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Counting published public library research: an exploratory study using content analysis

Margaret Grant Goodbody

To the Graduate Council:

I am submitting herewith a thesis written by Margaret Grant Goodbody entitled "Counting published public library research: an exploratory study using content analysis." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Information Sciences.

Douglas Raber, Major Professor

We have read this thesis and recommend its acceptance:

Elizabeth Aversa, William Robinson

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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COUNTING PUBLISHED PUBLIC LIBRARY RESEARCH AN EXPLORATORY STUDY USING CONTENT ANALYSIS

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Margaret Grant Goodbody
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DEDICATION

Dedicated with love to Jeff Amthor, who supported me in every way possible.

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Special thanks to Jacqueline Kracker, my companion in this adventure, for our many hours of conversation on the phone, on the track, in the pool, and over lunch *Maybe* I could have done it without her, but it would have been a much lonelier experience

ABSTRACT

Studies published in a selected set of 20 scholarly library and information science journals were examined to determine the amount of research conducted about or in public libraries compared with academic, school, and special libraries Only refereed journals published in the U S and targeted for a general audience of librarians were included in the set Of the 241 articles included, 77% were about academic libraries and 23% were about public libraries (30 of the articles (12%) considered more than one library type) Academic librarians published 51% and academic researchers published 38% of the studies Authorship, author occupation, and subjects studied within the subset of public-library-related research articles were also examined. Within the 94 public-library-related articles, academic researchers authored 59%, academic librarians wrote 19%, and public librarians wrote 9% (several of the multi-author articles included more than one occupation in the author list, indicating collaboration among occupations). Possible consequences of a comparatively low number of published studies on the effectiveness of public libraries and practitioners are considered, including a lack of innovation in public libraries, reduced or limited status of public librarians within the profession, and poor representation of public library problems in the overall knowledge base Participation of public librarians in formal research is also discussed, especially in the context of a practice-theory communication gap in library and information science. Future research topics are suggested

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CHAPTER I

INTRODUCTION AND PROBLEM STATEMENT

Libraries, even highly mechanized and efficiently operated libraries, should not exist to give librarians something to do. . . . More than ever our society appears to need what libraries have to offer, but what the nature of that need is, and how it should be met, is still unclear.
—Jesse Shera

Public libraries in the United States of America confront significant and interesting problems New technology, rapidly changing and complex communities, high rates of public illiteracy, and other issues tax a system already overburdened and underfunded How can public libraries best fulfill their social mission in this challenging environment? What is the proper role of public libraries in the future? What can public librarians do to insure that members of their communities are not left behind in this era of electronic information sources? How can they deal effectively with multicultural and multilingual communities? If public libraries expect to meet present and future user needs and respond effectively to rapidly changing circumstances, solutions to problems and new approaches must be developed that address the unique needs of public librarians and of current and potential public library users

Research, systematically performed and its results widely disseminated, may be needed for public libraries to successfully respond to present and future challenges Yet it seems that in library and information science (LIS) scholarly journals, a primary dissemination medium of research (Lynam, Slater, and Walker 1982, Ali 1986, Hernon and Schwartz 1999), the number of studies published about public libraries is notably smaller than the number published about academic libraries This raises several questions Is enough research being done about public libraries to meet the needs of the practitioners? What effects might this deficiency have on the profession? Why might this imbalance occur?

Without the sufficient generation and publication of research, the adaptability and effectiveness of public libraries risk being seriously undermined Solutions to various problems encountered by public libraries are communicated in many ways, such as in workshops and manuals, or by word-of-mouth That is, published research is not the only means of dissemination But published research is critical to the process because of its facility at identifying and isolating problems and creating solutions, its ability to legitimize public library purposes, needs, and practitioners, its role in the building of a knowledge base, and its use of objective data rather than anecdote Without sufficient and sufficiently varied formal research, the future capacity of public libraries and librarians to function well may be reduced

Developing solutions and innovation is a fundamental purpose of research in a practice-oriented profession In the past, research has provided the tools, techniques, and principles that improved practice (Van Fleet and Wallace 1992) Yet, despite their innovative beginnings, the predominant reactionary position of many public libraries toward substantial change causes some observers to doubt that they will survive the 21st Century (Pungitore 1995) The path from a concept's inception to its adoption is "a complex web of interrelationships" and there is no single or best way to move through this "maze-like network" (Pungitore 1995, 172) Research may not be the only source of new ideas, but it is a central part of systematic diffusion of a profession's solutions and new ideas

This relationship between a knowledge base and practice is fundamental. Published research is a kind of dialog (though sometimes one-sided) between scholars and practitioners. Research generates and identifies questions, hypotheses, causes, possibilities, principles, and research designs Practice applies the theories and ideas and in doing so, can reshape, redefine, or verify (or contest) research findings and conclusions If public library issues are

left out of this dialog, public librarians cannot obtain the information they need to practice effectively and efficiently. Ideally, practitioners would communicate with researchers and/or participate in research so that research would generate the kinds of information public librarians need "librarians must strive to make research and practice two sides of the same coin If research is to be valid, it must support practice If practice is to be valid, it must support research" (Van Fleet and Wallace 1992) A lack of research about public libraries and of participation by public librarians may therefore result in fewer innovations and solutions, and to fewer studies relevant to public librarians' needs

The status of public library practitioners and of public librarianship itself may be undermined by a lack of research and of practitioner participation in that research While practice is the primary purpose of librarianship, as a profession it is tied to a formalized knowledge system that is "logically consistent, rationally conceptualized" (Abbott 1988, 53) It is the existence of a knowledge system that legitimizes a profession "Without the body of knowledge that grows from scholarly examination, no profession has a legitimate base from which to speak out about anything" (Van Fleet and Wallace 1992) Increased separation from and lack of participation in creating their knowledge base threatens public librarians' status within the profession. If public librarians do not participate in research and scholarly publication, they risk losing influence, autonomy, and position within the field Other segments of the profession, such as academic librarians and researchers, representing other constituents, may dominate in this research-practice exchange, and public librarians may as a result become increasingly marginalized This could weaken their ability to maintain a viable knowledge base, obtain required funding, and maintain and effective practitioner status If the status of a profession is indicated by the quality of its professional literature, then the status of a subgroup within a profession may be determined by its contribution to that literature

