

How Services From the Institute For Scientific Information (ISI) Aid Journal Editors and Publishers

Eugene Garfield, Ph.D.

President
Institute for Scientific Information
325 Chestnut Street
Philadelphia, Pennsylvania 19106

As the head of an organization that produces secondary information services, I consider ISI® to be in an active and mutually beneficial partnership with journal editors and publishers.

While I'm sure each of you, especially the publishers, readily understands how ISI benefits from the existence of your journals, past experience tells me that a good number of you are not quite so sure how you benefit from the existence of ISI and its services. The purpose of this talk is to present the basis for my belief of mutual advantage.

According to F. Peter Woodford, who used to conduct an excellent training program for scientific editors at Rockefeller University, the editor is in a position of "some power, considerable prestige and great responsibility."¹ The first responsibility Woodford identifies for the editor is to assure the *scientific worth* of the articles published in his or her journal. This involves evaluating the magnitude of each paper's scholarly contribution to an important topic, its adequacy of experimental design and methods, and the validity of its inferences and conclusions. The second responsibility is to assure the *comprehensibility* of each article; that is, the ease and accuracy with which a reader

can grasp the author's thoughts. And the third responsibility is to assure the *retrievability* of each article. This includes the certainty and rapidity with which an article will reach the attention of another scientist interested in the subject, now and in the future.

Let's take the editor's first responsibility, to assure the quality of the papers accepted for publication, and see how ISI services can help.

In the reviewing process an editor frequently needs background information to support or refute referees' and authors' criticisms and claims. While most editors are attuned to the use of traditional reference tools for such purposes, many do not take full advantage of the recent innovations in information retrieval. For example, how many editors here subscribe to an SDI (selective dissemination of information) service?

By creating a profile that defines the subject scope of his or her journal, an editor can receive an SDI report at regular intervals indicating relevant articles published in other journals. In this way, the selection of manuscripts and other editorial decisions are made with more confidence.

SDI services, such as ISI's ASCA® and ASCATOPICS®, are relatively inexpensive for what they provide. ASCA (its full name is Automatic

Subject Citation Alert) can cover a subject area on as broad or as narrow a basis as you think necessary. ASCA is available with weekly reports for about \$100 per year, and with monthly reports for only \$50 per year. Its reports are computer-generated and they bring you lists of relevant articles published within the past few weeks. ASCATOPICS costs less than \$100 per year and gives you broad coverage of a subject area through standard profiles.

Of course, you may argue that you can more than adequately satisfy your current awareness needs by using *Current Contents*[®]. And many editors do! But I think the focus of the ASCA services is important.

ASCA can also be used to provide an innovative service for authors that makes it more attractive for them to publish in your journal rather than with a competitor. Through ASCA, you can list all the current articles that cite any article *ever* published in your journal. Or you could limit the listings to citations of articles published during the past few years. This is especially useful for new journals where there is a strong chance that other journals will be the main source of citations.

Besides the constant general awareness an editor requires, specific questions must frequently be researched. Or, you may need to decide on the originality of a submitted manuscript or the completeness of the bibliography it contains. In these cases, the use of on-line search services can be quite helpful. On-line services would also make it easier to provide referees with supplementary bibliographical

information. If editors used such quick-response services more often they might be able to speed up decisions and thereby earn the respect of authors who justifiably resent the time lags between submission of their articles and final publication.² In actuality, however, the use of on-line services by editors is astonishingly low.

Once again, the cost is minimal. With ISI's on-line services, *SCI-SEARCH*[®] and *SOCIAL SCI-SEARCH*, once you acquire your terminal, you pay only for the exact amount of time you are on-line and searching. There is no minimum charge for access to these data bases.

ISI can also help you assure the worth of the articles you accept in other unique ways.

In producing our information services we have created a massive, permanent record of who has published what and where in the journal literature. What's more, for about 3,500 journals, we have also recorded the references to other published work contained in each article processed. These records permit a wide range of quantitative, qualitative, and other descriptive analyses of scientific communication through journals. While some applications of these analyses, like measuring an individual's research performance, have created controversy,³⁻⁹ other uses such as defining the history of a scientific development and measuring the activity and interaction of scientific specialties seem to be more palatable.

