A Bibliometric Study of the *JEL*, 1960-1984

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This study describes and evaluates key bibliometric patterns in the articles published by the former *Journal of Education for Librarianship (JEL)* during its first 24 volumes of existence from 1960 to 1984. Data from each issue of *JEL* were collected and analyzed using SPSSx.

Since *JEL* became a refereed journal beginning with volume 12 in 1971, its scholarliness has increased dramatically — at least insofar as a quantitative indicator reveals. Before 1971, just over half of all articles contained bibliographic citations. Afterwards, this proportion grew steadily, and in the 1980s nine out of ten articles were referenced. The number of citations per referenced article has also increased steadily, from eight before refereeing to 17 in the 1980s.

THIS STUDY addresses the question of what quantitative and evaluative statements can be made about the *Journal of Education for Librarianship (JEL)* now that it has completed 24 volumes of publication spanning the years from 1960 to 1984. During this time, *JEL* was the principle medium of formal communications in English for professional educators in library science.

The objectives of the present study are to investigate two clusters of questions. The first cluster concerns the population of articles published by *JEL* over the past 24 years. Basic questions are as follows:

- How many and of what length were the articles published by *JEL*?

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What subject matter did they address? How often did they cite prior literature? Were they the product of author collaboration or of individual effort?

- Who were the contributing authors, in terms of the variables below: occupational status, geographical location, gender, typical number of article contributions to *JEL*, and, author identities of highest contributors?

The second cluster of questions concerns the population of bibliographic citations found in *JEL* articles over the study period, namely the following:

- What were the bibliometric characteristics of cited works, in terms of: number, frequency, age, publication format, and, authorship collaboration?
- What were the titles of journals most frequently cited? What was their productivity in terms of citation yield?
- What were the titles of the most cited publications? Who were the most cited authors and editors? What was the productivity of these respective titles, authors, and editors in terms of their citation yield?

Finally, what were the major shifts in these bibliometric dimensions over the study period from 1960 to 1984? In particular, did the adoption of manuscript refereeing in 1971 have a discernible effect on any of these bibliometric dimensions and on the scholarliness of the *Journal*? For the purposes of this study, it was hypothesized that a statistically significant difference would be apparent in the proportion of referenced articles before and after the introduction of this refereeing policy. The null hypothesis was that refereeing had made no difference in the proportion of articles with bibliographic citations accepted for publication.

Background to the Problem. In the summer of 1960, *JEL* was launched as the official publication of the Association of American Library Schools (AALS), and it proposed to address an ambitious agenda of questions:

What do they teach in library schools?
How do they teach it?
Who are the teachers?
Who are the students?
What do they know and do about research?
What does the AALS think, and do, and say?
What are related problems of education for librarianship abroad?
How do the changing needs of libraries affect the education of librarians?[1]

The *Journal* indicated that answers would be sought through a combination of approaches: signed articles, surveys, reviews of dissertations

and other research projects, an annual faculty directory, official reports of AALS activities, substantial reports of other associations concerned with education for librarianship including the annual report of the Committee on Accreditation, a quarterly chronicle featuring news items, workshop and institute summaries, and a calendar of events, and, a forum for "letters of thoughtful comment on the contents of the journal and also on the broader issues of professional education."[2]

The *Journal* began by intermixing scholarly articles with occasional feature items and regular columns which treated some of the above-mentioned topics. Commencing in 1964 with issue number 4 of volume 4, news accounts of conferences and meetings plus such aforementioned feature items were shifted to a general section entitled "Of Special Interest."[3] Other columns, such as the "Teacher's Section" and a book review section entitled "In Review," were later added to this general section. Early editorial themes in *JEL* included a plea for a more responsive readership, an invitation for more substantive manuscript contributions,[4] and sometimes simply for more submissions.

Notable departures in *JEL* editorial policies and practices occurred when *JEL* became a refereed journal with the first issue of volume 12, in the summer of 1971.[5] Manuscripts were to be reviewed not only by the editor but also by two or more experts who would be selected by the editor from the ranks of the Editorial Board or, on occasion, from the AALS membership. At the same time, members of the Editorial Board became official advisors to the editor and to the AALS Board of Directors. Also at that time, in order to ensure greater security of tenure and more editorial independence, the editor was given a fixed length of appointment, after which renewal was to be at the option of the Association's Board of Directors. Perhaps partly as a consequence of this policy, *JEL* editorship has been stable. Only five editors have served during the 24 years under study: Harold Lancour (1960-1964), William A. Katz (1964-1971), Norman Horrocks (1971-1976), Lucille M. Wert (1976-1980), and Charles D. Patterson (1980 to date).

The Problem in Perspective. Objective description and appraisal of *JEL* is appropriate at this time for two reasons. The first is that some 15 years have passed since Donald J. Lehnus (1971) published his ten-year analysis of the journal literature of library science education.[6]

The second reason is that, beginning in 1983, the sponsoring body of *JEL* changed its name from AALS to ALISE, the Association for Library and Information Science Education. The rationale for the change was that:

[The] Association is predominantly made up of personal members, is

international in scope, its objective includes information science, and . . . the majority of members work in schools, the names of which include "information" . . . .[7]

In addition, commencing with the first issue of volume 25 (Summer, 1984), *JEL* became *JELIS,* the *Journal of Education for Library and Information Science.* In announcing the change in name, the editor emphasized the dramatic impact of technological advances on all aspects of the many and diversified information professions.[8]

In his study of the journal literature of library science education for the period 1960 to 1970, Lehnus had been interested in whether or not there existed a core of highly cited authors and highly cited papers within that literature.