If a segment of a discipline, such as public libraries within LIS, is inadequately represented in the profession's general knowledge base and professional literature, the development of the profession may become skewed and inaccurately (or ineffectively) represent that segment and its ideas and contributions In LIS, which has a fundamental mission to serve users in a variety of settings, to neglect the issues of a major segment of the profession may result in practices that do not serve those users well Further, the relatively small amount of specifically public-library-related issues included in the LIS knowledge system means those problems may not be revealed or discussed among other members of the professional community, that is, issues important to public libraries may not have adequate consideration within the larger profession Information retrieval systems developers who work with academic libraries, content providers who supply educational databases, or community college librarians who work with multicultural communities will not benefit from or be as likely to become interested in and recognize commonalities with public-library-related problems. Therefore, public library issues risk becoming marginalized within the professional literature and research interests The dominant research community may not be adequately addressing these issues within the developing knowledge base

In order to begin to address these concerns, and indeed establish whether or not there is cause for concern, this study was conducted It examined three consecutive volumes of 20 general, scholarly LIS journals over a recent three-year period (e g , 1996–1998) and identified research articles specifically about and/or conducted in libraries The study's objective was to calculate the degree to which formal research considers public libraries compared to other library types (e g., academic) within the overall library and information science literature. This might provide evidence of a disparity between public and other kinds of libraries in the research literature that may have potentially serious consequences for public

libraries It also might identify directions for future investigation as to why such an imbalance occurs and what effects it might have on the development of the field and on the libraries and library users. Other patterns were examined in a subset of the database for article topics, authorship, and author occupations. This information was used to identify communication problems between researchers and practitioners and understand LIS research priorities and agendas Topics for future investigation were identified.

CHAPTER II

LITERATURE REVIEW

This study will examine the intersection of published research and public library issues It is assumed that topics covered in scholarly, refereed journals reflect with some accuracy the priorities and interests of the library and information science research community. The quantity and proportion of public-library-related research within the LIS scholarly literature has not been calculated before, but a context can be established by examining past studies of LIS research publication patterns, analyses of gaps in communication between researchers and practitioners, and journal policies about subject matter acceptable for publication

Studies of Research Dissemination and the Publishing Process

Past studies of innovation, the dissemination of research, and the publishing process demonstrate that the approach used in this study is a useful and valid method of identifying LIS's central subjects Equally important, they reveal some of the ways that the publication process influences what and who gets published when and where, as well as the critical role published research plays in the formation of LIS theory and applications Flaws or biases (if any) in the editorial and/or refereeing processes directly bear on what is read by academics and practitioners, and thus what becomes part of the body of LIS knowledge and what are perceived to be the central issues and priorities

Verna Pungitore's book, *Innovation and the Library· The Adoption of New Ideas in Public Libraries* (1995), explores in depth how and what obstacles affect the adoption of new ideas in United States (U S) public libraries Focusing on innovation in management, Pungitore compares this process in public libraries with other kinds of organizations She

provides an overview of diffusion models and factors influencing adoption and change within social institutions Pungitore argues for a collaborative and organized approach using research. "The key to planned change in a field such as public librarianship is the diffusion of selected innovations, created and designed collaboratively, through the use of applied research and valid knowledge" (1995, 29)

The essential function of formal research in the development of theory and its application in information science and librarianship is commonly accepted (Carter 1981; Ali 1985, Budd 1988, Boyer 1990, Ptacek and Van Fleet 1990; Rayward 1990; Van Fleet and Durrance 1993, and others) Effectively communicating that research is key to the success of a discipline, helping it to advance and providing a foundation on which to construct further research (Dimitroff 1995)

W Boyd Rayward, past editor of the *Library Quarterly,* describes the system of scholarly research and publication,

> This process is part of what one might call a dialectic of professional knowledge In the interactional processes of this dialectic, and speaking abstractly of the field's scholarly literature as a whole, practice and theory, fact and belief, evidence and application, the maverick and the orthodox are brought together, however tentatively and imperfectly. (Rayward 1990)

Although they are not the only avenue, professional journals are the most popular form of dissemination of current information (Ali 1986) As of 1978, 71% of all communication in librarianship was through journals (Olsgaard and Olsgaard 1980)

Problems in publishing, either in the editing process, solicitation of manuscripts, or perceived needs of its audience, may influence what is published and in which journal Long-standing recognition of weaknesses in LIS communication and publications is recognized Ferguson (1975), in a descriptive survey of the various organizations that support library and information science research, concluded that, among other areas, research

indicating which users were well-served by existing services and which were not were sorely lacking at that time In addition, he stated that more research was needed to understand the communication and research dissemination process in library and information science which, to that point, had not been adequately studied. "Our field is based on a belief that information processes can be systematically studied and that information services can be improved A corollary is that improved information contributes to improved research" (Ferguson 1975) The growing specialization of discipline journals in the 1960s and 1970s and a generally negative assessment of the quality of research and the journals themselves is noted by Melin (1979)

The process of manuscript review and publication may also influence what research is disseminated. The editor's role in deciding which journal articles are and are not published is described by Rayward (1980 and 1990) As a former journal editor, Rayward writes that he did not consider the affiliation or name of a researcher, only the quality of the manuscript submitted and if the work was within the journal's scope (1980) In a later article (1990), however, he wrote that poor judgement by an editor and/or editorial board and indifferent or incompetent referees can weaken the manuscript reviewing process significantly Editors chose which articles are published based in part on the scope and goals of the journal. If an article is considered by the editor to be beyond the journal's scope, or uninteresting to its readers, it will not be transmitted to the referees While the system may be difficult for new and unknown researchers to break into, Rayward stated that a well-developed manuscript will in the end be accepted by some reputable LIS journal He believed that editors "seek by definition what is original and new, usually within the constraints of the canons of scholarship, but sometimes not if a sudden increase in readership seems possible" (Rayward 1990).