Citation analysis can be especially helpful to editors of new journals. By using it to identify the important

people in a specific field, editors can obtain some objective input in establishing editorial advisory boards and in soliciting potential authors for review articles.

Through citation analysis one can determine those topics which are currently active.¹⁰ And for those articles you have already published, citation analysis can help determine whether your selection criteria are corroborated by the research community.¹¹ Indeed, we did a study for one journal that helped evaluate the papers they had rejected.

In today's interdisciplinary world, if you are having trouble determining just where your journal fits in, citation analysis can help resolve your identity crisis. In other words, if you know which journals cite yours and which journals yours cites, you can get a clearer picture of which journals are most closely related to your field. Undoubtedly, the dozens of journal citation studies I have published in *Current Contents* have produced many surprises.^{12,13}

While ISI services can help you improve and measure the scientific worth of your journal, there isn't much we can offer that directly assists you in improving *comprehension*. I've spoken out repeatedly on the need for better and clearer style in scientific writing.¹⁴ I've even cajoled scientific authors to use a little humor now and then.¹⁵ But, basically, you editors will have to fight this battle on your own. In this respect, the work of Woodford¹⁶ and Debakey¹⁷ and others is relevant.

ISI can, however, provide some important help in the third area of re-

sponsibility--making your articles *retrievable*. Remember that in this context retrieval includes dissemination--making certain that all potential readers see pertinent articles.

In my experience, this is the area where journal editors have the most problems. Many of you are still using editorial practices appropriate to another era. In the old days the typical scientist personally received all the journals he or she considered relevant and scanned them from cover to cover. Today's researchers generally use *Current Contents* or other information services to maintain their current awareness and to do retrospective searches.¹⁸ These services supplement or even replace scanning the journals. Thus, a completely worthwhile and well presented article might be overlooked by the research community if the journal in which it appears is not covered by the various secondary information services. Even if the journal is covered, its articles can still be overlooked if certain editorial practices prevent them from being effectively abstracted and indexed.

To get a clearer picture of what I'm talking about, consider these numbers. There are nearly 30,000 subscribers to our *Current Contents* publications. Our subscriber studies indicate that over 250,000 researchers read *Current Contents* every week. This readership is matched only by a few journals like *Nature* and *Science* while the circulation of most other journals is a few thousand or even less. Obviously, then, being listed in *Current Contents* is important to the visibility of small journals. I do not know the readership figures for other services

like *Chemical Abstracts* or *Biological Abstracts*, but certainly they too have significant impact on the use of small journals.

Later on I'll talk about the economic impact of having your journal covered by information services. What I would like to touch on now is the fact that even after your journal is covered, there remain many things you can do to improve retrievability. I recognize that the personalities of editors and publishers give journals much of their distinct character. But the checklist of editorial practices I am about to suggest does not infringe on your liberty or expressiveness and will help your journal immensely.

1. Use clear titles which include informative key words. A title that does not adequately identify the subject of the work reported is inexcusable.
2. For each article, include an abstract or summary that can be understood by scientists outside the particular area of specialization involved. I am delighted to note that, after years of prodding, even *Science* has now agreed to include such summaries for all of its lead articles. This is as important to those who actually scan the journal itself as to those who read the articles in the form of reprints.
3. The title of each article should be displayed on the table of contents in a bold face ahead of the author's name. Most names will not be known to the average reader, but if you insist on catering to the vanity of au-

thors, put their names in a separate column.

4. Prominently display your volume and issue number on the contents page. Too often this vital bibliographic information is too small or located in a visually obscure location.
5. Provide English titles on your contents page--even though the articles are written in another language. You can also supply the original title in parentheses, but the problem of bilinguality is probably best solved by having contents pages in separate languages. I offer this approach because the suggestion to use English exclusively may be offensive to some of you. I recently published an article in *La Recherche* in which I suggested that French scientists publish in English.¹⁹ The reaction in France was explosive.²⁰

I can only say that my stance is not one of "linguistic imperialism," as one of my critics asserted. In fact, my position is based on citation analyses of French journals which showed that articles published in French journals are infrequently cited by scientists outside France. My conclusion is that people are not browsing through these articles because of the language barrier. Even mediocre French scientists would get more attention if their articles were published in English.²¹ As I stated in the article, "Throughout the world, practically all prospec-

tive readers--even those who might *prefer* some other language--can immediately understand a scientific article published in English."

