

Of Conferences and Reviews

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Ever since Chauncey Leake first introduced me to the value of reviews more than 20 years ago, I've noted the regularity of published statements that more reviews should be written. I don't think I need bother to cite here any of the vast literature on the subject.

I've found that most discussion of reviews assumes that the best reviews are the work of individual authors. As the publishers of the *Annual Reviews* series and similar publications appreciate, it has always been difficult to find willing and qualified review writers. It takes a special patience and intellect to do a good review. Even the first step of defining the area and the limits of subject matter, is a formidable task. It may indeed be the most difficult step, as well as the most important.

Price has speculated that about forty papers at the research front lead to a review paper.¹ Yet as many as 5% of all papers published today satisfy ISI®'s quantitative number-of-references criterion for inclusion in our *Index to Scientific Reviews*. The difference from the figure of 2.5% implicit in Price's hypothesis is probably due to overlap in subject matter and the citation of many papers by two or more reviews. Nevertheless, if one ignores the redundancy, and assumes that the average research front consists of eighty papers, why should it be so hard to find reviewers and reviews? The task of identifying, collecting, reading, digesting, and synthesizing the relevant material isn't the formidable job one imagines in terms of a large-scale review. Clearly,

Price's research-front summary—what I call a microreview—is not what most people have in mind when they think of a review. They are thinking of macroreviews or research monographs. In several recent articles Curtis Benjamin has been bemoaning the fate of monographs.² According to Benjamin the future of the monograph is dim. The market for single-authored monographs has declined, partly because there are so many of them and partly because there is increasing dependence on libraries and photocopies. I'm not sure I agree with all his assumptions.

What we are seeing, I believe, is a decline in the number of single-authored monographs or macroreviews, and an increase in the number of multi-authored 'monographs.' The latter take many forms. In recent years many have been the product of symposia and small conferences. Usually the proceedings of such single-topic conferences have taken so long to appear that authors felt pressured by 'publish-or-perish' to put the same information in journals. Once the conference proceedings finally appear, the volume is of interest mainly to the participants, and to them only for its archival value.

The failure of indexing services and library catalogs to cover such monographs chapter-by-chapter has buried much information, especially when authors don't duplicate their contributions in journals. We know of course from the *Science Citation Index® (SCI®)* that many of these conference papers eventually do get

cited, if by no one else at least by their authors. But this is a somewhat chaotic bibliographic situation. Thus, ISI has been planning for some time, and will launch in late 1976, a detailed index to scientific monographs, including published proceedings. Our initial effort will probably cover about 100,000 source-papers or chapters a year. It should be useful not only to *SCI* subscribers, but also to others who already recognize the need for better access to monographs though they may not yet appreciate the virtues of citation indexing. In a library I have visited in Germany, a major cataloging effort is devoted to such chapter-by-chapter indexing.

In *Current Book Contents*[™] we have been trying to improve current awareness of multi-authored monographs. We not only list the complete contents page, but also include each chapter's key title-words in our *Weekly Subject Indexes*. In 1976, I hope we'll be able to include this information in *ASCA*[®] (ISI's *Automatic Subject Citation Alert* system) and *ISI Tapes* as well.

All of this has been introduction, and not intended to remind you of ISI's various products. I want to discuss rather the idea that the writing of comprehensive reviews has or must become a cooperative multi-authored effort. A recent visit to the Dahlem Conferences office in Berlin has helped coalesce my thoughts on the subject. The Dahlem Conferences are sponsored by the *Stiftungsverband für die Deutsche Wissenschaft* (Donors Association for Promotion of Sciences and Humanities in Germany) in cooperation with the *Deutsche Forschungsgemeinschaft* (German Research Society). Dahlem's Director, Dr. Silke Bernhard, is trying to forge a new and indeed timely concept of the international conference and of review compilation. Certainly the idea of holding a conference of fifty experts on some special topic like circadian rhythm or the nature of seawater is not new. But

surely Bernhard's many years' experience in organizing the Schering Conferences has helped crystallize the idea that even a small conference should be something more than just a gathering of an invisible college where members present papers on their current research.

No one will dispute the fact that there are many excellent conference organizations and that they have produced many valuable monographs. Some names that come quickly to mind are Ciba, Wellcome, Cold Spring Harbor, New York Academy, Pugwash, Geigy, Engineering Foundation. I don't know whether they have been able to reduce publication time-lags to a few weeks or months. But that is what they must do if we are to get the reviews we are continuously reminded we need. All the modern means of producing printed materials quickly must be employed. Hopefully, all conference organizers will work towards that end.

Larger publishers like Elsevier, Pergamon, Plenum and others have produced many excellent proceedings volumes, but they have not yet been able to cut time-lags acceptably. The problem of scheduling in such large enterprises is certainly not trivial, but it can be managed.

In the meantime, small organizations like Dahlem can concentrate on one monograph at a time. As at Dahlem, such conferences must receive continuous direction from one or two highly motivated people who, with the help of experts like Bernhard, can give each conference a meaningful Gestalt. This will lead to a readable, publishable multi-authored monographic macroreview.

With the help of *Current Contents*[®] and other current-awareness media, the information will get to the attention of the scientific 'masses' not much later than it circulates among the elite who participate in by-invitation-only meetings. It would be useful if some way could be found to include the comments or rebuttals of those who weren't invited.

Once the information is properly and effectively disseminated, then it will be retrievable through *SCI* and other indexes. I expect we will find, as with good review articles, that these integrated monographs will be more heavily cited than today's proceedings volumes, and will thereby become milestones in the scientific development of the topics involved.