The role of the editor was further investigated by John Budd (1992) in "Keepers of the Gate or Demons in a Jar?" He stated that, through what is published, a journal tells its readers what subjects are most valuable and important, and at its best, "the pages of the journal contain the most creative and best executed work in the field At a more cynical level it means that the contents bespeak the favored subjects or methodologies of the moment" (Budd 1992). He described problems in the editorial and refereeing process, especially those of bias. Yet he concluded that this system is as good (or as bad) as any other system, and that ultimately it is the responsibility of the reader to determine quality

Budd's earlier study (1988) explored the statistics of the publishing industry, comparing the openness to unsolicited manuscripts, methods of evaluating manuscripts, and publication delays of 53 journals Of the journals surveyed, Budd found that only 23 were peer reviewed Eight of the journals reported that (as of 1988) the editor alone selected articles for publication Two of those journals were *Public Library* and *Public Library Quarterly*

Journal processes for manuscript review and selection were more recently investigated by Barbara Via (1996), who compared her results with Budd's 1988 study Eighty-seven journals were surveyed, and Via noted that editorial selection processes were inconsistent Recently, Wallace and Van Fleet (1998) evaluated possible biases on the part of journal editors, who regard quantitative research more favorably than qualitative The authors suggested that editors may not know how to interpret or assess qualitative research, or where to direct them for review, and so reject manuscripts without understanding them

These articles demonstrated that the process of publication and manuscript review can be flawed and can influence what and in which journal research is published Editors' perceptions or their journal's scope or audience may preclude public-library-related research if they do not believe it is interesting to the largest segments of their audience If public

librarians do not read their journals their needs may not be seriously considered by editors

Bibliometric and Other Studies of Research Communications

Quantitative and qualitative analyses of LIS journals examined patterns in authorship, citations, methodology, and other variables One form of these approaches, bibliometrics, uses statistical or mathematical methods to analyze literature It is based, in part, on the theory 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" (Schrader 1985) The same may be said for content analysis Studies examining patterns in the communication of research about libraries, public or other kinds, provided helpful context for this project They also demonstrated that this inquiry's research problems could be successfully studied empirically

The proportion of research to non-research articles published in the special library literature, as well as author affiliation, research methodology, and research subjects, were examined by Dimitroff (1995) Using content analysis, Dimitroff looked at articles published in 1993 and 1994 to obtain a snapshot of the state of the literature regarding research activities of practitioners and researchers She found that there were significant differences between special library literature and LIS literature in general Approximately 19% of special library journal articles were related to formal research, which was a significantly smaller percentage than had been reported for general LIS literature She also found that the research conducted about special libraries used relatively unsophisticated methods and concluded that "we need to know if pragmatic obstacles, such as lack of funding, deter research efforts or, more seriously, if there is a lack of interest or confidence in conducting research" about

special libraries (Dimitroff 1995)

Esteiber and Lancaster (1992) compared the top 20 journals used in the University of Illinois at Urbana-Champagne's graduate LIS course lists (teaching-relatedness) with the top 20 cited in 41 doctoral dissertations and in the publications of the faculty (research-relatedness) at the same university Results showed that the two categories did not significantly overlap Among other conclusions, this indicated to the authors that, at this large research-oriented university, students are not directed to the same journals academics use in research This may demonstrate that "the lack of emphasis on research in the profession is actually being fostered in the schools" (1992)

Building on an earlier study, perceptions of the prestige of various LIS journals by faculty at ALA-accredited schools specializing in either school or public librarianship was examined by Tjoumas and Blake (1992) They found that there was little commonality between the two groups in their assessment of journal prestige There were, to some extent, distinct audiences for journal articles within the academic community, and distinct faculty groups specializing in different disciplines submitted to and read different journals Academic researchers' perceptions may, therefore, affect what research is published in which journal, despite a journal's stated scope

Article Subjects

Peritz (1977) analyzed the research methods reported in articles from a core of 39 library journals published from 1950 to 1975, inclusive. Based on this study, Nour (1985) examined 343 articles published in 1980 from a similarly determined core of 41 journals, identifying research methods and subjects of research articles and comparing her findings with

the Peritz study. Nour classified the article subjects into 9 categories, including unclassifiable and tangential to librarianship Of the articles in the other 7 categories, approximately 40% were classified under library administration and library service The other categories were technical processes, materials, automation, history, and information science theory

Schrader (1985), analyzing article subjects in the *Journal of Education for Librarianship* from 1960 to 1984, defined 10 categories based on the journal's subject index. He ranked the categories by the number of entries in the index corresponding to each category He found the most common subject was international and comparative library education and that the least common was library education—philosophy Schrader noted that indexer bias may have influenced the results

Dimitroff (1995) divided special-library research literature into 5 categories. applied, professional concerns, general, theoretical, and related fields Two-thirds (68%) of research articles were about applied topics The second-most common subject of study was professional concerns representing only 17% of the articles

Author affiliations

Library Research in Progress (LiRiP), a publication discussed by Schick (1973), reported on 85 to 90% of the U S library-related research between 1959 and 1964. Schick stated that 42% of the authors were degree candidates, 10% were academic educators, 7% were academic librarians, and 8% were non-library-school faculty members (1973)

Olsgaard and Olsgaard (1980) examined articles of all kinds in 5 major LIS journals from a 10-year period for authorship information, including gender, geographic location, and occupation They found that 31 6% of articles were authored by academic librarians, while only 21 1% were written by LIS faculty (and 2 9% were by LIS students), public librarians

wrote only 8 4% of the articles

Author affiliation in 11 major LIS journals was examined later by Watson (1985), resulting in similar differences between scholarly articles by public librarians and academic librarians or faculty Breaking her results down by journal, Watson found that between 1979 and 1983, in the journal *RQ*, 44 0% of authors were academic librarians, 19 3% were library school faculty or students, and only 10.4% were public librarians In *Library Quarterly*, however, 21 9% of the authors were academic librarians, 48 8% were faculty or students, and only 0 6% were public librarians Overall, there were more than twice as many articles written by academic librarians compared to faculty plus students (44 2% and 20 9% of the total, respectively), and only 8.2% of authors were affiliated with public libraries

In a study published the same year, Schrader (1985) examined authorship in the *Journal of Education for Librarianship* (*JEL*) over a 24-year period (1960–1983) Schrader defined *JEL* as "the principle medium of formal communications in English for professional educators in library science" (1985) In the 473 articles (research and non-research) examined, 71.9% of authors were educators/researchers and 21 1% were practitioners He pointed out that this was a comparatively large percentage of practitioners as authors, considering the journal's purpose and readership Schrader also examined frequency of authorship, and found that less than 1% of authors (first author only) published 4 or more articles.

