

Research Notes

Paradigm Restrictions on Interdisciplinary Research into Librarianship

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Scholars are becoming increasingly interdisciplinary in their approach to research, but traditional structures of knowledge within the social sciences may limit their ability to view a phenomenon in its entirety. This citation study examines the extent to which interdisciplinary research into librarianship is restricted by paradigms. The study uses library science and sociology journal articles that address the sociological aspect of libraries. The data indicate that interdisciplinary research into the applied discipline of librarianship is inhibited by paradigms.



Recent trends in social sciences research indicate that scholars are becoming increasingly interdisciplinary in their approach to research, more so than researchers in the organized schools of thought (e.g., sociology, political science, psychology) that define academic institutions.¹ However, a researcher investigating an interdisciplinary phenomenon approaches the topic from a specific research paradigm rooted in a traditional structure of knowledge. The paradigm may force a particular perspective or approach to conducting research, thus limiting the investigator's ability to view the phenomenon in its entirety. The extent to which interdisciplinary study of librarianship is limited by paradigmatic structures is the focus of this study.

Sociological aspects of libraries—the interdisciplinary phenomenon used for

this study—incorporates the disciplines of sociology and library science into a concentrated, specialized area of research. This phenomenon provides a logical example, combining a research discipline (e.g., sociology) and an applied discipline (e.g., library science) for which researchers could formulate a new paradigm. Because the library is a social institution, sociological research methodologies are appropriate in investigating library science. However, the extent to which research in library science looks toward previous research in sociology for methodological or theoretical foundations or the extent to which sociological theories are of value to the practice of library science has yet to be determined. It could be argued that library research studies that report the use of sophisticated sociological research

methodologies may reach only a small number of librarians.² This report questions the value of a research discipline's methodology and theory to applied disciplines and examines the nature of interdisciplinary studies and the extent to which cross-pollination occurs between a research discipline (in this case, sociology) and an applied discipline (in this case, library science).

LITERATURE REVIEW

Florian Znaniecki's work serves as an introduction to the concept of paradigm structures that may affect interdisciplinary studies. Znaniecki presented the concept of the social circle, the audience to which one addresses ideas. Within the social circle is "a common bond constituted by a complex of values which all of them appreciate positively."³ Some critics describe Znaniecki's concept as more apropos to a small social group than to society at large. In Znaniecki's model, the originator of an idea is a member of the social circle, which—in turn—expects the originator to meet certain demands in exchange for recognition. Scholars "anticipate the demands of their public; and they tend to form self-images, select data, and seize upon problems in terms of their actual or anticipated audiences."⁴

Thomas Kuhn made the concept of paradigm primary to the study of the organization of knowledge in his work *The Structure of Scientific Revolutions*. Kuhn defined paradigms as "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners."⁵ Paradigms develop as differing schemes compete for wider acceptance among scientists. Eventually, a paradigm is established, becomes widely accepted, and defines a given scenario of scientific discovery. Anomalies can force changes in a paradigm; these changes result in the creation of new paradigms. Richard H. Wells and J. Steven Picou consider Kuhn's model to be a dialectical one.

That is to say, the thesis (existing paradigm) provides its own contradictions (crisis provoking anomalies)

from which several antitheses (new competitors) arise. Finally a synthesis (a new paradigm) evolves which rejects the worst of both existing paradigms and the new competitors, while concomitantly retaining the best.⁶

Martin E. Spencer suggested that the social sciences do not advance in a dialectic manner. Rather, progress is problematic.⁷ The social sciences are "an aggregate of conceptual communities that communicate only imperfectly with each other and that assert the correctness of their point of view while disdaining others." Spencer contrasted the physical sciences and the social sciences using Kuhn's paradigmatic dialectic and concluded that "the mere succession of theories" traced through history does not constitute progress.⁸

Low subject dispersion within the professional literature of library science indicates little effort by librarians at looking toward another discipline (e.g., sociology) for theory or methodology.