The early *JEL* profile sketched by Lehnus was a gloomy one: an unscholarly (and unrefereed) journal with a large proportion of unreferenced articles, no sharply discernible research front of contributing and cited authors, and no core literature of citation classics. He conjectured that: "If the paucity of documented articles in a given area indicates a lack of serious inquiry, then the evidence . . . might indicate that there are few research articles appearing in this professional journal."[9] With respect to those articles in *JEL* which contained bibliographic citations, analysis revealed no strong citing preferences either for authors or for papers. Thus, the existence of a research front or of citation classics in library science education could not be claimed.

Among the findings reported by Lehnus were the following:

— 55 percent of *JEL* articles were unreferenced (130 out of 235 papers);
— The 105 referenced articles produced eight citations per article, with a range of 32 (from 1 to 32);
— 5.5 percent of citations were *JEL* self-citations (46 out of 838 total citations in the 105 articles);
— 14 percent of the citations in *JEL* articles were to the literature of education while an additional 22 percent were to works outside both library science and education;
— 43 percent of all citations in *JEL* articles were to journals and 52 percent were to books, pamphlets, conferences, reports, and the like;
— Over half of the citations in *JEL* articles were five years or less in age at the time of their use (449 out of 838 total);
— Ten authors were cited six or more times each in *JEL* articles and they were, in descending rank, Shores, Carnovsky, Shera, Berelson, Bonk, Reed, Danton, Wasserman, Williamson, and Lancour;
— Only two works received as many as six citations: *Training for Library Service* by Williamson (1923), and *Problems of Library School Administration* edited by Reed (1965).

The question arises, then: To what extent is the earlier Lehnus profile of *JEL* still valid? Some quantitative evidence of the current validity of this profile is desirable, in order that we can more adequately assess the recent record of *JEL* in transmitting the results of scholarly inquiry and so that we can more adequately characterize the state of current research in library and information science education.

Theoretical Framework. This study describes and evaluates key bibliometric patterns in the articles published by *JEL* during its first 24 years of existence. The work, then, while partially replicating the Lehnus study, also endeavors more rigorously to apply bibliometric concepts and to extend the scope of investigation. It is hoped that a more comprehensive characterization of *JEL* will thus be realized.

Bibliometric patterns try to portray a certain kind of human behavior with respect to the flow of information. This is the behavior of scholarly authors and their many "gatekeepers" such as editors, referees, and publishers. Scholarly authors and their gatekeepers do more than assist in a flow of information. Ideally, only certain information is permitted to "flow" — information that is the product of rational inquiry — and this kind of information must pass through a variety of quality control processes, including the reaction at large of the community of scholarly consumers. On the other hand, whatever the quality level of information flow, there is no direct way of empirically observing and measuring it. Only certain tangible proxies exist which are manifestations of this flow. These tangible proxies or artifacts are scholarly publications.

From these artifactual manifestations, it is possible to infer a variety of bibliometric characteristics of scholarly research and productivity.

One objective of bibliometric research is, then, to reveal how authors in a field or in a subset of a field organize and communicate their intellectual efforts. The efforts thus revealed can be those at a given point in time or over a period of time. The discovery of trends which can be inferred from large-scale shifts in bibliometric patterns is of particular interest.

The focus in such textual research is structural, but the consequences and import are functional. As Bazerman has noted, "From the shape of things, one can better understand how things happen."[10] Similarly, Frohmann has observed that: "Just as a command of geography aids navigation, a good representation of the structural characteristics of a discipline helps both researcher and scholar to identify issues and problems in the field,"[11] Thus, bibliometric research aims at visualizing and describing the authors who create such structural patterns, with particular emphasis on their publication habits.

Bibliometric research methodology is founded upon a number of theoretical propositions, some of which are of longstanding and con-

tinuing debate. Recent treatments are by Cronin, Line, Smith, Garfield, and Oromaner.[12] These theoretical propositions concern: the relationship between a field and its literature, the relationship between competition and consensus, and the relationship between scholarship and citation.

The first theoretical proposition is that the literature of a field represents the field itself, in that all the important problems and issues addressed by the intellectual community have been documented for peer review and have survived the field's formal systems of refereeing, editing, and publishing. This condition may not be satisfied in the short term, since a great deal of research effort that ends in blind alleys and in other unsuccessful strategems never gets written up for public consumption. Generally speaking, what authors report in the literature is success, not failure.

Another theoretical proposition forming the intellectual foundations of bibliometric research is that normal science is, simultaneously, both institutionalized competition and a highly cooperative and consensible activity. It is, as Ziman has phrased it, "the corporate product of a vast social institution."[13] From this consensus-producing effort, certain implications may be derived with respect to the relationship between scholarship and the citing norms of scientists. Ziman observed that:

> Scientific papers are derivative, and very largely unoriginal, because they lean heavily on previous research. The evidence for this is plain to see, in the long list of citations that must always be published with every new contribution. These citations not only vouch for the authority and relevance of the statements that they are called upon to support; they embed the whole work in a context of previous achievements and current aspirations. It is very rare to find a reputable paper that contains no references to other research. Indeed, one relies on the citations to show its place in the whole scientific structure just as one relies on a man's kinship affiliations to show his place in his tribe.[14]

