas of the most expensive journals and where the commercial publishers have the greatest presence, namely biology and chemistry. The greatest growth has been in chemistry with a change of 450%.

⁷ Dana Roth, "Extending the Online Catalog," in *Questions and Answers: Strategies for Using the Electronic Reference Collection, Clinic on Library Applications of Data Processing* (Urbana-Champaign: Univ. of Illinois, 1987). p. 36.

FIGURE 1: Number of Conferences published in Research Journals held at the Caltech Libraries



Proceedings and Peer-Review

This is a rather startling revelation since publishers and authors alike argue that the peer-reviewed journal is the sacred bearer of the highest quality papers.⁸ Again Barschall commented that “a referee report on a conference contribution is a rare occurrence...Conference proceedings are intended to be a record of what was actually presented at the conference. Hence altering a paper in response to a referee report, while desirable for an ordinary journal article, is not really appropriate for a paper in conference

⁸ Alma Swan, Sheridan Brown, *Authors and Electronic Publishing : The Alps Research Study on Authors' and Readers' Views of Electronic Research Communication / Alps* (West Sussex, UK: The Association of Learned and Professional Society Publishers, 2002).

proceedings.”⁹ Tagler at Elsevier even commented that not all papers at a conference are necessarily published.¹⁰

Chemistry librarians have been particularly active in questioning the role of conference papers inside the covers of peer-review journals.¹¹ This issue has primarily arisen due to the extraordinary costs of those journals.¹² No consumer can continue to absorb double-digit annual price increases without investigating the reasons for the increase or the value of the product. The issue of conference papers appearing in peer-reviewed journals is certainly pertinent to both.

The exchange between the chemistry librarians and the editors of the *Journal of Molecular Structure*¹³ regarding the appearance of conference papers in that journal and the added comments by the publisher¹⁴ is notable for the emphasis by all parties on “peer-review.” The librarians claim that conference papers are not peer-reviewed and the editors and publisher claim they are. The librarians use impact factor analysis as an attempt to apply an objective measure. The editors claim it’s irrelevant because they know their community. Who can properly evaluate? For the International Congress on

⁹ Barschall, "What's Wrong with These Conferences?." p. 79-81

¹⁰ John Tagler, "204.1 Reply: Newsletter on Serials Pricing Issues, No. 200," *Newsletter on Serials Pricing Issues*, no. 204 (1998). said this with the intent of providing support for the peer-review of these papers. In other words, not all the papers of a conference pass muster.

¹¹ Dana Roth, "200.4 Elsevier's Conference Proceedings in Journals," *Newsletter on Serials Pricing Issues*, no. 200 (1998), Dana Roth, listserv posting to Reedelscustomers-L maintained at University of Texas at Austin, Dec. 19, 2000. and Bernd-Christoph Kaemper, listserv posting to Reedelscustomers-L maintained at University of Texas at Austin, Dec. 12, 2000. and Dana Roth, "239.1 Librarian's Concern About Content of Journal of Molecular Structure," *Newsletter on Serials Pricing Issues*, no. 239 (1999).

¹² Joseph J. Branin, Mary Case, "Reforming Scholarly Publishing in the Science: A Librarian's Perspective," *Notices of the AMS* 45, no. 4 (1998).

¹³ Austin Barnes, "239.3 Professor Barnes' Response to Librarians," *Newsletter on Serials Pricing Issues*, no. 239 (1999), Jaan Laane, "239.2 Professor Laane's Response to Librarians," *Newsletter on Serials Pricing Issues*, no. 239 (1999), Roth, "239.1 Librarian's Concern About Content of Journal of Molecular Structure."

¹⁴ Tagler, "204.1 Reply: Newsletter on Serials Pricing Issues, No. 200."

Peer Review in Biomedical Publication , Drummond Rennie notes in 2002 that what he described in 1986 as a system with “scarcely any bars to eventual publication” continues to be true.¹⁵ And that is from a group that is pro-actively working on open peer-review standards. The situation in other disciplines lacking a comprehensive and systematic review of the review methodology cannot be much better. One might reasonably conclude that though there is a consensus that “peer-review” is a quality criteria; it exists primarily as an ideal, not a quantifiable measure. Business needs can easily and quickly trump any ideal.¹⁶

Librarians and authors both know that any single research result is described and communicated through multiple vehicles. The general understanding has been that a published conference paper is, in fact, the paper presented at the conference.¹⁷ Surely that is the expectation of the readers and the librarians. After a conference presentation and ensuing Q and A, the author re-works the paper for submission to a peer-reviewed journal. The resulting published paper then reflects the value-add of peer critique and editorial treatment. The conference paper gets the word out; it forms the basis for a discussion. The peer-reviewed paper is the matured and tested description and analysis.

The most benign interpretation of this trend to publish conference papers in journals is to interpret it as yet another convergence phenomenon in the electronic information age. In order to make the content of a published journal compete with pre-print servers,

¹⁵ Drummond Rennie, "Fourth International Congress on Peer Review in Biomedical Publication," *Nature* 287, no. 21 (2002).