Communication within the social circle does not necessarily facilitate a dialectic process and, Wells and Picou argued, the social sciences can provide theoretical "puzzles," but not an "arsenal" of shared exemplars to guarantee solutions to the puzzles, as is the case with the physical sciences.⁹ Therefore, the social sciences consist of a number of partial, not full, paradigms.

One method for identifying a partial paradigm within the social sciences is to define the social circle membership through the professional literature. Thus, the development of professional literature within a subject area can be one component of a paradigmatic structure.¹⁰ Gloria Stark Cline asserted, "The intellectual base of any discipline is revealed in its journal literature which serves, among other things, as a vehicle for disseminating information, introducing innovations, and reporting the findings of research in the field."¹¹

Librarians have begun to investigate the structure of knowledge and the development of paradigms in the distribution of knowledge.¹² This investigation is occurring, in part, through the study of the nature of the professional literature of disciplines.¹³ Tefko Saracevic and Lawrence J. Perk argued that library science as a discipline has not developed "many interactions with other subjects as many other subjects have, subjects from which, for instance, tools for investigation may be borrowed."¹⁴ This statement suggests that low subject dispersion within the professional literature of library science indicates little effort by librarians at looking toward another discipline (e.g., sociology) for theory or methodology.

Specifically, Leigh Estabrook conducted a citation analysis of library science literature to determine the extent to which tools for investigation have been borrowed from previous sociological research. Estabrook discovered little acknowledgment of "those individuals who are classically important to sociological theory," including Karl Marx, Emile Durkheim, and Max Weber.¹⁵ Estabrook concluded that approximately 8% of the library citations can be considered sociological, yet demonstrate an "apparently limited sociological theoretical framework from which library researchers have drawn."¹⁶ The result, by implication, is that library science researchers may view phenomena sociologically, but adopt unsophisticated analytical techniques and use limited theoretical frameworks. For example, only descriptive, rather than inferential, statistics may be used for data analysis, or the use of one theoretical model may define the type of research methodology employed.¹⁷

METHODOLOGY

The general objective of this study is to examine patterns of interdisciplinary research for the purpose of determining and observing the existence of a partial paradigm. Specifically, it seeks to determine whether the subject area "sociological aspects of libraries" is composed of researchers constituting a partial paradigm or whether the subject area is con-

sistently examined from two distinct paradigms.

Sampling Procedure

Two sets of source journal articles—library science and sociology—were identified. Each set is devoted to the topic "sociological aspects of libraries." For library science source journal articles, the database Library & Information Science Abstracts (LISA) was searched for all English-language journal articles published during the ten-year inclusive period between 1979 and 1988. This set was then reduced to include only the articles that had been assigned sociology-related subject headings in LISA. The following subject headings were selected after a thorough examination of the preferred terms list in the *LISA Online User Manual*: "social aspects," "socialization," and "sociological perspectives." A list was generated of 201 source articles representing research on various sociological aspects of libraries as published in library science journals.

For sociology source journal articles, the database Sociological Abstracts was searched for all English-language journal articles published during the ten-year inclusive period between 1979 and 1988. This set was then reduced to include only the articles that had been assigned the subject heading "libraries," determined after a thorough examination of the *Thesaurus of Sociological Indexing Terms*. A list of 17 items resulted. After the investigator discarded one of the items because it was an occasional paper and not a journal article, a list of 16 source articles representing research on various sociological aspects of libraries as published in sociology journals remained. This sampling procedure produced two sets of source journal articles from which citation patterns could be examined: library science (n = 201) and sociology (n = 16).

Classification

The source journal articles in both sets (library science and sociology) were classified by a variety of means, including identification of prominent source au-

thors, prominent source journals, and prominent source subject areas. In addition, prominent cited authors, prominent cited journals, and prominent cited disciplines from the source articles were identified. ("Prominent" was defined as a relatively high frequency of appearance.) Source subject areas were identified by using the subject headings that had been assigned to the article by the database producer. In some cases, similar subject headings were tabulated as one. For example, some articles from LISA were assigned the subject heading "intellectual freedom" while other articles were assigned the subject heading "censorship." In compiling the data, the investigator tabulated these two subject headings as if they were the same.