Journals were the most popular means of disseminating research among a sample of 50 public, academic, and special/government librarians interviewed in Illinois (Ali 1986) *American Libraries* was the most regularly read/scanned by all groups of librarians (although it tied with *Library Journal* among public librarians), while *College & Research Libraries* was the second most favored among academic library practitioners. Scholarly journals, such as *Library Quarterly* and *Library Trends*, were reported to be less frequently read, although

some librarians indicated that they would only read those publications if they were subscribed to by their libraries. The majority of practitioners (72%) stated that popular journals, such as *American Libraries*, were the most effective in reporting research results to practitioners because of their wide circulation and because many were provided with no cost to professional association members. Respondents in the study who conducted research were mostly academic librarians, but 82% of the total sample reported that they were not currently involved in research Most respondents (88%) reported that they believed research reported in the literature was important to their work This study provided insight into the needs of librarians and a willingness to read research studies, particularly if they are published in popular journals It also indicated the influence of professional associations in what was read among the majority of practitioners Contrary to other studies, however, practitioners interviewed did find research relevant to their work, although more than half (62%) identified areas that they believed should be the subjects of increased research (Ali 1996)

The fraction of all *College & Research Libraries* articles (not only research reports) with primary authors affiliated with academic libraries increased from 58 7 to 69.4% between the periods 1939–1979 and 1989–1994. For the same journal and periods, the fraction of primary authors from library schools increased from 8 56 to 18 1%. On the contrary, primary authorship by public library staff decreased from 3 16 to only 0 8%, with similar fractions and declines for government library staff, special library staff, and affiliates of library associations (Terry 1996) Although limited to one journal that is targeted at college and research libraries, these trends may be part of an overall decline in public librarian participation in the LIS published communication

Communication Gap

Conflict and difference in perceived roles and needs between researchers and practitioners were explored in several publications The role of research in LIS curriculum was discussed by Martin (1957), who described a long-standing perceived differences between a "man of action," an "intellectual," and a "research man "

> The man of action starts with decision and not with inquiry, and he may display limited understanding and actually scorn research The intellectual lives in the sphere of understanding, gained through background and insight, he expects action to correspond with understanding (and because it does not, he is often at odds with life around him), and he expects research to confirm his previous insight (and because of this is often not a good research man) Confronted with a job that needs doing, a practical man acts, the intellectual reflects, only the research man investigates This is an oversimplification, for in practice the several levels do and indeed should run together (Martin 1957)

Rothstein (1985) reviewed the history of criticism of library schools by librarians, students, and LIS educators in his article, "Why People Really Hate Library Schools " Among the persistent accusations against the LIS curriculum, students and practitioners claimed that their graduate education did not teach them the right things, that the schools were too conservative, unresponsive to outside influences, and generally inferior to other courses of study. Continuing this theme, Bohannan (1991) stated that library schools received mixed signals from employers, who cannot "even agree on the basics" of what students need to know.

Raber and Connaway (1996) further explored the gap between LIS educators/researchers and practitioners They wrote that faculty members were caught between the culture of the university and the culture of the profession, each with its own competing values and demands The university culture values research over teaching, and legitimacy through the creation—and publication—of knowledge The culture of the profession, however, demands that university faculty solve practical problems, often with technology, and satisfy needs such as continuing education "library and information science

educators often cannot escape the feeling that the practicing professional regards as irrelevant what educators must necessarily regard as most important" (Raber and Connaway 1996)

A lack of research by the academic community about issues important to public libraries and pertinent to public library users might result in differing perceptions of the usefulness of academic journals to the two professional groups Van Fleet (1993) examined the citation patterns of articles written by public librarians and LIS faculty and published in five public library journals over two years Her purpose was to determine the degree of interaction between the two groups, and if journal literature was a means or an obstacle to effective communication Her study concluded that public library journal literature is an active means of communication between public librarians and LIS faculty members and that the two groups successfully used public library journal articles to communicate She also found, however, that in the journals reported to be the most frequently read by public librarians, less than 40% of the articles were written by public librarians or LIS faculty members

Lynam, Slater, and Walker's study, *Research and the Practitioner: Dissemination of Research Results Within the Library-Information Profession* (1982) examined dissemination of LIS research results to practitioners, and its relationship to actions or changes Results of a questionnaire, distributed to librarians and information professionals in the United Kingdom of Great Britain and Northern Ireland (U K), addressed how aware they were of ongoing research, their attitudes toward research and its relevance and usefulness, and what research they would like to see done The authors noted an almost "instinctive resentment of research amongst practitioners" and a patronizing attitude by researchers toward practitioners (1982, 4) They also found the greatest variable influencing practitioners' attitudes toward research and the need for research was their type of employment, commercial or special librarians wanted more research on technology, while public librarians requested more research on users

and how to meet community needs. Both groups, however, complained of a lack of relevance of current research to their needs In addition, the study found that professionals in a position of seniority were more receptive to research than their junior colleagues

Other results of this study showed that, within the whole sample, only 4% of respondents felt "well informed" about work-related research and 19% thought they were "informed " Further, 46% reported having a "rough idea" of ongoing research, and 31% believed they were "not really informed " The most commonly given reason by practitioners surveyed (25%) for their (low) level of interest in the research conducted was its impracticality and irrelevance to their work The second-most common reason was a lack of time (18%) Over a quarter of the respondents, however, had done some research themselves, although often only informally Opinions on what research should be about varied from education and training of workers and users to user studies and automation

Van Fleet and Durrance (1993) (also reported in Durrance and Van Fleet 1992) discussed results of their survey of 23 U S. public library leaders and their recognition of a communication gap between themselves and researchers/educators. The need for research to address the most pressing problems was recognized by survey participants

> These leaders see the need for research in a variety of areas that will require an emphasis on developing new knowledge, skills, attitudes, and approaches used by librarians There should be continued emphasis on defining appropriate roles for this institution and its staff as the twenty-first century approaches New mechanisms for anticipating information needs and delivering services need to be developed. It is imperative that public librarians learn how to better reach and serve a multicultural society Finally, new tools are needed to help librarians plan, evaluate, and fund services. (Durrance and Van Fleet 1992)

Respondents remarked, however, that much current library research was irrelevant to them and to these problems, and library schools did not very well understand public library needs On the other hand, many noted that public librarians did not pay enough attention to research or commonly initiate their own research Several survey respondents believed that, as

practitioners, they viewed the discipline from a fundamentally different perspective than that used by researchers, that practitioners were too pragmatic and researchers were not interested in applied research As a result of their findings, Van Fleet and Durrance recommended more research collaboration between public librarians and academic researchers, increased funding for on-site library research, and increased research by public librarians themselves They argued that both sides faced barriers to change, but that each must contribute to change if it is to be successfully designed and implemented.