Now, to move on to a less controversial suggestion:

6. On the first page of all articles, provide the complete address (including the departmental affiliation and postal code) of each author. Ideally, the address should immediately follow the author's name.²² You may think that this is a minor point, but at ISI we process nearly a million addresses each year and it is incredible how often addresses are incomplete. And it is often absolutely impossible to tell which address goes with which author when there are three or more authors. Since ISI publishes *Who Is Publishing In Science*[®] each year, our own editors know all too well the difficulties of dealing with the inconsistencies of author addresses from one journal to another as well as within individual journals. One wonders if editors and publishers are fully conscious of the importance of these addresses in promoting the sale and distribution of reprints. *Current Contents* and *ASCA*, alone, produce about 10 million reprint requests each year.
7. Finally, some advice on reference citations. Naturally, ISI has a special interest in the way you handle reference citations since we are the only

major information service currently using citation indexing. But what I suggest will reduce printing costs for your journal and avoid frustrating your readers. So, stop using archaic citation phraseology like *op. cit.* and *ibid.* And was there ever a footnote important enough to publish that could not be included in the text? Or, if some force compels you to put footnotes at the bottom of your text pages, at least separate them from the reference citations, which should be gathered together at the end of an article rather than dispersed through its pages. Naturally, the numbered or alphabetic arrangement makes it easier for ISI to process your articles. But it really is an important service to your readers, too. One of the most common things researchers do when they find an article of interest is to use its bibliography to obtain additional reading material. This is frequently done by supplying an assistant with a photocopy of the reference list so he or she can obtain the checked items. Gathering the references at the end of an article can sometimes make the difference between 20 pages of copying and just one. I will also mention, although I'm sure it will be for naught, the disservice done to readers by *Science* and other journals which omit the titles of cited articles. I have published my objections on

this before, but I assure you it makes little difference to ISI in its work.^{23,24}

Following these seven suggestions will help your journal's articles attain maximum exposure to the research community. You may then wish to see how well your journal is doing in terms of its relative importance. One way you can monitor this is through our *Journal Citation Reports*[®], which is available as an individual publication and as a part of the *Science Citation Index*[®]. In *JCR*[™] you can observe how your journal compares with other journals in total citations, impact, immediacy, and in other measures of importance.²⁵⁻²⁷ If you have a favorable citation analysis, you will be more likely to attract better authors. Today's more sophisticated researchers want to know in which journals their articles will be read and responded to most quickly. Most important of all, you can observe whether your journal's impact is increasing or decreasing from year to year.²⁸

Until now I've dealt primarily with the concerns of journal editors. But ISI is also very much aware of the publisher's role in scientific communication.

Probably the one question most asked of me by publishers is, "Won't having my journal covered by a secondary information service reduce my total subscription level?" Such publishers are especially concerned about ISI services since they are backed up by a tear sheet service, called *OATS*[®] (*Original Article Tear Sheet*), which provides copies of articles from the journals we cover. Many

publishers fear that users of our services will continuously order tear sheets without ever asking for the actual journal.

Realistically, economic considerations work against this happening unless you have a *very* poor journal which only infrequently publishes articles of interest. Here's why. Having your journal covered by an information service should cause an increase in the number of requests for its articles. If a library does not subscribe to your journal, copies will have to be ordered through inter-library loan. This is always slow and is now becoming quite expensive as the larger libraries increase their fees to discourage heavy use of their resources by others. Frequent purchases of articles through *OATS* at three dollars per 10-page article can quickly run up some big bills, too. So what usually happens is that librarians do some basic arithmetic and realize that it's cheaper to subscribe to a journal than to continue to buy its articles one by one.