The *Standard Periodical Directory (SPD)* supplied the appropriate discipline to which a cited journal should be assigned. If a journal could not be classified using *SPD*, the investigator viewed OCLC records to determine the Library of Congress subject classification, which was then used to assign the journal to a discipline. For example, when the journal *Administrative Science Quarterly* was cited, the discipline to which it is assigned by either the *SPD* or the Library of Congress via OCLC classified it. This journal was assigned to the discipline "management."

In some cases, similar disciplines were combined into one larger discipline. For example, some journals were assigned to the discipline "communications" while other journals were assigned to "television." In compiling the data, the investigator tabulated these two disciplines as if they were the same.

RESULTS

Library Science Source Articles

In the library science journals, 15 authors were discovered to have written more than one article on sociological aspects of libraries. These 15 authors accounted for only 8% of all the authors within library science source articles. Twenty-one (28%) journals accounted for 55% of all citations. Almost 50% of the source articles' subject areas focused on

organizational administration or the dissemination of information (typically in electronic format).

Sociology Source Articles

In the sociology journals, only one author was discovered to have written more than one article on sociological aspects of libraries. This one author accounted for 9.5% of all the authors within sociology source articles. Not only did a number of the source journals originate from outside of traditional sociology (e.g., *Journal of Management*), but the most frequently found source journal in the Sociological Abstracts database relevant to this study was *Library and Information Science Research*, a library science journal. The plurality of the articles (31%) was dedicated to the subject area of education.

Examination of Study Questions

To what extent does research into the sociological aspects of libraries, as published within library science journals, draw on previous sociology research?

This question was answered by first identifying the prominent cited authors, journals, and disciplines. One hundred and twenty-seven of the 201 source library science articles identified through LISA were used for the citation study. These 127 articles were found in the Kent State University Libraries collection of library science journals supporting a graduate library science program.

Only 33 (2.7%) of all cited authors (a total of 1,207) were cited more than three times, representing 12.8% (198) of the 1,541 citations. An author was considered to be cited each time a different work by that author was referenced within a source article. Citations were tabulated as follows: one work by an author referenced one or more times within one source article equaled one citation; multiple works by an author referenced within one source article equaled one citation per unique work; and one work by an author referenced in different source articles equaled one citation per source article. The ten most frequently cited journals represented

TABLE 1
FREQUENTLY CITED JOURNALS IN "SOURCE" LIBRARY SCIENCE ARTICLES

Cited Journal	Discipline	No. of citations (n=679)	% of Total (n=227)
<i>Library Journal</i>	Library	86	37.9
<i>New York Times</i>	General	32	14.1
<i>Wilson Library Bulletin</i>	Library	19	8.4
<i>Library Quarterly</i>	Library	15	6.6
<i>Library Trends</i>	Library	15	6.6
<i>South African Libraries</i>	Library	13	5.7
<i>Top of the News</i>	Library	13	5.7
<i>American Libraries</i>	Library	12	5.3
<i>College & Research Libraries</i>	Library	11	4.8
<i>J. American Society for Info. Science</i>	Library	11	4.8
Total*		227	99.9

* The 227 citations represented in this table constitute 33.4% of the total number (679) of citations to journals from 127 "source" articles. The "% of total" column totals to 99.9% due to rounding.

33.4% of the 679 citations to journals, but only 4% of the 249 journals cited. Therefore, of all the citations to journal articles, one-third were to 4% of the titles. Approximately 52% of all citations were to journals within the discipline of library science. Only about 3% were to journals within the discipline of sociology. (The term "discipline" refers to a cited journal's general orientation, not to the specific focus of the cited article that appears within a journal.)

This study examines the nature of interdisciplinary studies and the extent to which cross-pollination occurs between a research discipline (in this case, sociology) and an applied discipline (in this case, library science).