¹⁶ Instructive here is a look at the Morgan Stanley report, *Scientific Publishing: Knowledge is Power* (September 30, 2002) on Reed Elsevier as an investment opportunity.

¹⁷ Even Barschall 1992 reports the basic expectation that a published paper from a meeting or conference is the record of what was presented there and then.

news journals, and author web-sites, the publisher goes after the conference papers. Inclusion of new information in as timely a manner as possible (albeit after nearly a year delay in some cases) also puts the journal on the leading “news” edge. In turn the authors can show peer-reviewed papers for their work. Allen speculated that the necessity of rapid publishing “might be the driving force behind less rigorous reviewing of conference-derived papers that appear in journals.”¹⁸ One might ask, “Do proceedings, formally published in print, continue to serve the research community?” They do not. The primary reasons are: 1) excessive cost which creates access barriers and 2) a significant delay in distribution, which is contrary to the whole purpose of a conference.

Interestingly, since authors and publishers alike vigorously support adherence to traditional scholarly publishing (e.g. the peer-reviewed article journal) should they not then also logically argue that conference papers be published ad hoc, on the web **before** the conference convenes? This would make a clear distinction between the conference paper and the peer-reviewed paper. It would establish priority for the author with probably the earliest time-stamp.

The exchange and sharing of research results is critical to the scientific method and is a recognized core value.¹⁹ Certainly since Robert Merton’s studies in the forties²⁰, this core principle in research has been formally acknowledged. We also know that historically, research journals began as an exchange commodity between mutually

¹⁸ Allen, "The Magnitude of Conference Proceedings in Physics Journals."

¹⁹ Mark S. Frankel, *Seizing the Moment Scientists' Authorship Rights in the Digital Age: Report of a Study by the American Association for the Advancement of Science* (Washington, D.C.: American Association for the Advancement of Science, 2002).

²⁰ Robert K Merton, "Science and Technology in a Democratic Order," *Journal of Legal and Political Sociology* 1 (1942).

interested organizations. This “exchange” behavior continued formally in research libraries well into the 1970’s and remains alive to this day within well-defined small communities of interest

In 2001 the Caltech Libraries had the opportunity to publish the contributed papers for an international conference that was held on the Pasadena campus. The conference convener, a professor of Mechanical Engineering, required that the “publishing” be electronic and that the papers be available online before the conference dates. The object was to make the most of participants’ time by creating a convenient and easy to use web site and to maximize distribution of the authors’ work. At the same time costs were to be kept to a minimum. Certainly printing and mailing of paper products would be eliminated.

The Caltech Library System was already developing digital collections within the Open Archives Initiative compliant system, E-Prints, developed by Steven Harnad’s group at the Univ. of Southampton in Great Britain. The conference papers were a first excursion into creating a “born” digital repository.

Cavitation 2001(<http://cav2001.caltech.edu>) ²¹included 110 papers submitted from 18 different countries world-wide. Authors came from Asia, Eastern Europe and the Mid East. Though small, this conference represented the full spectrum of Internet access and use around the world. The conference conveners produced most of the publicity for the conference by email and on the Internet. As preparations proceeded linked webpages

²¹ Anne M. Buck, Richard C Flagan, "The Scholar's Forum Debuts," *On the Horizon: A scholarly publication that focuses on the future of postsecondary education*, no. Nov/Dec. (2001). provides additional description of the project.

were added, enriching the main site located at another university, University of Michigan. Authors submitted abstracts to the conveners who reviewed them by standard email methods. Eventually a list of approved papers and abstracts was prepared and submitted to the library staff that then invited the authors to submit their papers directly into the digital library system. Once submitted, library staff reviewed the format and useability of the document's format and added or edited necessary metadata before final acceptance and release for general use. About 10% of the papers required resubmission from the author due to formatting issues. Most of the papers were submitted in pdf format (65%); another 30% submitted in pure LaTeX that had to be rendered in pdf and a few papers were submitted in MSWord. While there were a few formatting problems, overall any difficulties that arose were far fewer than expected. The authors were clearly conversant in preparing their documents. A few authors had network bandwidth problems and resorted to email attachments as the method of submitting their papers. Work on creating the repository began in April 2001 and by the end of May, nearly all papers had been submitted.

Library staff spent nearly 200 hours on this first time effort, which included a certain amount of trial and error learning. Journal publishers report that a peer-review paper will generally cost at least \$1500 to produce. In some cases of purely electronic journals, it is said to cost \$500/paper. Paul Ginsparg²² points out that such costs are not sustainable. There isn't enough funding in academia to continue to pay these and even

²² Ginsparg's presentation at the SPARC Institutional Repository Workshop in Oct. 2002 included data, verbally presented, that peer-review publishing ranges from \$500/paper to even \$5,000 per paper. In contrast the XXX preprint server puts the cost per paper at less than \$1, including "archiving."

higher costs for certification, much less publishing and distribution of an ever-increasing body of literature. The Caltech experience showed that it was definitely possible to generate useable and accessible material at a much lower cost. The Caltech costs were under \$100 per paper; a cost that would be reduced by at least one-half in a repeat effort. Enhancements to the E-prints software would further eliminate more of the currently necessary human interventions.

