Research Forum

Using citation analysis to analyze library and information science journal characteristics

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Citation and content analysis have both been used extensively to reveal characteristics of a body of literature. Gloria Cline's 1978 University of Southern California D.L.S. dissertation used citation analysis, among other techniques, to test the literature of library science against the norms for a scientific literature.[1]

One of those norms was Price's Index, in which Derek de Solla Price used citation analysis to determine a "research front" for scientific journals. By testing his theory of the research front against the literature of several disciplines, Price determined that the "hardness" of a scientific literature corresponds to the percentage of citations to literature which is no older than five years prior to the article in which it is being cited. He calculated that a "hard science" has more than 42% of its citations within this research front period, a "medium science" has from 33% to 42% of its citations within this period, and a "soft science" has between 21% and 32% in this period. Anything measuring below 21% is not to be considered a scientific literature, but a technical literature.[2]

Price also used citation analysis to determine the number of citations per article and the percentage of journal citations normally found in scientific literature. His studies suggested, but did not totally confirm, that a scientific literature usually contains 10 to 22 citations per article. He further theorized, but did not confirm, that at least 80% of the citations in a scientific literature should be to journal literature, not to monographic publications.

There are several limitations in any research conducted using only citation information. Authors tend to engage in some self-citation, especially in academic circles where being cited in an index may support promotion and tenure. For the same reason, some researchers include citations to friends even when the cited article was not actually used for the research. Of course, there are always occasional inaccuracies found in citations, no matter how carefully the author edits the final manuscript.

The present study was designed to test both information science literature and library science literature against the three norms proposed by Price—research front index, number of journal citations, and number of citations per article—and to detect any differences that might exist between the two subsets of literature.[3]

Methodology and findings

A list of journal titles found in *Library Literature* and *Library and Information Science Abstracts* and published continuously from 1965 to 1985 was sent to library and information science professors who listed their specialty as information science in the directory issue of *Journal of Education for Library and Information Science Education*.. Thirty-five professors were selected to receive the list, and 22 valid responses were received. They were asked to check whether, in their opinion, each title could be considered library science or information science. The 10 titles receiving the most number of checks in each of the two categories were then selected for analysis. Each article found in the issues for 1965, 1970, 1975, 1980, and 1985 in each of the 20 titles on the final list was analyzed for citation information. This list contained 3,873 articles and 34,157 citations. Tables 1 and 2 identify the 20 titles.

The data gathered for this study included year of citation, year of article, whether the citation was to a journal or a monograph, and how many citations were given in each article. This information was

then entered into a computer file and analyzed using StatPak. Analyses were done both by using the database as a unified whole and as two separate subsets of the database, one being library science titles and the second being information science titles.

When Price's Index for scientific literature was applied to the full database, it was found that library and information science literature could be considered a hard science, maintaining over a 42% research front during the five years analyzed. However, when the Index was applied to each of the two subsets, it was found that, with the exceptions of 1970 and 1975, the library science subset did not meet the 43% Index with the same strength as was found in the information science subset, suggesting a possible stronger adherence to scientific method within the information science literature.

Price's suggested criteria of 10 to 22 citations per article for a hard science was then applied to the full database, with the result that the literature met the criteria in only 1980 and 1985. When the subsets were compared, it was found that information science literature met the criteria in all years except 1965, while library science literature did not meet the criteria at any point in the study. Once again,

there is at least a suggestion that information science adheres to Price's scientific journal indicators with more consistency than does library science.

Lastly, when the full database was compared against Price's norm of at least 80% of the citations being to journal literature, this level of journal citation was never achieved. However, the information science subset, although never achieving 80%, did remain higher on the scale than library science in all years but 1980.

In conclusion, when Price's three norms for scientific literature are applied to library and information science, the discipline does not meet the criteria for being considered a "hard" science, but is more accurately a "medium" science. When the two subsets of library science literature and information science literature are compared, however, information science consistently shows a greater tendency toward "hard" science than does library science. Further study is needed before any conclusions regarding why this difference exists can be drawn. However, current library education should be cognizant of the need for a more rigorous training in research methodology if library schools are to prepare students for entry into the publishing and research world of the profession.

TABLE 1: LIBRARY SCIENCE JOURNALS

1. American Libraries
2. Australian Library Journal
3. Bookmark
4. Canadian Library Journal
5. Catholic Library World
6. College & Research Libraries
7. Horn Book Magazine
8. Journal of Education for Library and Information Science
9. Library Journal
10. Library Resources and Technical Services

TABLE 2: INFORMATION SCIENCE JOURNALS

1. Annals of Library Science and Documentation
2. Aslib Proceedings
3. Bulletin of the Medical Library Association
4. Drexel Library Quarterly
5. The Indexer
6. Journal of Documentation
7. Journal of the American Society for Information Science
8. Library Quarterly
9. Library Trends
10. Quarterly Bulletin of the International Association of Agricultural Librarians and Documentalists

There is also a suggestion that the discipline of information science may be more cognizant of established scientific research methods similar to those employed by the journals found in the pure sciences—e.g., biology and medicine—than the discipline of library science. The literature may be moving in the direction of a more disciplined, scientific literature. Once again, further study is needed before any conclusions can be drawn.

[1]G. S. Cline, "A Bibliometric Study of Two Selected Journals in Library Science, 1940–1974." D.L.S. diss., Univ. of Southern California, 1978. *Dissertation Abstracts International* 39, p. 6380A.