Next, the cited authors from source library science articles were compared with the sociology source authors. Of the 1,207 authors that were cited in 127 source library science articles, none authored the 16 source sociology articles. The cited journals from library science source articles were then examined to determine the journals cited most prominently and to determine to which dis-

cipline the cited journals belonged. Table 1 illustrates the 10 journals cited most frequently in source library science articles. These 10 titles represented 33.4% of all the citations to journals, with 237 titles accounting for the remaining 66.6% of citations to journals. Within this top one-third cluster, library science journals composed 86% of the citations. One title, the *New York Times*, represented the remaining 14% of these citations and is, (1) not associated with any particular subject discipline and (2) not a professional scholarly journal. Moreover, none of the citations within the top 33.4% of citations was to sociology journals. In fact, sociology journals did not appear in the top 66% of the citations.

Therefore, library science research apparently does not look toward the field of sociology when investigating sociological topics. The lack of citations to contemporary sociologists publishing in the same area and the overwhelming tendency of library science articles to cite articles from a core of library science journals support this conclusion (see table 1). Also, the observation that sociology journal articles represented only 3% of the citations to journals within the entire sample—less than, but similar to, journal articles in education (4.7%) and

TABLE 2
FREQUENTLY CITED JOURNALS IN "SOURCE" SOCIOLOGY ARTICLES

Cited Journal	Discipline	No. of citations (n=130)	% of Total (n=55)
<i>Academy of Management Journal</i>	Bus. Adm.	9	16.4
<i>Administrative Science Quarterly</i>	Bus. Adm.	9	16.4
<i>Human Organization</i>	Sociology	6	10.9
<i>College & Research Libraries</i>	Library	5	9.1
<i>International Library Review</i>	Library	5	9.1
<i>Public Administration Review</i>	Pub. Adm.	5	9.1
<i>American Political Science Review</i>	Political	4	7.3
<i>American Sociological Review</i>	Sociology	4	7.3
<i>Journal of Business</i>	Bus. Adm.	4	7.3
<i>Urban Life</i>	Sociology	4	7.3
Total*		55	100.2

* The 55 citations represented in this table constitute 42.3% of the total number of citations to journals from sixteen "source" articles. The "% of total" column totals to 100.2% due to rounding.

administrative sciences (3.2%), as well as newspaper articles (12.4%)—demonstrates a lack of attention focused on previous sociological research.

To what extent does research into the sociological aspects of libraries as published within sociology journals draw on previous library science research?

The same method described above was used to answer this question. Only 5 (1.4%) of the 364 authors were cited more than three times, representing 6.1% (27) of all citations. The 10 most frequently cited journals represent 42.3% of the 130 citations to journals and approximately 15% of the 65 journals cited. Therefore, of all the citations to journal articles, just over two-fifths were to 15% of the titles. Approximately 19% of all citations were to journals within the sociology discipline. Just over 26% were to journals within the library science discipline.

Next, the cited authors from source sociology articles were compared with the library science source authors. Of the 364 authors that were cited in 16 source sociology articles, 3 were authors from the 206 source library science authors. The cited journals from sociology source articles were then examined to determine the journals cited most frequently and to determine to which discipline the

cited journals belonged. Table 2 illustrates the 10 journals cited most frequently in source sociology articles. These titles represent 42.3% of all the citations to journals, with 55 titles accounting for the remaining 57.7% of citations to journals. Within this top two-fifths cluster, sociology journals composed only 25.5% of the citations. The remaining titles were dispersed among several other disciplines. Library science journals represented 18.2% of these citations.

Library science research apparently does not look toward the field of sociology when investigating sociological topics.

Therefore, it appears that sociology research into libraries looks to previous library science research. While 3 of the authors cited in the sociology source articles also were authors of library science source articles, this constituted less than 1% of all authors cited. However, within the top 10 journals cited (see table 2), the frequency of citing library science journals (18.2%) was similar to that for sociology journals (25.5%). Moreover,