Thus, any investigation of bibliographic citation patterns rests on the proposition that cited works are more useful, more germane, to the collective knowledge base of a field than works not cited. The extent to which this theoretical view is valid, however, is a matter of considerable conjecture — and, concomitantly, a matter of very limited empirical study. For instance, Oromaner argued recently that citations may not indicate the most innovative and creative work. Moreover, some limited recent research into the functioning of citations in papers suggests that up to one-half of them could be considered redundant, perfunctory, or ceremonial.[15] It has also been demonstrated that a researcher does not automatically select the best work for review and citation. The factor of document accessibility — in terms of form, place of origin, age, language, or coverage by secondary services — may be of equal or greater importance than document quality in an author's selection decisions.[16]

Citation analysis is a very general measure of the utility of the contribution made by an individual to cognitive progress in a field. Utility is thus not to be equated with importance or impact: a highly cited work is one that has been found useful by a relatively large number of publishing peers.[17]

Other theoretical premises issue from the nature and quantification of citation pheomena. A fundamental one in terms of data collection and analysis is that each citation is of equal weight with a fixed value of one. By reverse inference, therefore, each citation was of equal utility and relevance to the citing author. Typically, citation studies have ignored factors such as the location of citations within a paper[18] and multiple mention.[19]

In spite of some degree of extant theoretical inadequacy, citation analysis reveals not only the structure of publication utility within a field, but it also reveals the career patterns of publications themselves: How many perish? How many survive, and for how long? What and who replaces them? Such questions are the driving force behind bibliometric analysis; and it appears that, at least for a time, in the absence of a satisfactory theory of citing,[20] theoretical advances are more likely to issue from the failures and frustrations of slightly blind empirical researchers than from theorists concentrating upon formal analysis.

By investigating and describing the formal characteristics of *JEL,* the present study also characterizes the primary educational literature of library science in order to shed light on the essence of the field itself. In particular, citation patterns are a rich source of quantifiable data about publication phenomena. Accordingly, they are subjected to close analysis for what they are able to reveal about the citing authors themselves, and about their field at large.

Review of Related Literature. Since the Lehnus study in 1971, a number of bibliometric investigations of library and information science have been reported in the literature. Several of these have focused on the nature of secondary information services while others have focused on the role of annual reviews and still others have investigated the characteristics of a particular form of literature, such as doctoral dissertations or periodicals. A recent group of bibliometric studies has tried to describe the parameters of the domain itself, or of subject subsets of the domain, typically through analysis of the relevant journal literature. Notable work has been reported on two subsets of the domain: (1) the literature of library administration, by Mittermeyer and Houser;[21] and, (2) the literature of cataloging and classification, by Frohmann.[22] The methodology of the present work is modeled on their approaches. Also, the findings of the

present work are compared briefly with their findings, as a way of giving some quantitative context to the *JEL* data analysis.

Conceptual Problems and Definitions. Although some of the Lehnus data for the decade 1960 to 1970 can be used to compare with the data collected here for the subsequent period, he did not address the following variables of interest in the present work: the proportion of pages devoted to articles versus news reports; the subjects treated in *JEL* articles; authorship collaboration; the demographic parameters of contributing authors; and cited authorship collaboration.

Moreoever, some of the data could not be used because of conceptual difficulties. The most important issues from the need for a more rigorous definition of the notion of a journal "article."

1. *Article*

Lehnus defined an "article" as:

> any contribution that was not a regular feature item of the journal. News notices of meetings, new accreditations, faculty appointments, etc., were not considered as articles. In the case of *JEL* all the news items of the activities of the AALS, as well as its annual directory of library educators were not considered as articles. In the composite articles where the writing of each individual is separable and distinguishable each was counted as a separate article; but an article written jointly without such distinction was considered as a single article.[23]

Although data collection was commenced on the basis of the Lehnus approach, its inadequacy for operational decisions was almost immediately evident. Neither the bibliometric literature nor professional glossaries were helpful in clarifying the matter.[24]

The inadequacy of Lehnus' definition of "article" was particularly evident for the early years of the *Journal,* when news reports of various issues and activities and news summaries of meetings, committees, panel discussions, discussion groups, symposia, conferences, and the like appeared intermixed with articles. Lehnus classified as articles some items which were news reports on various matters or journalistic summaries of meetings, symposia, conferences, and the like. These reports and summaries were not papers prepared and read at the events, but were rather second-hand accounts. This categorization tended to inflate the *JEL* article count. In the present study, items of this kind were excluded from the category of "articles." Titles of all excluded items are listed in Appendix I. In order to render classification decisions more credible, all items whose status as articles or news reports was not readily apparent were judged, independently of each other, by two colleagues. Items so refereed totalled 23. Of these items, both referees agreed to exclude all but four. (These four items were also excluded.)

The effect of this more rigorous conceptualization of *JEL* articles is to

reduce their number from Lehnus' population for the 1960-1969 period of 235 to 205 in the present work.

2. *Bibliographic Citation*

The terms "citation" or "reference" as used to denote bibliographic items in an article note or footnote are synonymous. They were interpreted following Lehnus' criteria as closely as possible: "Any reference to an article, book, letter, personal notes and interviews, etc., was considered as a citation. Several references to the same item in one article were considered as a single citation. Works to which the reader was referred for further information were also considered as citations. Excluded were all items intended as a bibliography *per se*, and not as a list of notes or references for the article."[25] If an author included a section of "additional references," these were included as citations in the present study, but a "bibliography" or a list of examples was excluded. The following were articles in *JEL* found to have embedded bibliographies: vol. 6 (1): 27; vol. 7 (4): 210; vol. 9 (2): 95; and vol. 10 (1): 3.