[2]For further discussion, see Derek J. de Solla Price, "Networks of Scientific Papers," *Science* 149 (3683): 510–15; and Price, "Citation Measures of Hard Science, Soft Science, Technology, and Nonscience," in C. E. Nelson & D. K. Pollock eds., *Communication Among Scientists and Engineers*, (Lexington, Mass.: Heath, 1970).

[3]For the complete study, see C. E. Thompson, "Hard Science or Soft Science: A Bibliometric Analysis of Selected Library Science/Information Science Journals." Ph.D. diss., Texas Woman's University, 1989. *Dissertation Abstracts International* 50, p. 3401A. ■■

UCLA's Powell Library moves into tent during rehab

UCLA is rehabbing its Powell Library building, rendering it earthquake safe, and in the meantime the Undergraduate College Library, which makes its home in Powell, will be housed in a 40-foot-high, two-story tent.

"The Powell Library Seismic Staging Facility, as the tent is now referred to, will be constructed this summer," said Alison Bunting, the associate university librarian in charge of Powell staging plans. "Another name for the facility may be chosen at a later date."

The Powell Library, built in 1927, was identified in a 1987 campus safety survey as potentially dangerous in the event of earthquake or fire, and badly in need of structural improvement.

The exposition-style tent will open for business winter quarter 1992, in advance of Powell Library construction work, which will begin in April of that year. The College Library's staff and book collection will be moved into the tent during winter break, in order to minimize disruption of campus routines.

"The seismic staging facility will be a pre-manufactured system of aluminum ribs covered with a plastic-coated mesh fabric, similar to tents used at world fairs and car shows," said Sarah Jensen, a senior architect with UCLA Capital Programs' Division of Design and Construction. "The tent's cost, including site preparation, exterior shell and interior work, will be about $2 million."

The tensile structure will actually be an interconnected system of several tents. The main tent will house bookstacks and study areas, and smaller tents will provide office space. The facility will contain not only the College Library, but other units now housed in Powell.

The reusable tent will offer some 36,000 gross square feet of floor space, including a mezzanine in the central tent that may be reached by stairs or elevator. A translucent panel at the ridge will bring natural light into the structure. "I believe the tent will be a popular study place. The overhead light panel will give the structure a bright airy feeling. Students will feel like they are inside a building, not an army tent," said Jensen.

The Graduate School of Library and Information Science, now located in the west wing of Powell, will move this summer to a temporary building adjacent to the University Research Library. The school will not return to the Powell Library building, Bunting said.

"The state allocated $35 million last fall to cover the cost of upgrading Powell Library," Bunting said. "When work is completed, Powell's primary focus will be services to undergraduates, with twice as much study space as before, expanded computer workspace, and perhaps a reading room that will operate 24 hours....The south side of the building will feature a landscaped courtyard." ■■

WHCLIS poster available

An unusually designed poster advertising the White House Conference for Library and Information Services will grace the walls of many libraries long after the close of the conference itself. Attractively displayed in a vertical format, 16" across and 36" high, the poster has tones of yellow, orange, and brown with illustrations that highlight the Conference themes: enhancing literacy, increasing productivity, and strengthening democracy. Its unusual shape catches the eye and its message is certain to raise the library awareness of its readers!

Copies of the poster may be requested from the office of the White House Conference on Library and Information Services 1991, 1111 8th Street, N.W., Suite 302, Washington D.C. 20036; phone (202) 254-5100.

Libraries urged to adopt ALA Code of Ethics

We are asking your support of a joint effort of ACRL and ALA's Committee on Professional Ethics. The goal is to persuade college and research libraries to officially incorporate the ALA Code of Ethics into their "policies and procedures" documentation before the close of 1991.

We considered addressing this plea to principal librarians (whether called dean, university librarian, director, or another title). We believe, however, that it would be most appropriate for such a project to be a "grassroots" campaign, with individual librarian members of ACRL presenting the proposal to the leadership in their own organizations.

We plan to publish an "honor roll" in *C&RL News* and *American Libraries* in 1992.

The Code is printed on the back of the ALA membership card you receive when you pay your dues each year. An attractive illuminated copy of the Code is available from ALA itself. To obtain a copy, write or call ALA's Office for Intellectual Freedom (800-545-2433 ext. 4223). Large 8-1/2" x 11" copies on parchment paper are free; 17" x 11" illuminated copies are available for $3.50 each.

As we work together on automation, collection development, reference problems, and networking, we must ensure that the importance of ethics in society today, and particularly in our profession, is not forgotten. Please complete the following form and return it to Judith F. Krug, Staff Liaison to the Committee on Professional Ethics, by December 15, 1991, to ensure that your institution will be included in the ACRL/ALA Ethics Honor Roll next year. Stand up and be counted!—Anne Marie Allison, *Chair, Committee on Professional Ethics* and Anne Beaubien, *President, ACRL*.

College & Research Library Adoption of the ALA Code of Ethics

Date _____

Our library has officially adopted the ALA code of ethics, integrating the code into our official "policy and procedure" documentation.

Name of library _____

Address _____

_____

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Phone _____

FAX _____

Name of principal administrator _____

Title _____

Signature _____

Name of librarian who introduced proposal _____

Title _____

Signature _____

(Use another sheet if additional names should be reported.)

Please return this form to: Judith F. Krug, American Library Association, 50 East Huron, Chicago, IL 60611, before December 15, 1991.