

The Social Sciences Citation Index, More Than a Tool

Since its introduction in 1973, the *Social Sciences Citation Index™ (SSCI™)* of the Institute for Scientific Information has been greeted with widespread enthusiasm by researchers and librarians throughout the world. The *SSCI* can already be found in more than five hundred libraries in more than thirty-five different countries. Among the *SSCI's* typical users are the British Museum, the Lenin State Library in Moscow, the University of Hong Kong, Tel Aviv University, Cambridge University, the Rand Corporation, the Harvard Science Center, the Stanford Research Institute, the Massachusetts Institute of Technology, and Columbia, Yale, and Princeton Universities.

We believe that the reason for the *SSCI's* overwhelming commercial success in its first two years is a simple one: the *SSCI* is unique, it is one of a kind.

It is unique from a number of viewpoints: the rapid and gratifying response of users; the extent and quality of its coverage; its timeliness; its innovative format; the flexibility of searching approaches it offers. Perhaps one can best sum up its uniqueness by emphasizing that it is the first and only *multidisciplinary* citation index for the social sciences.

The *SSCI* covers *all* the social sciences—including anthropology, business, communications, criminology, education, geography, history, information and library sciences, law, linguistics, philosophy, sociology, and many other disciplines that formerly could be approached only through a multiplicity of separate subject indexes. In the *SSCI* all these subject areas are, for the first time,

linked together. This fact is of enormous importance, both for ongoing research in the social sciences and for the study of their development as sciences.

Not only does the *SSCI* link the social disciplines themselves, but it also links them to the so-called natural sciences. The *SSCI* covers more than 1000 journals, cover-to-cover. In addition, however, another 1250 journals—from among those covered by the *Science Citation Index® (SCI®)*—are routinely scanned for articles that cite social sciences material. 'Hard' science journals frequently cite social sciences journals, and *vice versa*. It is by no means a rare phenomenon. One common example is the use of radiocarbon and other analytical methods in archaeological dating, something familiar to most educated laymen. But there are hundreds more. Consider the use of mathematics and statistics in virtually every social science. Or consider something as specific as the contribution of neural physiology and feedback theory to the study of perceptual and motor skills. The specialist, of course, is aware of such relationships, and their ties in the literature, but the non-specialist and particularly the student probably is not. Till now neither has had any tool that could, as the *SSCI* will, clarify such relationships through their citation linkages. The social sciences *depend* upon multidisciplinary information. They draw on each other, on the 'hard' sciences, and also upon the humanities, for tools, analytical methods, and their organization and interpretation of data on social and behavioral phenomena.^{9,10}

Traditionally indexes for the various disciplines of the social sciences have covered, at the most, a few hundred journals. The *SSCI* covers every significant item—articles, letters, editorials, notes, corrections, reviews, etc.—from more than 1000 of the world's important and influential social sciences journals. In addition, as mentioned above, it scans more than 1250 other journals from the 'hard' sciences for any article that has cited any journal it covers, and picks up all such articles for inclusion in the *SSCI*.

In the past, indexes for the social sciences have appeared monthly, quarterly, annually, but rarely if ever have they been *current*. It has not been unusual for there to be a time-lag of two years or more between an item's publication and its citation by an index. The *SSCI* appears three times a year. The first of its two soft-cover issues covers journal material published from January through April. The second covers material published from May through August. Both of these soft-cover issues of the *SSCI* are available within a few months of the close of the indexing period. A user can search for—and find—references to articles published in April as early as June of the same year, or for articles published in August as early as October. The third issue of each year's *SSCI* is a hard-cover annual cumulation of the first two issues with material from journals published during the last third of the year. The *SSCI* is a *calendar-year index*, and each annual cumulation—available within four months of the end of the year—covers all material published during that year.

The *SSCI* is not a single book, volume, or index. It is an integrated search system, consisting of three separate but related parts.

First is the *Citation Index* section, which lists by first author all previously published items that have been cited during the current year. It indicates current articles that have cited the older work, giving first author, journal title, page, and year of the new citing articles.

Second is the *Source Index* section. Basically, it is a straightforward author index to all items published in covered journals during the year, and to items published in other journals whose citations have revealed a link with social sciences. For each indexed item, the

Source Index provides the names of all authors, the full title (with a code for languages other than English), journal title, volume, page number, publication date, type-of-item code (article, letter, editorial, etc.), and a 'citation abstract'. The last is a recent innovation that has more than doubled the size of the *Source Index* of the *SSCI*. It lists, in condensed form, the citations of all items cited in the references of the source article.¹⁰ Besides adding information and giving the searcher more insight into the author's purpose and sources, the inclusion of citation abstracts greatly facilitates the iterative search technique that we call *cycling*. Each of the listed citations in the citation abstract calls the searcher's attention to another previously published and relevant article. With these citations the searcher can reenter the citation index for a more comprehensive literature search, and information on other recently published articles.¹¹

Also, to make contact between scientists as easy as possible, the *Source Index* entry gives the mailing address of every first author.