An editorial by Van Fleet and Wallace responded to a letter published in *American Libraries* expressing an opinion that is part of "a broader body of literature that rejects research in favor of practice" (1992) Van Fleet and Wallace took advantage of this letter to respond in general to the anti-research theme found throughout the profession's literature. They detailed the arguments made in LIS against research, refuting each and describing how research has benefited librarianship They then emphasized the connection between research and practice that is necessary for the profession to prosper: "How can we support a positive image for the profession if we undertake efforts to isolate the profession from its intellectual and empirical underpinnings?" (Van Fleet and Wallace 1992).

Ali (1985) studied the dissemination of research in formal publications, writing that when research is not adequately disseminated, a gap between researchers and practitioners would result Ali argued that the process of research and publication in LIS, which "should be inextricably bound together" (1985), is necessary in order for librarians to be effective He sent questionnaires to 353 librarians in the U K and 500 librarians in the U S to study their perceptions of the usefulness of professional journals He concluded that public librarians, in both countries, preferred more popular journals than academic and special librarians, while academic librarians favored scholarly journals Librarians of all library types emphasized their

reliance on journals for keeping current with the field.

Dimitroff (1996) surveyed 355 special librarians (with 168 completed surveys) about research subjects that interested them, their current research activities, and what support they might need to continue their research Building on her earlier study (Dimitroff 1995), which found that the amount of research in special library literature was significantly smaller than in general or medical library literature, she sought to identify obstacles that might prevent special librarians from conducting formal research. The most commonly cited barrier to doing research was a lack of time, followed by a lack of management support in a distant second. Other barriers included lack of funding and interest. The surveys revealed that special librarians were not interested in formal research and did not appreciate its connection to their work According to their comments, many librarians believed research was irrelevant to their day-to-day jobs

Collaboration between practitioners and academic researchers as a way to bridge the practice-theory gap and improve the relevancy of research to practitioners was explored by Macduff and Netting (2000), who reported on their experiences as research collaborators Macduff, a practitioner, and Netting, an academic researcher, analyzed models of collaboration as well as external and internal impediments to working together Obstacles may originate in fundamental perspective differences (as reported by Lynam, Slater, and Walker (1982) and Van Fleet and Durrance (1993) and others), "Surely a significant barrier is the inadequate socialization of practitioners and researchers in one another's professional or organizational cultures" (Macduff and Netting 2000) Researchers may disagree on what is "real" research, academics favoring conventional objectives and methodologies, and practitioners seeking information that directly applies to their practice, while focusing less on generalizability or theoretical grounding. These cultural differences can be exacerbated if the

institution to which the researchers are affiliated discourages collaborative projects between practitioners and academics. A university may not support or encourage applied research, for example, or library management may resent time taken by a collaborator away from practice for any formal research.

"Collaborating for Useable Knowledge: A Work in Progress by the Nonprofit Sector" (Schuman and Abramson 2000) gave an overview of programs sponsored by the Nonprofit Sector Research Fund of the Aspen Institute This organization sponsored a series of collaborative projects between practitioners and academic researchers in various areas, in an attempt to increase relevancy of research to practice The article addressed possible benefits of practitioner-academic researcher collaboration Barriers to collaboration and ways around these barriers were also described, as well as a brief overview of practice-theory gap in various social service professions Collaboration in other areas tangential to research were also discussed, such as collaboration in agenda setting, grant making, and research dissemination

This literature provided convincing evidence that the communication gap between academic researchers and practitioners is a significant and ongoing problem in LIS Specific reference to public libraries was made only in context with other library types in the studies, however. Further exploration of the potential or perceived communication gap between public library practitioners and researchers may help determine if it affects the types of public-library-related research, its relevancy to library practice, and who conducts it (i e., public librarians or academic researchers)

Past Methodological Examples: Identifying Journals and Research Articles

In the past, researchers identified an appropriate or core list of journals for content analysis as well as methods for defining research articles. Those studies established that both activities can be and have been successfully done and also provided direction for this inquiry.

Various methods have been used to identify appropriate, or core, journals for analysis. Nour (1985), using the method devised by Peritz (1977), checked *Source Publications of the SSCI, Library and Information Science Abstracts*, and *Library Literature*. Journals included in these publications that were also found in at least two bibliographic services were designated as "core." Watson (1985) selected 11 journals, all of which either solicited articles or were refereed, had general contents and appealed to a wide range of information professions, and were in publication for the entire study period (1979–1983). Periodicals used in Olsgaard and Olsgaard's study (1980) had been in publication for at least 10 years (the entire study period), were nationally recognized in the field, and used an article format. For the five journals used in her reference analysis, Van Fleet (1993) chose only public library literature She based these choices on past studies that indicated the journals most frequently used by public librarians, as well as two subject-specific publications. Other studies focused on one publication only (Schrader 1985; Terry 1996). Schrader's work was a follow-up to the 10-year bibliometric analysis of the *Journal of Education for Librarianship* by Lehnus (1971)

Dimitroff (1995) used content analysis to cull special library research articles from the general LIS literature Rather than choosing a representative sample of journals, she searched online databases (ERIC, *Library and Information Science Abstracts*, and *Library Literature*) for all relevant article citations and limited her study to articles published in 1993 or 1994 She also operationally defined research articles based on the broad definition made by Peritz (1980) Formal research was any study using systematic methods for the "purpose of eliciting

some new facts, concepts, or ideas" (Dimitroff 1995)