Also, in the case of anthologies whose contents were cited several times, Lehnus counted as a citation not only the cited author but the anthology editor as well.[26] The effect of such double counting was to inflate the citation frequencies of authors-cum-editors. On the other hand, Lehnus' Table 6 of "authors who were cited at least three times" appears to contradict the stated approach; Reed, for example, received three citations according to this table, but according to Table 8 she received six citations as an editor.

Moreover, Lehnus' Table 6 of "authors who were cited at least three times" is misleading because he excluded individuals who had only one title cited, even though such a title might have been cited a large number of times. Lehnus does not report how many authors went unreported as a consequence. This is enigmatic if the research objective is to identify highly cited authors and highly cited titles.

3. *Publication Format*

Another conceptual difficulty which makes previous data unusable relates to Lehnus' classification of publication formats,[27] with particular reference to his overly broad format of "books, pamphlets, conferences, and reports" as a single category. In addition, the level of precision reported in the Lehnus data does not permit longitudinal comparison among variables, and so multi-faceted shifts in bibliometric patterns cannot be identified. For example, the age distribution of cited works is grouped into five-year intervals and so a more detailed analysis of patterns of most recent citations is not possible. Also, no overall frequency distribution of citations by author is presented in tabular form; only grouped data are mentioned in the text.

There is a need for more clarity in the glossaries which attempt to standardize concepts in library and information science, as these do not always discriminate between publication form or format, and publication function. Based upon the existing definitions, "publication format" is taken to include the physical identity of a recorded work and implies dissemination or transfer of intellectual content, so as to satisfy conditions of the publication process.

There is no consensus in previous citation analyses on a standard typology of publication formats. Some studies use a very simple set of types, such as: journal, monograph, other. In his analysis of *JEL* citations, Lehnus created five major categories for type of publication format: periodicals; books, pamphlets, conferences, reports, etc.; letters, speeches, interviews, etc.; Ph.D. theses; and, master's theses. However, neither the Lehnus typology nor others provided a set of format categories suitable to capture the variety of publication formats cited in *JEL* articles.

The typology which was developed for the present study included 17 categories. (Appendix II.) Whereas Lehnus termed his first category "periodicals," the current *JEL* investigation treated journals, newsletters, and annual reviews separately. Similarly, whereas Lehnus combined books with pamphlets, conference proceedings or conference news, reports, plus an *"etcetera"* category — which requires guesswork to replicate — monographs in the present study were classed separately from technical or statistical reports, from conference proceedings, and from edited collections and anthologies. Pamphlets were placed in a miscellaneous class along with speeches, manuscripts, committee records, and other materials.

4. *Scholarliness*

Windsor and Windsor conducted a study of information scientists and the citing of their own publications. Their study proposed as a measure of the scholarly status of a field "the ratio of papers without references to those with references."[28] One criterion for regarding publications as "scholarly" is coherence in relation to past knowledge. Therefore, one indicator of scholarliness should be the presense of formal acknowledgements of that foundational knowledge and its creators, through bibliographic citations. The concept of scholarliness is thus given a partially measurable form in the phenomenon of bibliographic citations. However, this theoretical framework does not provide for how much knowledge must be formally recognized, so that more citations do not automatically or necessarily imply a greater degree of scholarliness.

5. *Article Subject*

The subject or subjects treated by *JEL* articles were assigned from the

official cumulative subject indexes.[29] These indexes cover the period 1960 to 1980 only, volumes 1 to 20; consequently no subject heading assignments were made for the subsequent years, volumes 21 to 24 inclusive. Excluded from the analysis of subject coverage were all index terms relating to the affairs of AALS and other associations, to regular features of the *Journal,* and to news reports carried by the *Journal.*

Data Collection Methods and Procedures. Using computerized files, two databases were built for volumes 1 to 24 of *JEL.* The first database consisted of source article information. The definitional criteria for source articles were applied and the collaboration of professional colleagues was secured in ambiguous cases (Appendix I). All qualifying source articles were numbered in consecutive order (n = 473).

The database of source article information included volume and issue numbers, authorship and author occupation codes, geographic location of contributing author, gender of contributing author, source article subject codes, article pagination, and presence or absence of citations.

Data from each issue of *JEL* were then analyzed using SPSSx for nine characteristics of the population of published articles: number, length, subject matter, scholarliness, authorship collaboration, occupational status of authors, geographical distribution of authors, gender of authors, and productivity of authors.

The second database consisted of information about the bibliographic citations contained in *JEL* source articles. The references cited within each article were consecutively numbered throughout all volumes (n = 3,655). These citation codes were recorded manually in the journal issues and were input directly into the database from the coded issues. For source articles with no citations the numeric citation sequence was simply carried forward from the last-numbered citation. Codes were also input for journal volume, issue date, publication date of the cited work, authorship and/or editorship, type of publication format, and journal title (where applicable).

Data were then analyzed using SPSSx for seven characteristics of the population of bibliographic citations in *JEL* articles: frequency, age, publication format, journal titles, authorship collaboration, productivity of cited authors, and the titles of highly cited publications.

Findings. JEL published a total of 473 articles between 1960 and 1984, about five works per issue. The typical article in the 1960s was seven pages long, but by the 1980s it had doubled in length. The overall proportion of pages in each issue devoted to articles, however, remained relatively constant, at approximately 70 to 75 percent.