The third component of the *SSCI* system is the *Permuterm®Subject Index (PSI)*. The *PSI* makes an entry for every significant word from the title of every article, and pairs it with every other significant word from that title. Each such word-pair entry refers the searcher to a first-author entry in the *Source Index* section, thus providing another means of subject access to the current year's literature.

Because of the *SSCI*'s tripartite structure of citation, source, and word indexes, it offers unique search capabilities that have heretofore been unavailable in the social sciences.

When the user knows an earlier paper relevant to his search, he can locate it quickly in the *Citation Index*. There he will find all significant articles, published during the year, that have cited the earlier paper. In the *Source Index* he will find complete bibliographic information on each of the current papers. This is a useful way to begin when one wishes to pick up where one left off in the case of earlier work—one's own or another's—when work or interest has been suspended. The *Citation Index* allows one to construct a current bibliogra-

phy rapidly, for a summary of activity on the topic since it was dropped.

But let's say the searcher *doesn't* know of an earlier paper that is relevant to his interest. Perhaps he is entering a new field; perhaps he is a graduate student starting a new project. From his knowledge of the subject terminology—however limited that may be—he picks words descriptive of his interest and locates appropriate word-pairs in the *Permuterm Subject Index*. The entries he finds will indicate names of first authors who have used those words in titles of current articles. Again, the searcher will find full bibliographic data on the articles so identified in the *Source Index*.

In another situation, the searcher may know only the name of some expert in the field. A quick check of the *Source Index* will tell him what, if anything, his expert has published during the period covered by the index. If the expert has published nothing during the period, the searcher can turn to the expert's name in the *Citation Index* for reference to current articles that have cited his expert's earlier work.

Finally, let's say the user knows of no specific article, or author, and doesn't trust his own knowledge of the technical vocabulary to give him productive word-pair descriptions. But he *does* know of an organization that specializes in research on the subject that interests him. He can use the organization's name as an entry point. Checking under the name of the organization in the *Corporate Index*, he will find the names of people at the institution who have recently published. A look-up in the *Source Index* then provides complete bibliographical information on current work emanating from that institution.

Every article indexed in the *SSCI* is available to the researcher through ISI's *Original Article Tear Sheet*®(OATS®) service. As a fully integrated, total information system, the *SSCI* provides this library service, just as it does for users of another part of the system, *Current Contents/Social and Behavioral Sciences*.¹²

The accuracy and completeness of all sections of the *Social Sciences Citation Index* are assured by a sophisticated system of entering, checking, editing,

and verifying all processed items. Every journal issue received is logged in, edited, and marked to insure that all required data will be recorded. Foreign language titles are translated into English, and citations are processed from footnotes, bibliographies, and even from running text. Every single entry is scrutinized by a combined human and computer editing system, and all data are machine-verified. A final computer editing routine cleanses the data of spelling errors, variant terminological forms, and unifies variants—or corrects outright errors—in bibliographic data, such as journal titles, page numbers, etc. After computer formatting and photocomposition, the material is offset-printed and bound.

The *SSCI*, like all indexes, is a tool, and like all tools, it is an extension of the person who uses it. It can be used effectively with either simple or complex search strategies.

But quite apart from its value as a retrieval tool, the *SSCI* is an intrinsic data source for students of the sociology and history of science. With it one can trace the development of scientific concepts, theories, and discoveries through citation linkages.

Before the introduction of the *SSCI*, students followed the development of thought in the social sciences by means of traditional disciplinary histories. These histories have dealt mainly with the impact and influence of major figures—the giants—in a given field.

For the first time, the *SSCI* has presented students with the opportunity and a means of tracing the impact of any person's work, with bibliographic objectivity. By tracing citation linkages between papers, the *SSCI* enables the student to develop a sense of the kind of research that has systematic repercussions, that produces papers with a multitude of 'citation progeny'. In the same way, the *SSCI* points up instances of 'dead-end' research, where publication has failed to influence or stimulate further investigation.