This works on an individual basis, too. Researchers who are regularly ordering individual articles from a specific journal are going to get tired of the hassle, delay, and expense and want their own copy. This will be true whether they have been buying tear sheets or writing authors for reprints. Even a free reprint has a cost associated with it that is not trivial.

Even if a library already subscribes to your journal, having it covered by an information service may cause a second or third copy to be purchased, or influence the annual decision to renew. As more requests for articles

from your journal are received, librarians are forced to do more in-house photocopying. These days nearly everyone realizes the true costs of this procedure. Furthermore, in the United States, new copyright legislation seems likely to limit the number of photocopies a librarian may legally make. The upshot of this is that most librarians will realize the economy and wisdom of buying a second copy of your journal.²⁹

Of course, if your journal is really bad or of limited interest, it isn't likely that it would be covered by ISI services in the first place. In some cases this lack of exposure may well be fatal. This is not necessarily a bad thing, either, since I believe in euthanasia for poor quality journals.³⁰

But why has ISI persisted in operating its OATS service for over 10 years in the face of publishers' strong concern that it is depriving them of subscription revenue? Basically, we do it because we want subscribers to ISI services to know that when traditional channels fail them they can get the article they want from us. I believe that even if a subscriber comes to ISI for an article just once a year, he or she must be serviced without a delay of weeks.

We also persist with OATS because we feel we have not done badly at all when it comes to protecting publishers' rights. Since its inception, OATS has been a royalty-paying service. Each OATS transaction is recorded and, at the end of each year, publishers receive royalty checks based on volume. Until recently that royalty was equivalent to five cents per page. Now, this amount has been doubled

and we have established a minimum payment of 50 cents per article. And we are prepared to go higher if publishers insist on it. It is their privilege and ISI supports the principle of copyright protection even when it causes ill-will with the librarians and researchers who are our customers. But if publishers insist on exorbitant royalty fees--one publisher expects to receive \$3.75 per article--they will limit the effectiveness of voluntary arrangements such as the one set up by the Association of American Publishers. What they will get instead will be a compulsory licensing system similar to the one that exists for music. Under such an arrangement, publishers will be likely to receive *less* than 10 cents per page.

But despite the fears of some publishers about having their journals covered by ISI services, others are quite eager to participate. And just as an editor faces the wrath of an author when it is necessary to reject a manuscript, so it is when ISI turns down a publisher's offer to cover a new journal.

We even have some problems with editors and publishers who, once their journals are covered, try to tell us in which edition of *Current Contents* they should appear. I have in mind the editor of a botanical journal who insists that it should be in the *Life Sciences* edition instead of the *Agriculture, Biology, and Environmental Sciences* edition. We know from careful analysis, however, that the journal is of primary interest to botanists and agricultural workers. And since we can only cover a few of the *most* prestigious botanical journals in *Life*

Sciences--due to our absolutely comprehensive coverage of areas like biochemistry and molecular biology--our decision had to stand. I only wish that it was not necessary to make such decisions.

I now want to offer a few final suggestions on how ISI services can help publishers. For one thing, we can show you in what areas new journals are needed. A citation analysis can provide evidence that articles related to a specific subject appear in a broad range of journals. Frequently, this scattering indicates that a new journal in this emerging specialty will be well-received. Back in 1973, I published a citation analysis on pathology journals and stated that there seemed to be a field of "applied virology" developing.³¹ The recent publication

of the *Journal of Medical Virology* seems to have confirmed the correctness of this analysis. ISI citation analyses can also help publishers identify prospects in given specialties for mailing lists for book and journal promotions.

As I said earlier, I see ISI in a partnership with editors and publishers. I hope my talk has illuminated some of the areas in which we can work together for our mutual benefit, and I would like to continue this dialogue. For this reason, I am thinking about conducting a series of workshops at ISI that will offer more complete instruction to scientific editors and publishers on how to interface with information services. I would appreciate any comments you may have on this idea.