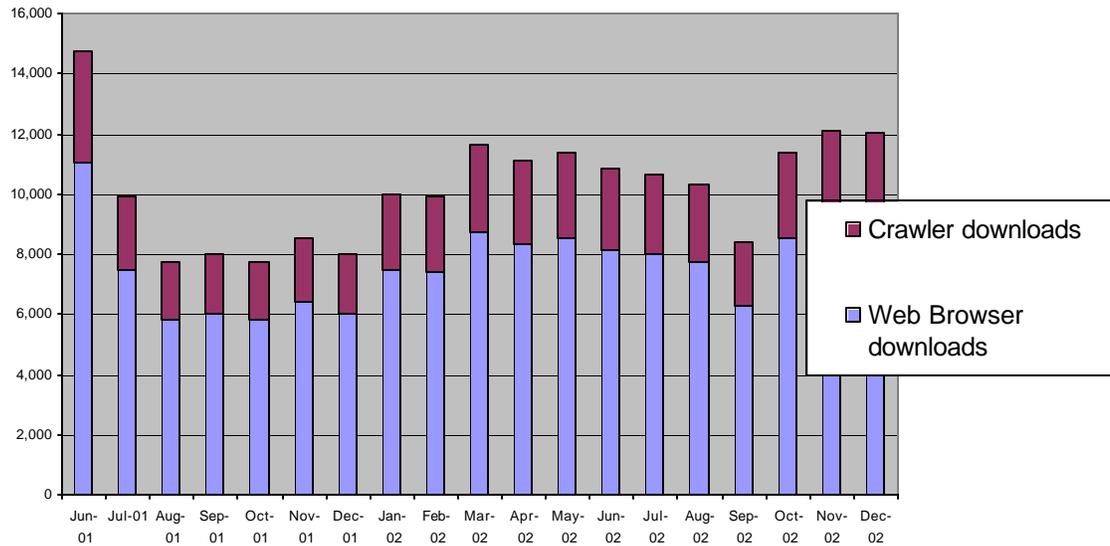
One might argue that the *CAV 2001* proceedings online is limited to the presentation format only and therefore has not risen to the level of sophistication required for guaranteed archiving. Though the first statement is true, the environment is in constant flux and archiving solutions will be implemented as they become more standard and available. For the purposes of this paper it is important to recognize that the material was up, useable and ready for the participants before the conference and the content remains there now, available to the entire world.

Now consider the return on investment. Even now, 18 months after the conference was held, there are over 7,000 human hits on the conference site per month as measured by pdf downloads from Web browsers that comprise 87% of the total accesses over this time period (See Figure 2). Contrary to other experiences, web browsers far outstrip the accesses by web crawlers and other harvesting 'bots. The number after initially falling off from a peak of about 11,000 during June 2001 to 6,000 in the summer months of 2001 continues to grow much to everyone's amazement.²³ Without a doubt, the group of

²³ The Conference convener made this comment in Sept. 2003.

researchers who participated in this conference will not conduct their conference without mounting the papers openly on the Web. The success has been overwhelming.

FIGURE 2: CAV2001 PDF Downloads by Type of Access



A look at the access logs reveals that many industrial sites, military facilities and education organizations around the world are making regular use of these papers. This stands to reason. Cavitation is a fluid mechanics phenomenon in which water flowing at high speeds creates bubbles that in bursting against surfaces pit and damage adjacent surfaces. Turbine and pump designs must address this engineering challenge. The invited lectures, informative review papers for the most part, are the most visited. An important note is that many of these site visitors are from organizations that are unlikely to have license agreements for access with major publishers. Given that this conference was the fourth in a series and that the earlier three conferences are relatively unknown, this usage speaks volumes for the benefit that unfettered access to conference papers

allows. Depending on a researcher's needs the ready access to a conference paper could, in fact, drive more interest in the peer-reviewed version. For authors who want to have their work recognized and used, there is simply no comparison between an article openly available on the Internet and another that is closely controlled by a publisher, as authors are beginning to notice.

It is incomprehensible that in this day and age, with the maturity of the web and the increasing ubiquity of access, that conference papers would continue to be printed at all much less primarily in the formal journal literature. The web is the perfect place for conference papers. They can be viewed by everyone; they can be openly commented on. They create documented attribution establishing priority for authors. They provide an opportunity for any conference convener to "use the web to its full potential"²⁴; to enhance scholarly communication world-wide, all in preparation for the formal paper in peer-review journals.

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²⁴ Euan M. Scrimgeour, "Rough Guide to Organising a Medical Congress," *Lancet (North American edition)* 358, no. 9296 (2001).

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