Seminal papers generate networks of citations, linking papers over time and within and beyond disciplinary boundaries. Study of these detailed networks of papers linked by citations imparts a sense of the continuity, of the interrelation and the interdependence that is

characteristic of scientific inquiry. The citation pattern is eloquent testimony of the essentially cumulative nature of science and scholarship.¹³

Following the evidence of the citation network, the student acquires a sense of the diverse applications of the same or a related idea in different substantive areas. The same idea or tool or method may arise or be applied in what seemed to be wholly unrelated disciplines. No other literature tool can so clearly elucidate the interrelationships of research advances in the social sciences.

One of our most enthusiastic users, Professor Robert K. Merton of Columbia University, recently told us, "The intensive use of the *SSCI* creates a kind of new contact with continuities and discontinuities in recent thought in the social sciences, and also provides a kind of imagery of the interrelationships between ideas or techniques that ordinarily appear in isolated spheres of work within the larger field of sociology. It gives most

students a concrete and specific sense of how ideas spill over into neighboring disciplines or quasi-disciplines. The *SSCI* alerts them to the ways in which sociological ideas do overflow their disciplinary banks. Students using the *SSCI* can't avoid acquiring a sense of the actual operating texture of disciplines, the reciprocal uses of common materials, ideas, and instruments. This is by all odds the most important aspect of the general training that the *SSCI* provides."¹⁴

Let us suggest the image of a deluge of ideas. The literary oceans of the 'hard' sciences and the social sciences are nowhere separable. They merge, each contributing to a common mass, just as both have been fed by a multitude of meandering, intertwined tributaries. The *Social Sciences Citation Index* provides the best chart we as yet have of the every-changing currents, making plain which channels have been navigable and which may make for further productive journey.

1. Garfield E. The information revolution reaches the social sciences; ISI helps bridge the gap between the two cultures. *Current Contents* (CC) No. 2, 10 January 1973, p. 5-7.
2. -----, Information, power, and the *Science Citation Index*. CC No. 6, 9 February 1972, p. 5-6.
3. -----, Citation frequency as a measure of research activity and performance. CC No. 5, 31 January 1973, p. 5-7.
4. -----, Citation analysis as a tool in journal evaluation. *Science* 178:471-79, 1972. — The references cited in this and the items above will provide an incomplete but extensive bibliography on the subject. See especially footnote 33 of this paper, as reprinted in *Current Contents* No. 6, 7 February 1973, p. 7-24.
5. Newell A. Personal communication, 27 February 1962: "...there seems little doubt that citation indexes will be used increasingly as a means of evaluating scientific merit." Quoted in: Garfield E. "Citation indexing, historio-bibliography, and the sociology of science." In: *Proceedings of the third international congress of medical librarianship, Amsterdam, 5-9 May 1969*, ed. by K. E. Davis & W. D. Sweeney (Amsterdam: Excerpta Medica, 1970), pp. 187-204; and reprinted in *Current Contents* No. 15, 14 April 1971, p. M23-41.
6. American Library Association, Reference and Subscription Books Review Committee. Reference and subscription books reviews...*Social sciences citation index, 1973 annual*... *The Booklist* 71(12):624-27, 15 February 1975.
7. Steinback H B. The quest for certainty; the *Science Citation Index*. *Science* 145:142, 1964.

8. Weinstein M. "ISI's social sciences and humanities citation index." In: *Access to the literature of the social sciences and humanities; proceedings of the conference on access to knowledge and information in the social sciences and humanities, New York City, April 5th & 6th, 1972*, p. 120-33 (Flushing, New York: Queens College Press, 1974), 199 pp.
9. -----, "ISI's *Social Sciences Citation Index*: a new comprehensive multidisciplinary information retrieval system." Paper presented at the National Convention of the American Society for Information Science, 23-26 October 1972, Washington, D.C.
10. Garfield E. Bibliographies, citations, and citation abstracts. CC No. 51, 18 December 1974, p. 5-6.
11. *Social Sciences Citation Index, 1973 Annual, Guide and Journal Lists*. (Philadelphia: Institute for Scientific Information, 1974), 96 pp. — The *Guide* describes fully the format and use of the *SSCI* that are briefly summarized here. Copies are available from ISI.
12. Garfield E. *Current Contents/Social & Behavioral Sciences*—a component of ISI's total information system for the social and behavioral sciences. CC No. 45, 7 November 1973.
13. Deutsch K W et al. Conditions favoring major advances in social science. *Science* 171:450-59, 1971.
14. Merton R K. Behavior patterns of American scientists. *American Scholar* 38:2, 1969. — The quotation is not from this early article, but from the interview. The article, however, makes clear Dr. Merton's attitude on the sociometric and retrieval potential of citation indexing, and was indirectly quoted in the paper cited in reference 5 above.