Conclusion

The literature presented a comprehensive understanding of library issues and the research process, from the conduct of research through manuscript review and dissemination, to consumption. Past studies of general LIS trends show that public librarians have preferred popular journals to scholarly ones as research sources, and many believed that much research is irrelevant to their needs (Lynam, Slater, and Walker 1982; Ali 1986, Durrance and Van Fleet 1992; Dimitroff 1995, Raber and Connaway 1996) Further, public librarians did not frequently participate in or publish formal research studies (Olsgaard and Olsgaard 1980; Watson 1985; Terry 1996)

Research specific to research and public libraries was found in Pungitore's study (1995) of the dissemination of ideas and solutions and barriers to change in public library management. Van Fleet, and Van Fleet and Durrance's work, raised important issues of communication processes and practitioner perceptions of research. More public-library-specific works similar to these would advance the understanding of public library research needs and how to meet those needs

This study continued this direction of investigation, identifying a gap in past literature in the investigation of the relationship between public-library published research and the larger LIS knowledge base By calculating the fraction of public-library-related research within overall LIS research, this project takes a new direction of inquiry that may be useful in understanding the effect of a comparatively small proportion of public-library-related published research within the LIS knowledge base on public library practitioners, library practice, and the profession as a whole

CHAPTER III

GOALS AND METHODOLOGY

The primary goal of this study was to determine if public library issues are well represented in the larger LIS knowledge base and research process The secondary goal was to identify future research directions, based on results from completion of the first goal To meet these goals, this study compared the number of articles reporting formal research studies about public libraries or public library users with the number of articles about other library types over a 3-year period in general LIS academic journals It then identified patterns in authorship and subjects of study within the public library articles.

Four research questions guided the study:

Entire article set

1 What fraction of the overall library and information science literature is about public libraries, and how does this compare with special, school, and academic libraries?

Public library article subset only

2 What are the main topic categories of the public-library-related articles?

3 How many authors published one, two, or three or more articles about public libraries and what does this imply?

4 What occupations are leading the public library research agenda (e g , public librarians, academic researchers, or others)?

Data were gathered and coded using content analysis Data collection was completed in two stages selection of journals and identification of research articles about and/or conducted in libraries from three volumes of each selected journal.

Journal Selection

Articles for the study were taken from LIS scholarly journals available in the University of Tennessee, Knoxville, John C Hodges Library. The set of journals used was restricted and this limitation of the project may have influenced the generality of the results A larger set of LIS journals, including state library publications, may have provided more general results, but time was limited and resources were unavailable for travel to other libraries Consequently, the journals selected did not represent all public library research or research performed by public librarians Nevertheless, the goal of determining the degree to which public library issues are represented in the overall scholarly literature compared with other library research—and so influence the overall knowledge base of the field—should have been accomplished to a considerable degree by the set of journals studied

All articles from three years of publication were evaluated The most recent complete year and the two previous years (not always continuous) held at Hodges Library were reviewed (Appendix A). No issues earlier than 1995 or later than 2000 were included, and most were in the range of 1996–1999 All research articles in the selected publications for the relevant years were identified Each published article was individually examined in order to identify every relevant article and then discern other relevant information.

Six specific criteria were used to select journals

1 Indexed by both *Library Literature* and *Library and Information Science Abstracts* *Library Literature* is the leading library science index in North America, and *Library and Information Science Abstracts* is international A journal indexed by both services is likely to be central to the field

2. Targeted to a national, general LIS readership (e g , *Library Quarterly,*

Journal of Library Administration, Reference Services Review). This excludes journals targeted to a particular kind of librarian or readership (e.g , *College & Research Libraries, Public Library Quarterly, Special Libraries, Georgia Librarian*, etc). General journals provided an overall representation of LIS research interests and priorities because their published scopes either explicitly include, or at least do not exclude, every kind of library and are targeted for all kinds of librarians (Appendix A) It is, in part, in these journals that, for example, a public librarian might read about research in bibliographic instruction, or an information retrieval system designer might read about difficulties in interfaces for some kinds of users

3. Reported by *Library Literature* as refereed Research published in refereed journals pass through a series of gatekeepers, including editors and peers (i.e , other researchers) In this way, they should reflect the priorities, problems, and central themes of the field more than articles that have not been through this process The only exception in this study is *Library Administration and Management*, which, although not refereed, is included because it fits the other criteria and is published by the American Library Association (ALA). The broad and inclusive mission of ALA, and the large and varied readership of its publications, make the inclusion of all of its general journals desirable.

4 Published in the U S Because of the influence of referees and editors, journals published outside the U S may be unrepresentative of U S. LIS research priorities and biases It is recognized, however, that referees need not be located in the same country as the journal publisher

5 Published conventionally, that is, they are not electronically published or

available through outlets such as ERIC.

6 Subscribed to and available in Hodges Library, the University of Tennessee Knoxville.

Twenty journals met these criteria (and the exception listed). All articles from three complete volumes of each of these journals were examined

Article Selection

Only articles reporting original formal research studies were considered in this study Formal research was operationally defined based on the current dominant paradigm of research reporting This included studies that began with testable hypotheses or research questions based on theoretical knowledge and past research An open and replicable methodology was devised and reported Relevant operational definitions and underlying assumptions were explained Empirical data were collected and analyzed, and the hypotheses or research questions were explicitly addressed This definition of formal research may have excluded studies that in other contexts would be defined as research, but it was used to reduce ambiguity in the selection of articles

Articles following this pattern included qualitative as well as quantitative studies and may have used evaluative, case study, content analysis, survey, and other well- established research methods Historical research that followed the general pattern and used data from primary sources was also considered

Most formal research articles were immediately identifiable They used clearly labeled and standard categories such as "problem statement," "literature review," "methodology," "data analysis," and "conclusion " They also included empirical data There were some

articles, particularly qualitative or historical, that did not follow these conventions and so were harder to recognize They used different headings or structures, for example It was for this reason that each article was considered individually, in order to include as many relevant articles as possible from the set of journals selected

Only articles that explicitly stated that they were about a particular library, a particular user group, or a particular type of library (i e , academic, public, special, or school) were considered This was done so that each article could be coded with respect to specific library issues, user populations, and library types Research about a particular database, for example, was coded as "public library" if the author stated the name of the library in which the study was done (and it could be concluded that it was a public library) or that it was a public library For the sake of obtaining unambiguous results, articles that did not reveal a library or library type in which the study was conducted were discarded.