Subjects most frequently addressed in *JEL* during the period of time for which subject indexes are available (1960 to 1980 only) were international and comparative library education, curriculum, and library education. When subjects are ranked by the number of times mentioned in the indexes, the following pattern emerges:

1. international and comparative library education (including status reports on individual countries)
2. curriculum — reference services
3. curriculum — design and development
4. curriculum — core courses
5. curriculum — cataloging and classification
6. curriculum — special librarianship
7. curriculum — book selection
8. curriculum — aims and objectives
9. library education — aims and objectives
10. library education — philosophy.

It should be noted that the present descriptive study cannot account for purposive editorial decisions with respect to the subject matter of articles published in *JEL*. That is to say, do the data reflect the interests of the field, or a lack of papers treating other subjects? Moreover, it should also be noted that the present study cannot account for purposive subject indexing decisions. That is to say, do the data reflect indexer behavior, or the *Journal* itself? (Each of the 181 subject headings was used about four times.)

In spite of these perceptual difficulties, it can be stated that there were more mentions of international and comparative library education than of any other subject matter. There was also considerable attention to curriculum and related matters. There was not, however, very much attention to the philosophical aspects of library science education. In the absence of a strong consensus on the philosophical foundations of the field, this paucity of treatment in *JEL* articles must be regarded as surprising. One would expect the single most important problem for educators to be the nature of underlying philosophy for the education of neophytes. Where is the debate on the kind of discipline which we want — humanistic, managerial, social scientific, technocratic, and so forth?

Since *JEL* became a refereed journal beginning with volume 12 in 1971, its scholarliness has increased dramatically — at least insofar as a quantitative indicator reveals. Before 1971, just over half of all articles were referenced. Afterwards, this proportion grew steadily. Indeed, in the most recent three volumes, nine out of ten articles were referenced. A chi-square test was used to verify the hypothesis that refereeing constituted a significant factor in the scholarliness of the *Journal*. The null

hypothesis was disconfirmed (significance = .000). The table below shows the patterns in scholarliness of articles, before and after the adoption of expert refereeing of manuscripts.

TABLE 1. *Scholarliness of Articles in* JEL, *by Refereeing Policy*

	Number of articles		Total	Proportion of articles	
	with citations	without citations		with citations	without citations
Before refereeing (1960-1970)	122	108	230	53.0%	47.0%
After refereeing (1970-1983)	195	48	243	80.2%	19.8%
Total	317	156	473	67.0%	33.0%

X^2 = 54.801, df = 1, sig. = .000

Another important, though less dramatic, change since *JEL* became a refereed journal has been an increase in the frequency of authorship collaboration. During the *Journal's* first ten years, the notion of joint authorship of an article was virtually unheard of. By the early 1980s, one out of three articles was authored by two or more individuals. In most fields of the natural and human sciences, collaboration is taken to be a sign of development and maturity — though one must hasten to add that such collaboration is only a crude indicator of cognitive progress.

The following table shows the occupational status of first authors of *JEL* articles for the period under study.

TABLE 2. *Occupational Status of First Authors of* JEL *Articles, 1960-1983*

Occupational Status	Articles	
	Number	Percent
Educators	340	71.9%
Practitioners	100	21.1
Students — doctoral	15	3.2
— master's	12	2.5
Unidentified	6	1.3
Total	473	100.0%

This table shows that seven out of ten first authors were educators. The presence of such a considerable proportion of practitioners raises the interesting question of whether or not the educators are intellectual masters in their own domain.

An analysis of the geographic distribution of first authors of *JEL* articles reveals that 90 percent were American and an additional five percent were Canadian or British. The remainder were located in 14 other countries.

By gender, two-thirds of first authors were male and one-third were female.

Of the 366 first authors published by *JEL,* over 80 percent of them contributed only one article during the 24-year period under study. Less than one percent of all first authors contributed four or more articles during this time. These authors were: R.E. Bidlack, T.J. Galvin, L.A. Grotzinger, F.L. Schick, J.H. Shera, T.P. Slavens, and E.W. Stone. Bibliographic data are detailed in Appendix III.

The 473 articles published in *JEL* during the period under study contained a total of 3,655 bibliographic references. Actually, since one-third of the articles lacked any references at all, these 3,655 items were contained in 317 articles. As the average length of an article increased, so did the average number of citations. Interestingly, citations in the referenced papers provide another indicator of increasing scholarliness of the *Journal,* because the average per article before refereeing was eight and afterwards the average rose to 14; by the 1980s it was 17 citations per article. If both referenced and unreferenced articles are included, the average per paper before refereeing was four and afterwards 11.

This evolving scholarship, however, is somewhat uneven. The range of citations per article goes from zero to 66. The median falls in the group of one to four citations per article. Thus, just over 50 percent of all papers in *JEL* yielded zero to four citations each. At the other extreme, a total of 37 papers were heavily footnoted, producing 25 to 66 citations each. This skewing accounts for the high overall average citations per article.

JEL scholarliness as evidenced by citations depended on recent publications. Almost half of all 3,655 citations were to works less than five years old, and over 70 percent to works less than ten years old. Only ten percent of all citations were to works older than 20 years. This suggests that *JEL* authors relied heavily on current materials in the production of their manuscripts.