REFERENCES

1. **Woodford F P.** Training professional editors for scientific journals. *Scholarly Publishing* 2:41-6, 1970.
2. **Rodman H.** The moral responsibility of journal editors and referees. *The American Sociologist* 5:351-7, 1970.
3. **Wade N.** Citation analysis: a new tool for science administrators. *Science* 188:429-32, 1975.
4. **Carter G M.** Peer review, citations, and biomedical research policy: NIH grants to medical school faculty. Rand Report R-1583-HEW. Santa Monica, California: Rand Corporation, 1974.
5. **Johnson A A & Davis R B.** The research productivity of academic materials scientists. *Journal of Metals* 27:28-9, 1975.
6. **Gustafson T.** The controversy over peer review. *Science* 190:1060-6, 1975.
7. **Bayer A E & Folger J.** Some correlates of a citation measure of productivity in science. *Sociology of Education* 39:381-90, 1966.
8. **Bernier C L, Gill W N & Hunt R G.** Measures of excellence of engineering and science departments: chemical engineering example. *Chemical Engineering Education* 9:194-7, 1975.
9. **Roy R.** Comments on citation study of materials science departments. *Journal of Metals* 28:29-30, 1976.

10. **Garfield E.** Citation indexing for studying science. *Nature* 227:669-71, 1970.
11. **Margolis J.** Citation indexing and evaluation of scientific papers. *Science* 155:1213-9, 1967.
12. **Small H & Griffith B C.** The structure of scientific literatures I. Identifying and graphing specialties. *Science Studies* 4:17-40, 1974.
13. **Griffith B, Small H, Stonhill J A & Dey S.** The structure of scientific literature II. Towards a macro- and micro-structure for science. *Science Studies* 4:339-65, 1974.
14. **Garfield E.** On style in scientific writing. *Current Contents* No. 2, 10 January 1977, pp. 5-14.
15. ————. Humor in scientific journals and journals of scientific humor. *Current Contents* No. 51, 20 December 1976, p. 664-71.
16. **Woodford F P.** *Scientific writing for graduate students.* New York : Rockefeller University Press, 1968.
17. **Debakey L & Debakey S.** Muddy medical writing--is the culprit bad grammar, technologic terminology, committee authorship, or undisciplined reasoning? *Southern Medical Journal* 69:1253-4, 1976.
18. **Garfield E.** Primary journals, current contents and the modern systems of scientific communication. *Interdisciplinary Science Reviews* (In Press).
19. ————. La science Francaise est-elle trop provinciale? (Is French science too provincial?) *La Recherche* 7:757-60, 1976.
20. ————. Le nouveau defi Americain. (The new American challenge.) *Current Contents* No. 16, 18 April 1977, p. 5-12.
21. ————. Let's erect a new tower of babel. *Current Contents* No. 45, 6 November 1974, p. 507-9.
22. ————. An address on addresses. *Current Contents* No. 28, 14 July 1975, p. 5.
23. ————. The value of article titles in bibliographical citations. *Current Contents* No. 45, 8 November 1968, p. 7-8.
24. ————. Citations in popular and interpretive science writing [letter to the editor of] *Science* 141:392, 1963.
25. **Virgo J A.** A statistical procedure for evaluating the importance of scientific papers. *Library Quarterly* (In Press). Dissertation, Graduate Library School of the University of Chicago, Chicago, Illinois, December 1974; 105 pp.
26. **Garfield E.** Citation statistics may help scientists choose journals in which to publish. *Current Contents* No. 7, 16 February 1972, p. 5-6.
27. **Koshy G P.** The citeability of a scientific paper. *Proceedings of Northeast Regional Conference of American Institute for Decision Sciences*, Philadelphia, Pa., April-May, 1976, p. 224-7.
28. **Garfield E.** Significant journals of science. *Nature* 264:609-15, 1976.
29. ————. Citation studies indicate that two copies may be cheaper than one! *Current Contents* No. 23, 7 June 1972, p. 5-6.
30. ————. Is there a future for the scientific journal? *Sci/Tech News* 29: 42-4, 1976.
31. ————. Citation analysis of pathology journals reveals need for a journal of applied virology. *Current Contents* No. 3, 17 January 1973, p. 5-8.