The continuing education provided by these conferences should not be underestimated. No matter how much we read in journals and elsewhere, we cannot obtain the same encyclopedic overview provided by these conferences. To do just that is indeed one of their main purposes. Another is to obtain consensus about problems needing resolution if the particular field is to progress. This seems a democratic way of establishing priorities. In this respect, the National Science Foundation, the National Institutes of Health and other such agencies should review the manner in which their sponsored conferences are organized. From what I have observed, better standards are needed. To achieve this, financial compensation must be provided for those who can guarantee that the standards are met and that the reviewing task is accomplished on schedule.

It has occurred to me that this might be a propitious time to establish a new International Association of Science Conference Organizers (IASCO). If such a group exists, it is scarcely visible. The larger professional societies have full-time staffs occupied with the technicalities of conference planning and management. These pros could help set standards that smaller groups could emulate. IASCO could prevent an incredible waste of energy. Must conscientious and dedicated amateurs reinvent the wheel each time a conference is organized? Why does no book come immediately to mind on "How to Organize a Scientific Conference?" Clearly IASCO could produce an authoritative work, one that would give

international scope to such meeting manuals like that of Hegarty.^{3,4}

The technology of conferencing is an important aspect of science management. Research on teleconferencing, computer-assisted or otherwise, should be reviewed by IASCO. While they may be of doubtful value in small conferences, the use of poster-papers even for small groups like the Gordon Research Conferences should not be dismissed.

My recent experience with Gordon Research Conferences leads me to ask whether the directors of that organization should not reexamine its charter. Gordon conferences could produce useful review monographs. I believe the original concept of the Gordon Research Conferences is still basically sound, but it has not been adapted to the changing needs of science. I suspect that not a few such conferences are essentially little different from the meetings of *The Call Girls* novelized by Koestler.⁵ Today, attendance at a Gordon conference is not limited to the elite. But the quite desirable participation of younger scientists need not interfere with the production of useful reviews.

It is not easy to obtain reliable statistics on the number of specialized conferences held each year. I estimate, however, that they produce annually some 2,500 to 4000 single-volume monographs. Too many proceedings volumes are merely collections of miscellaneous papers with very loose topical concentration. The smaller figure of 2,500 represents what I would probably class as significant monographs. Interestingly enough, that figure matches the number of research clusters that have emerged in our study of cocitation.⁶⁻⁸

Another way of looking at this problem is to set up a simple model that stipulates that 10% of the world's scientists participate in specialized conferences each year. Since there are more than half a million publishing authors each year,⁹ we can set that 10% at 50,000. If 50 of them

are necessary for a specialized conference, there may be 1000 conferences a year. That figure might be doubled or tripled in view of the fact that many scientists attend two or three such conferences. For a more likely criterion of significance, the model might stipulate as elite and conference-worthy only scientists who have been cited 40 to 50 times a year on the average over the past decade or so. There are about 10,000 such scientists. Again, if a specialized conference requires 50 of them, most of whom attend two or three such conferences, there must be about 400 to 600 significant conferences, or from 6 to 10 a week. I like to think we could provide brief reports on such significant conferences in *Current Contents* as we expand its role as a scientific news medium. That number of proceedings monographs could easily be handled in our present *Current Book Contents*.

One may, of course, assert that many of the sessions or symposia held at ACS and other meetings produce comparable results. I think not, even though conceivably they might. There are too many distractions at large national and international meetings that would prevent the 50 or so co-authors from concentrating on their primary objective--the review itself.

At Dahlem, concentration is facilitated by separating the participants into five to ten discussion groups, so that each chapter can be worked over in some detail. Needless to say, the social benefits of an international conference with such a working atmosphere are quite different from those of meetings held in huge auditoriums. Nevertheless, with proper organizations even the subdivisions of the ACS, FASEB, or whatever, could work to produce reviews of a kind that the present ACS advances series simply cannot equal.

If one imagines a careful selection of conference macro-reviews arranged on a single series of shelves (even in microform edition), and then combines it with our present *Index to Scientific Reviews* and the planned index to scientific monographs, one has effectively produced a usable annual yearbook and encyclopedia of science. Whether this would serve the needs of twentieth-century science remains to be seen. I believe it would. Certainly our citation analyses would go far in providing continuing feedback to conference organizers on where the action is, so that the up-dating process could be almost a self-organizing one.

1. Price D J D. Networks of scientific papers. *Science* 149:510-15, 1965.
2. Benjamin C. Soaring prices and sinking sales of science monographs. *Science* 183:282, 1974.
3. Hegarty E J. *How to run better meetings*. New York: McGraw Hill, 1957.
4. I have learned about the following, and look forward to its appearance: Lemp H.B. *Manual on the organization of international scientific congresses*. In preparation. -- The author is a member of the staff of FASEB.
5. Koestler A. *The call girls; a tragi-comedy*. New York: Random House, 1973.
6. Small H. Co-citation in the scientific literature; a new measure of the relationship between two documents. *J. Amer. Soc. Inform. Sci.* 24:265-69, 1973. Reprinted in *Current Contents (CC®)* No. 7, 13 February 1974, p. 7-10.
7. Small H & Griffith B C. The structure of scientific literatures. I. Identifying and graphing specialties. *Science Studies* 4:17-40, 1974.
8. Garfield E, Malin V M & Small H. A system for automatic classification of scientific literature. *J. Indian Inst. Sci.* 57(2):61-74, 1975. Reprinted in CC No. 42, 20 October 1975, p. 7-16.
9. ISI's *Who Is Publishing in Science® 1975 Annual*. Philadelphia: Institute for Scientific Information, 1975. -- "The 1975 edition of *WIPIS* includes addresses for 320,344 publishing authors from 167 countries." p. 7. -- Those are *first or reprint* authors. Since there are certainly more than 1.33 authors per published paper, the figure 500,000 is conservative.