The relative recency of citations is in all likelihood accounted for by the heavy reliance of *JEL* authors on journals for their bibliographic references. Cited works in journals accounted for 40 percent of all citations, while cited monographs accounted for only 25 percent of the citations. The heavy dependence of authors on the journal literature is another indicator of the scholarliness of *JEL,* since journals are much more frequently subject to some form of refereeing than are monographs and conference proceedings, which generally have less consistent quality control.

Recency exhibited in the citations is attributable primarily to the journal literature, because 50 percent of journal citations were four years or less in age, while the corresponding proportion of cited monographs was 34 percent.

Up to this point, the data analysis has shown a journal becoming more scholarly on a number of bibliometric dimensions. The strongest evidence for this is the high proportion of citations to journals and the nearly 50 percent of all citations which were four years or less in age.

The next question is which journals made up this contribution. All the journals which yielded 15 or more citations were in the domain of library science if one includes information science (*Journal of the American Society for Information Science* and its predecessor *American Documentation)* and archives *(American Archivist)*. The table below indicates the distribution of citations to highly cited journal titles.

TABLE 3. *Most Cited Journals in* JEL *Articles*

Journal Title	Citations
Journal of Education for Librarianship	285
Library Journal	120
American Libraries/ALA Bulletin	67
College and Research Libraries	58
Library Quarterly	56
Library Trends	42
Special Libraries	38
Journal of the American Society for Information Science/American Documentation	36
American Archivist	28
Libri	27
RQ	27
Unesco Bulletin for Libraries	23
Medical Library Association Bulletin	21
Wilson Library Bulletin	21
Library Resources and Technical Services/Journal of Cataloging and Classification	18
Illinois Libraries	16
Library Association Record	15
Sub-total	898
Other journals (282)	581
Total	1,479

These 17 journal titles yielded almost 900 citations over the period under study. That is to say, six percent of the journals received 60 percent of all citations to journals. This is equivalent to an overall median of at least one citation received each year by these most cited titles. At the other

extreme, almost 60 percent of the journals received only one citation each during the entire study period. In general terms, the pattern in these journal citation data is that a few journals received many citations while many journals received only a few citations.

JEL itself is cited more than twice as often as the next ranking journal, *Library Journal.* This attention to *JEL* is a positive indicator that contributing authors find it relevant to their own scholarship in the field of library science education. On the other hand, *Library Journal* and at least several more of the most cited journals are vehicles for current awareness rather than for research. Such heavy reliance on news publications raises important questions about the qualitative nature of that scholarship.

It is reasonable to expect that researchers in library science education would look to the research literature of education for pedagogic theories, philosophies, principles, and practices. The data reveal that *JEL* authors cited 22 education journals about four times each over the entire period of time under study. While this is not a large proportion of the citations to the journal literature, no other field provided more than one or two journals for citing except psychology with 11 titles which received 37 citations.

What is true of the pattern of cited journals is also true of the pattern of cited authors: a few individuals received many citations, while many individuals received only a few. A total of 16 authors (less than 1%) received nine percent of all citations. The range of citations for these most cited authors was ten to 72 times during the study period. This is slightly less than one citation per year over the 24 years for each of these authors. At the other extreme, about 70 percent of all 1,950 authors received only one citation during the entire period. The most cited authors were:

TABLE 4. *Most Cited First Authors in* JEL *Articles*

Cited author	Citations	Cited author	Citations
American Library Association (and its divisions)	72	Galvin	18
		Danton	15
Shera	33	Carnovsky	13
Association of American Library Schools	26	Grotzinger	13
		Wasserman	13
Williamson	25	Bonk	12
Asheim	22	Slavens	11
International Federation of Library Associations	19	Lancour	10
		Reece	10
Shores	19		

Corporate authorship was shown to play a large role in the literatures of both library administration and cataloging and classification.[30] Similarly,

in *JEL,* three of the six most cited authors were professional associations, and the top ranked author was a corporate one, the American Library Association. With 72 citations over the study period, the association far surpassed the most cited personal author (Shera) who, with 33 citations, averaged just slightly more than one citation per year.

However, the citation prominence of the American Library Association does not issue from any one publication. Although two of its titles were cited at least five times during the study period *(Library Education and Manpower* and *Standards for Accreditation, 1972),* other citations were distributed throughout a large number of published works.

This was not the case for the two most cited personal authors. Their citation prominence is attributable to a single publication each: Williamson's *Training for Library Service* in 1923, and Shera's *The Foundations of Education for Librarianship* in 1972.

Although the overall proportion of citations to journals was higher than the proportion to monographs (40% and 25% respectively), monographs accounted for the majority of highly cited titles in *JEL* articles examined here. A total of 12 monographs and two pamphlets received five or more citations each during the study period. Only five journal articles received as many citations. Three of these articles were published in *JEL* itself.

Table 5 shows the 18 titles which were cited five or more times in *JEL* articles between 1960 and 1984. The range of citations was 17 (5 to 21) for these most cited titles.

Summary and Conclusions. A bibliometric profile of *JEL* during the period from 1960 to 1984 can be sketched as follows:

— subject emphasis was on international and comparative library education, and curriculum concerns
— two out of three articles had bibliographic citations, with this proportion growing rapidly in the early 1980s
— one out of three articles was authored by two or more individuals in the early 1980s
— seven out of ten first authors were educators, nine out of ten were Americans, two out of three were male
— less than one percent of all 366 first authors contributed four or more articles to *JEL*
— 317 articles contained 3,655 citations, on average eight before *JEL* became a refereed journal, 14 afterwards, and 17 in the 1980s
— range of citations per article was zero to 66, with a median of one to four
— half of all citations were to works less than five years old
— cited works in journals accounted for 40 percent of all citations, monographs for 25 percent

— six percent of all cited journals received 60 percent of all citations to journals, with *JEL* receiving twice as many citations as the next ranked journal
— less than one percent of all 1,950 cited authors received nine percent of all citations, while 70 percent received only one citation over the entire study period
— the most cited author was corporate, receiving twice as many citations as the next ranked author, a personal one.