At least one author had to be based in the U S at the time the article was published. This project focused on the research priorities and creation of the LIS knowledge base in the U S The inclusion of at least one U.S.-based author helped the article selection stay within the study objectives

Specific examples of articles that were defined as formal research studies included

- Research about databases, information retrieval systems, or technical systems that included system tests by real-life queries from (past or present) or users of a library of any specific type Research based on real-life library data or queries explicitly considers specific kinds of library users in their studies, rather than basic research that may run generic test queries or test a system on a non-library associated group of users The fact that the researchers used this real-life data implied certain expectations and intentions For example, results based on queries from an

academic or corporate library may differ from results based on queries from a public library.

- Research about physical libraries only Research about digital libraries appears to be increasing, but it was not clear in which library category the various studies should be placed. Because of this, digital library research was irrelevant to this study and excluded.
- Evaluative studies of library tools, methods, or programs that included empirical data
- Originally published articles Reprinted or abbreviated versions of articles were excluded

A summary of the criteria for including research in this study were:

- Articles conveyed results, analysis, and meaning, including empirical data as well as standard categories of problem statement, literature review, methodology, data analysis, and conclusion, or their equivalents
- Articles specifically identified a particular library, a type of library, or type of library user group or used real-life library data such as reference questions or library-user evaluation to test information retrieval systems or other tools
- Articles had at least one author based in the U S.
- Articles reported original research

Coding of the research articles proceeded in two stages First, individual articles were examined to determine the kind of library they were conducted in and/or were about, as well as author names and occupation. Second, subjects of study and authorship were determined

for the subgroup of public library research articles

Articles were coded with respect to library type as academic (AC), public (PU), special (SP), school (SC), or some combination A database was created in ASCII (American Standard Code for Information Interchange) text and analyzed using a Fortran program (Appendix C). Information about each research article was entered (Box 1), including journal title (abbreviated), volume and number, page number (start of article), year published, library type, study subject (only for the public-library-article subset, otherwise entered as "not applicable" (NA)), author occupation, and author name

Further analysis was conducted with the subset of public-library-research articles They were examined for subject, author, and author occupation Each author of an article was counted equally. It was important in this study to assess the participation of all kinds of contributors in studies of public libraries For example, it was important to know if academic researchers and public librarians collaborate in studies of public library issues Therefore, even if a public librarian was third or fourth author, authorship was counted equally

Six subject categories were determined for the articles entirely or partially about public libraries Each article was assigned exactly one category. Categories were cataloging (CA), collection (CO), history (HT), management (MT), networks/consortia (NW), and services (SV) These categories were derived after studying the articles rather than determined before examining the articles Because there was a relatively small number (56) of public library articles, the subjects were broadly defined rather than being so finely divided that only one or two articles would represent a subject. Patterns within the subject areas are discussed in the analysis

Author occupations were defined as. academic researcher (RA), academic librarian (LA), public librarian (LP), student (ST), and other (OT) The final category was made up of

IPM 34(2/3), 237 (1998)	*Journal Title (abbreviated) Vol(no), page (year)*
PU AC SC	*Library type (PU=public, AC=academic, SC=school)**
CO	*Subject (CO=collection, NA=not applicable)***
LP Goodin, D	*Author position and name (LP=librarian, public)*
LA Hunter, C	*(LA=librarian, academic)*
RA Smith, L	*(RA=researcher, academic)****
IPM 34(2/3), 257 (1998)	
AC	
NA	* other library type in the database: SP=special.
RA Spink, A	** other study subjects in database HT=history,
RA Goodrum, A	SV=services, CA=cataloging, MT=management,
RA Robins, D	NW=networks/consortia.
	*** other author positions in the database: OT=other,
LRTS 42(4), 313 (1998)	ST=student.
AC	
NA	
LA Ryan-Zeugner, K	
LA Lehman, MW	

Box 1: Sample input data

mostly private sector researchers (e.g , vendors), consultants, and a small number of special librarians Most journals included this information with the article Any ambiguities in author position were settled by finding either the author's web page, a contemporary publication by that author in another journal with the pertinent information, or other institutionally affiliated web sources

Pilot Study

A pilot study was conducted Eighteen articles from one volume each of three journals were coded. Within this group, one article was determined to be a report of informal research, and three were discarded because they were not directly about and/or conducted in a specific library or specific kind of library Several articles were about more than one kind of

library This pilot study helped identify issues considered in the full study, especially in defining "formal research studies" and in making the operational definition explicit

Limitations

Approximately ten journals that otherwise would have been included in this study were inaccessible because Hodges Library did not subscribe to them. Examples of these journals are *The Acquisitions Librarian, Library and Information Science*, and *Library Management* The 20 journals used in the study are a selection (the entire set of general LIS journals available to the author) rather than a randomly selected subset of the entire population of general U.S LIS journals The use of either a random sample or of the entire population of approximately 30 relevant journals may have provided more generalizable results. Because this project was conducted as a master's thesis, however, resources were limited and travel to other libraries was impossible

The study was also limited by time to including only three years of each publication. This may have affected findings, particularly in the public-library-related data subset Three years may not have resulted in enough data to allow patterns to emerge that would have been evident in a longer time series, particularly in authorship frequency and study subjects. Analysis of five, ten, or more years might have resulted in a more meaningful and deeper understanding of public library research

One advantage of content analysis is the ability to review coding as many times as necessary for accuracy by the primary researchers or by others In this study, the researcher assessed each categorization decision at least twice Relevant content was usually manifest and the decision to code an article as formal research was obvious There were instances, however, in which the decision was not clear-cut In those cases, a list of decisions was

maintained during coding for referral in future similar circumstances. This helped obtain a high degree of consistency Review of the decisions by another researcher, or panel of researchers, familiar with the operational definition of formal research used in the study, may have further improved consistency. Unfortunately, there was not time to put such a panel in place This also applied to decisions about article subjects within the public-library-related data subset

CHAPTER IV

FINDINGS AND DISCUSSION

The first of the four research questions guiding this project concerned the entire data set The other three questions were associated with the subset of articles about public libraries

Research Question 1: What fraction of the overall library and information science literature is about public libraries, and how does this compare with special, school, and academic libraries?