TABLE 3
 FREQUENCY OF AUTHORS CITED IN BOTH
 LIBRARY SCIENCE AND SOCIOLOGY "SOURCE" ARTICLES

Authors	Cited in Library Science Sources		Cited in Sociology Sources	
	n	rank*	n	rank*
Asheim, L.	1	21.0	1	18.0
Berelson, Bernard	3	5.0	1	18.0
Berger, Peter	1	21.0	1	18.0
Blau, P. M.	2	9.5	1	18.0
Braverman, M.	5	2.5	1	18.0
Carpenter, R. L.	2	9.5	2	5.0
Chelton, M. K.	2	9.5	1	18.0
Chen, C.	1	21.0	1	18.0
Chisholm, M. E.	1	21.0	1	18.0
Cooper, M. D.	1	21.0	1	18.0
Danton, J. D.	1	21.0	1	18.0
Dervin, Brenda	2	9.5	9	1.0
DuMont, R. R.	3	5.0	1	18.0
Estabrook, Leigh	3	5.0	1	18.0
Garrison, Dee	6	1.0	1	18.0
Goodman, Paul	1	21.0	1	18.0
Hughes, E. C.	1	21.0	1	18.0
Katz, J.	1	21.0	1	18.0
Lazarsfeld, P. F.	1	21.0	1	18.0
Liesener, J. W.	1	21.0	1	18.0
Olsen, Harold A.	1	21.0	1	18.0
Palmour, Vernon E.	1	21.0	1	18.0
Roderer, N. K.	1	21.0	1	18.0
Strauss, Anselm	2	9.5	3	3.0
Toffler, Alvin	5	2.5	1	18.0
Van House, Nancy A.	1	21.0	2	5.0
Warner, E. S.	1	21.0	1	18.0
Zaltman, Gerald	1	21.0	2	5.0
Zweizig, Douglas L.	2	9.5	4	2.0

* corrected for ties. $r_s = +.444$

library science articles were cited more often than sociology articles within source sociology articles.

To what extent does a partial paradigm, constituting sociological aspects of libraries, exist?

Table 3 lists the 29 authors who were cited in both source article sets—library

science and sociology. These cited authors represent the extent to which both library science and sociology draw on a common body of specific authors when studying sociological aspects of libraries. For library science source articles, table 3 lists approximately 4.5% of all authors cited. For sociology source arti-

TABLE 4
 FREQUENCY OF JOURNAL TITLES CITED IN
 BOTH LIBRARY SCIENCE AND SOCIOLOGY "SOURCE" ARTICLES

Journal	Cited in Library Science Sources		Cited in Sociology Sources	
	n	rank*	n	rank*
<i>Academy of Mgt. Review</i>	1	18.0	9	1.5
<i>Admin. Science Quarterly</i>	2	10.0	9	1.5
<i>American Pol. Sci. Rev.</i>	1	18.0	4	6.5
<i>American Soc. Review</i>	1	18.0	4	6.5
<i>College & Research Libraries</i>	11	4.0	5	4.0
<i>Intl. Forum Info. & Doc.</i>	1	18.0	1	19.5
<i>Intl. Library Review</i>	7	8.0	5	4.0
<i>J. of Academic Libr.</i>	1	18.0	3	9.5
<i>J. of Educ. for Libr.</i>	10	5.0	2	13.0
<i>Journalism Quarterly</i>	1	18.0	1	19.5
<i>Library Journal</i>	86	1.0	3	9.5
<i>Library Quarterly</i>	15	2.5	2	13.0
<i>Library Trends</i>	15	2.5	2	13.0
<i>Management Science</i>	1	18.0	3	9.5
<i>Monthly Labor Review</i>	1	18.0	1	19.5
<i>North Carolina Libraries</i>	1	18.0	1	19.5
<i>Public Admin. Review</i>	2	10.0	5	4.0
<i>Public Interest</i>	1	18.0	1	19.5
<i>Public Opinion Quarterly</i>	2	10.0	3	9.5
<i>Science</i>	8	7.0	1	19.5
<i>School Library Journal</i>	9	6.0	1	19.5
<i>Social Forces</i>	1	18.0	1	19.5
<i>Sociological Quarterly</i>	1	18.0	1	19.5
<i>Urban Affairs Quarterly</i>	1	18.0	1	19.5

* corrected for ties. $r_s = +.361$

cles, the same table lists approximately 12% of all authors cited.