TABLE 5. *Most Cited Titles in* JEL *Articles*

Cited Title	Author or editor	Date	Type of Publication	Number of citations
Training for Library Service	Williamson	1923	monograph	21*
The Foundations of Education for Librarianship	Shera	1972	monograph	16
Education for Librarianship	Berelson	1949	monograph	14
"Education and Manpower for Librarianship"; Library Education and Manpower	Asheim; ALA	1968; 1970	*ALAB;* pamphlet	11**
Library Education: An International Survey	Bone	1968	monograph	8
The Administrative Aspects of Education for Librarianship: A Symposium	Cassata and Totten	1975	monograph	7
"The Status of 'Practicum' in Graduate Library Schools"	Grotzinger	1971	*JEL*	7
The Curriculum of Library Schools	Reece	1936	monograph	7
Training for Librarianship before 1923	Vann	1961	monograph	7
"Doctoral Study in Librarianship in the United States"	Danton	1959	*CRL*	6
Education for Librarianship	Goldhor	1971	monograph	6
The Program of Instruction in Library Schools	Metcalfe and Russell	1943	monograph	6
"The Future of Library Education: 1975 Delphi Study"	Vance and Magrill	1977	*JEL*	6
Standards for Accreditation, 1972	ALA	1972	pamphlet	5
The Professionalization of Education for Librarianship: with special reference to the years 1940-1960	Carroll	1970	monograph	5
Handbook of Research on Teaching	Gage	1963	monograph	5
"The Case Technique in Education for Reference Service"	Galvin	1963	*JEL*	5
The Search for a Scientific Profession: Library Science Education in the U.S. and Canada	Houser and Schrader	1978	monograph	5

* includes Vann's re-issue in 1971 of Williamson's work for the Carnegie Corporation under the title *The Williamson Reports of 1921 and 1923*.
** combines the two versions of this policy statement, Asheim's 1968 draft and ALA's 1970 official release.

This analysis indicates increasingly rigorous scholarship among library science educators and authors. This is indicated by the increasing frequency and number of bibliographic citations, the increasing length of papers, and collaborative authorship. These are healthy signs for any domain. Similarly, the heavy reliance on journals is an additional positive sign of good scholarship, in that the importance of recent materials is recognized. These indicators provide an insight into the essence of the field: an attempt is being made to enhance intellectual credibility and scholarly status. *JEL* has evolved from a news journal in the 1960s to a vehicle for scholarly communication in the 1980s.

However, the goal of any field is intellectual consensus, and none of the indices developed in this study point to the existence of such a consensus. There is, on the conceptual level, little interest in the philosophical foundations of library science education. There is no well-defined core of domain problems. Concomitantly, there is no well-developed core of either contributing authors, cited authors, or cited works over the 24-year period examined in this study. Beyond these quantitative estimators, bibliometric analysis must be coupled with critical review of the substantive content of *JEL* articles, in order to shed further light on the domain thereby represented. This light is all the more important if the policy of *JEL* is to continue to claim that it is the preeminent journal in library and information science education in the world, the principle channel of scholarly communication among educators in — at least — the English-speaking international community.

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3. *Journal of Education for Librarianship*, 4:(Contents page), Spring 1964.

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16. Smith, ref. 12, pp. 88-89.

17. Garfield, ref. 12, pp. 362, 363.

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APPENDIX I — Items in *JEL* Excluded from the Database of Journal Articles

A. *Items Excluded by the Author*

Regular Features:
- — Association Activities
- — Calendar of Events
- — Contributors to [the] Issue
- — Editorials: Forum, Notes, Foreword, plus commentary or introductory remarks
- — Of Special Interest
- — Miscellany
- — Reviews
- — Research Reports

AALS Constitution and By-Laws
Accredited Library School Enrollment Statistics
ALA Committee on Accreditation Annual Report
Directory of the Association of American Library Schools

B. *Items Excluded by Both Referees*

v. 1(1):22 "Equating Professional Library Qualifications" — no author
v. 2(2):68 "USC Library Education Institute Summary" by M. Boaz

v. 2(2):105 "Undergraduate Library Conference Report" — no author
v. 3(1):35 "Reports from Washington: Two Library Training Programs" by J. G. Lorenz
v. 3(1):41 "Types of Competence to Fill the Libraries' Changing Role: A Synthesis of Seminar Reports" by R. Warncke, compiler
v. 3(1):43 "Educating for Librarianship of the Future: Research and Training — [Panel Discussion]
v. 3(1):53 "Future of Library Education: Proceedings of an Institute — Suggestions, Recommendations, and Proposals; Appendix [Proposed Amendment to the Library Services Act]
v. 3(3):173 "Teaching and Practice of Reference Service" by J.R. Armstrong
v. 3(3):204 "The Life and Times of the Junior Librarian" by C. W. Hintz
v. 4(4):191 "The Conferences That Were" by W.S. Yenawine and M. Boaz
v. 4(4):207 "The Core Reference Course — Discussion Group Summary" by G.A. Marco
v. 4(4):216 "The Core Book Selection Course — Discussion Group Summary" by V. L. Coughlin
v. 4(4):226 "How Articulate is Our Articulation? — Discussion Group Summary" by Carlyle J. Frarey
v. 4(4):242 "Cataloging and Classification — Discussion Group Summary" by Florrinell F. Morton
v. 5(1):20 "Reports on Library School Facilities" by: L.D. Carroll, E. Eisenbach, E.J. Humeston, Jr., V. Lawson, C.J. Frarey, R.N. Broadus, and D. Bevis
v. 5(2):87 "Library Education — What's Missing?"
— "A Realistic and Mature Selection Process" by C. W. Robinson
— "Complex Problems" by J. Orne
— "Select the Students" by M. J. Arnold
— "Small Fund of Information" by R. O. Hummel, Jr.
v. 6(1):19 "Teaching the Selection of Library Materials: An Institute Summary" by H. Hagan
v. 9(4):296 "A Happening at College Park, Maryland" by J. E. Daily
v. 10(4):271 "A Symposium at Bloomington" by J. E. Daily
v. 16(4):245 "Three Reviews on Education for Librarianship" by R. D. Stevens, J. P. Danton, and H. Lancour
v. 18(4):336 "Standards for the Development of Sixth-Year Programs" [adopted by the] AALS
v. 19(2):151 "Papers Presented at a Workshop on the Integrated Core Curriculum — Introduction" by M.L. Wilson
v. 19(3):260 "The Accreditation Process — A Position Paper" [adopted by the] AALS

C. *Items Excluded by One Referee Only*

v. 3(1):30 "Reports from Washington: The Legislative Outlook" by G. Krettek
v. 8(4):251 "Reflections on the Doctoral Program . . ." by M. Monroe and others
v. 15(1):3 "Current Sources of Statistics on Library Education" by the AALS Statistics Committee
v. 22(½):89 "The Conant Report: Three Deans Speak Out:
— "The Original Proposal" by J. D. Ramer
— "The Michigan Site Visit" by R. E. Bidlack
— "A Comment on the Final Conant Report" by R. L. Darling

APPENDIX II — Codes Used for Publication Format of *JEL* Bibliographic Citations

a annual reports
c edited collections, anthologies
d dissertations (doctoral, masters)
h handbooks, guidebooks, manuals, codes, directories, encyclopedias, reference works, union lists
j journals, bulletins, periodicals
l legislation, acts, statutes, bills
m monographs, occasional papers in series
n newsletters
o other (see list below)
p proceedings, annals, transactions, papers of symposia or conferences, institutes, seminars
r annual reviews
t technical reports, statistical reports, ERIC reports
v newspapers
w personal communications, letters, telephone, interviews
y yearbooks
z non-print media (films, television, motion picture, tape, disc)

OTHER: o
addresses, speeches, but if in a journal use "j" code
brochures, pamphlets
committee records, minutes of committees, meetings
course lists, programs, program lists, curricula, syllabus, prospectus
plays
unpublished manuscripts, mimeographed papers, policy statements, typescripts, working papers

APPENDIX III — Authors Who Contributed Four or More Articles to *JEL* 1960-1984

Bidlack:
v. 19, spring 1979: "A Statistical Survey of 67 Library Schools, 1978-79"
18, spring 1978: "Faculty Salaries of 62 Library Schools, 1977-78"
17, spring 1977: "Faculty Salaries of 62 Library Schools, 1976-77"
16, spring 1976: "Faculty Salaries of 62 Library Schools, 1975-76"
15, winter 1975: "Faculty Salaries of 59 Library Schools, 1974-75"
14, winter 1974: "Faculty Salaries of 53 Library Schools, 1973-74"

Galvin:
v. 18, spring 1978: "The Profession's Response to a Crisis-Based Society"
14, spring 1974: "AALS and L.E.D.: A Case for Merger"
10, summer 1969: "The Accreditation Controversy: An Essay in Issues and Origins"
5, spring 1965: "Teaching Reference with Case Studies: An Interim Report"
3, spring 1963: "The Case Technique in Education for Reference Service"

Grotzinger:
v. 17, fall 1976: "Characteristics of Research Courses in Master's Level Curricula"
11, spring 1971: "The Status of 'Practicum' in Graduate Library Schools"
10, spring 1970: "Margaret Mann: The Preparatory Years"
9, summer 1968: "One Road Through the Wood"

Schick:
v. 10, fall 1969: "The Statistical State of U.S. Library Education"
3, spring 1963: "Library Science Research Needs"
3, fall 1962: "Library Science Research"
3, summer 1962: "Manpower Shortage and Library Education"

Shera:
v. 19, summer 1978: "And Gladly Teach"
10, summer 1969: " 'Twelve Apostles' and a Few Heretics"
4, winter 1964: "In Defense of Diversity"
1, winter 1961: "An Educational Program for Special Librarians"

Slavens:
v. 19, winter 1979: "A Study of Library Science Dissertations Accepted by the University of Michigan"
11, fall 1970: "Experimenting in Education for Library Associates"
10, fall 1969: "Computer-Assisted Instruction for Reference Librarians"
9, fall 1968: "Films for Teaching"

Stone:
v. 14, spring 1974: "A Call for the Continued Autonomy and Independence of AALS"
12, spring 1972: "Role of AALS in Lifetime Learning for Librarians"
11, summer 1970: "Librarians and Continuing Education"
6, summer 1965: "Methods and Materials for Teaching Library Administration"