A Spearman's correlation, which measures the relationship between two sets of rankings of the same observations, was computed for table 3. It indicates that among the common authors cited in both sets there exists a degree of relationship ($r_s = +.444$). However, the existence of a common body of specific authors who are cited in both library science and sociology source articles does not necessarily imply the existence of a paradigm. It is a necessary, but insufficient, condi-

tion. For table 3, the relatively high correlation could be artificial and explained by the high number of ties on the low number of occurrences.

Table 4 illustrates the comparison of both the library science cited journals and the sociology cited journals in an attempt to discover common titles. Twenty-four journals were cited in both library science and sociology source articles. These journals represented 26.5% of all the journals cited in library science source articles, and 53.1% of all the journals cited in sociology source articles. A

Spearman's correlation of ranked data indicates that among the common journals cited in both sets there exists a degree of relationship ($r_s = +.361$). However, only one of these titles, *College & Research Libraries*, appeared in both table 1 and table 2, the tables that listed the most frequently cited journals for each source set. Because of this, one could conclude that rather than illustrating the existence of core journals within a paradigm, table 4 reflects the tendency of sociology articles to draw on the published literature of other disciplines, as made evident in table 2.

Limitations

Examining citation patterns only within journal articles limits this study. Monographic and other material was not used because journal literature provided a focus on current interdisciplinary communication. Also the study is limited by the citations from library science source articles available in the Kent State University Libraries. Furthermore, the low number of source sociology articles ($n = 16$) may not be a large enough sample for conclusive data analysis. However, this low number is also indicative of the direction and level of interdisciplinary relevance between applied and research disciplines. The examination of the research discipline's literature revealed few instances of empirical study into how that discipline's research is applied in a given field.

DISCUSSION AND RECOMMENDATIONS

This study affirms that research reported in the library science literature does not often cite relevant research from other disciplines. The observation that an applied discipline—in this case, library science—demonstrated a strong tendency to cite its own body of literature reinforces the notion that paradigmatic structures do not cross the traditional boundaries of established disciplines, thus inhibiting interdisciplinary research. The research discipline, sociology, seems to indicate that unlike paradigms for applied disciplines, para-

digms for research disciplines may be structured around a theoretical or methodological approach rather than around topics. This would explain why the topical focus of this study, sociological aspects of libraries, resulted in a clearly defined body of literature within library science and the absence of such a body in sociology.

This study examined the extent to which cross-pollination can occur between a research discipline (e.g., sociology) and an applied discipline (e.g., library science), resulting in a new paradigm facilitating interdisciplinary research. The research discipline and the applied discipline do not share a paradigm. The applied discipline appears to be more self-contained, while the research discipline appeared more likely to draw on resources from a variety of disciplines. Paradigms are perpetuated by rewards through publication and other means. The reward system reinforces the perception within the social circle that an internal focus is superior. As long as the rewards are greater for paradigm membership, the traditional partial paradigm structures of the social sciences will continue.¹⁸

This study could be restructured. Rather than approaching the study from a specific topic, the investigator could have studied a content analysis of articles from sociology (research discipline) core journals and defined paradigms based on observations of the theoretical or methodological approaches. Once this was accomplished, the presence or absence of specific phenomena could have been noted from one paradigm to the next. Library science (applied discipline) literature could have been approached in the same manner in order to confirm or deny the concept, introduced in this study, that an applied discipline's paradigms are organized differently from a research discipline's paradigms, which may, in turn, inhibit scholarly interdisciplinary research into librarianship.

CONCLUSION

Librarians need to be conscious of the existence of paradigms, how library science paradigms are organized, and how

paradigms shape practice within the profession. In order for librarianship to incorporate new ideas and to challenge existing structures, theory and research methodologies from a variety of disciplines should be used. This utilization would allow movement from topical or

situational issues toward the building of "the theory base which supports and enhances the library and information professions."¹⁹ The first step in this process is to understand that existing paradigms may inhibit the interdisciplinary inquiry necessary to accomplish this task.

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