The 20 journals studied in this project (Appendix A) provided 241 library-related formal research study articles during the periods considered, including 30 articles about more than one type of library (e g , academic and public, school, public, and special, etc.) Academic libraries were the focus, either entirely or in part, of 185 (77%)* of the articles A total of 56 (23%) articles were about public libraries Special libraries were the subject of 33 (14%) articles, while 20 (8%) articles were about school libraries

Most articles were about a single library type, and these were dominated by studies of academic libraries The 30 articles that considered more than 1 library type were more evenly distributed among the 4 library types· public, academic, school and special (Table 1) Twenty-seven (90%) of those articles included public libraries in their discussions, and 23 (77%) included academic libraries Out of the total number of articles about public libraries (56), more that half (29, 52%) were exclusively about public libraries

*Because some articles were about more than one type of library, there were more articles by library type than total articles Percentages of articles about each library type were figured using the total number of articles in the data set (i e , 241), not the total number of library types, and therefore equal more than 100 percent

Table 1. Number of Articles in the Study Database About a Single Library Type Compared to Number of Articles About More Than One Library Type

Number of Library Types Included in Article	Number of Articles	Library Type			
		Public	Academic	School	Special
One	211	29	162	7	14
Two or more	30	27	23	13	19

The distribution of library types studied in articles in journals published by the American Library Association (ALA) was compared with the distribution of library types studied in articles in non-ALA journals (Table 2) As the most comprehensive professional library association, part of ALA's mission is to be a conduit between the various segments of librarianship and libraries Its journals should therefore include articles relevant to all branches of librarianship in order to serve its entire constituency Alternatively, ALA-sponsored publications may generally reflect research priorities of the established (formally or informally) LIS community, whereas other journals may be less conservative (Budd 1992) The data may indicate, therefore, if either of these factors (broad reader representation or established priorities) influences the amount and kind of research published, and may be reflected in differences between ALA-sponsored and independently published journals

Distributions of library types studied in articles in the ALA and non-ALA journal groups were similar (Table 2) Of the 50 articles published by the four ALA journals included in this study, 39 (78%) included studies about academic libraries, while 13 (26%) included studies about public libraries (some articles included both library types).

Table 2. Number of Articles About Each Library Type ALA Journals Compared with Non-ALA Journals (*n* (%))

Journal Type	Library Type			
	Public	Academic	School	Special
ALA Journal* (50 articles)	13 (26%)	39 (78%)	2 (4%)	4 (8%)
Non-ALA Journal (191 articles)	43 (23%)	146 (76%)	18 (9%)	29 (15%)

Because some articles included information about more than one library type, the sum of all numbers listed is greater than the number of articles in the database (241) Similarly, percentages in a row were based on the total number of articles for that row (50 and 191, respectively) and because some articles were about more than one library type, the row percentages total to more than 100%

* ALA journals were *Information Technologies and Libraries, Library Administration and Management, Library Resources and Technical Services*, and *Reference and User Services Quarterly* (formerly *RQ*)

School libraries were the subject (or partial subject) of 2 (4%) of the articles, and 4 (8%) included studies about special libraries Of the 191 articles in non-ALA journals, 146 (76%) included studies about academic libraries and 43 (23%) included studies about public libraries, again with some of those studies considering both library types Also, 18 (9%) considered school libraries, and 29 (15%) considered special libraries The similarities in the proportions suggested that both groups of publishers, ALA and non-ALA, published similarly with the result that comparatively little research was published about public libraries (though more than about school and special libraries) Results did not indicate a bias by ALA toward research about particular library types in comparison to non-ALA journals included in this study

There were a total of 457 authors (including repeated names) in the study database More than half—236 (52%)—were academic librarians (Table 3). Professional academic

Table 3. Author Occupation by Library Type(s) Studied (*n*)

Occupation	Library type				
	Public	Academic	School	Special	TOTAL
Librarian, academic	18	199	3	16	236 (52%)
Librarian, public	8	5	1	1	15 (3%)
Researcher, academic	55	77	18	22	172 (38%)
Student	6	4	0	1	11 (2%)
Other	7	10	1	5	23 (5%)
TOTAL	94 (21%)	295 (65%)	23 (5%)	45 (10%)	

Percentages at the end of a row and bottom of a column reflect the fraction of the 457 total authors in the database accounted for by that row or column, respectively Column percentages do not sum to 100% because of rounding

researchers totaled 172 (38%), with another 11 graduate students (another form of academic researcher) Only 15 authors (3%) were public librarians, and 23 (5%) were categorized as "other" (i e., vendors, consultants, and special librarians).

Academic librarians writing about academic libraries was the largest category of authors (Table 3) This group made up 67% (199) of the total number of authors (295) of academic library articles and 44% of the overall number of authors (457). Academic researchers (including 4 students), the next largest group, accounted for 27% (81) of the academic-library-related article authors. Academic researchers were by far the largest single group writing about public libraries Of the 94 authors of public-library-related articles, 61 (65%) were academic researchers (including 6 students) Academic researchers also accounted for the majority of authors of articles about school and special libraries Eighteen of the 236

academic librarians were authors of articles about public libraries with those 18 representing 19% of the authors of public-library-related articles Only 8 (9%) authors of public library articles were public librarians, though more than half the public librarians in the database wrote articles about public libraries (Only 5 of the 15 public librarians wrote articles about academic libraries) Finally, 7 of the 23 authors categorized as "other" wrote public-library-related articles

The fact that almost half the articles about public libraries were also about at least one other library type (Table 1) may be a reflection of author occupations Of the 30 articles about two or more library types, 20 of the authors were academic researchers Twenty of these 30 articles had at least one author who was an academic researcher This indicates that academic researchers may be more likely to examine broader trends, such as gender in library management, the characteristics of reference librarians, or indexing and cataloging They may tend to look at several kinds of libraries to find commonalities or contrasts As a group they are generalists The high percentage of academic librarians writing about academic library research may, on the other hand, reflect the needs of academic librarians to solve problems associated with academic libraries in particular That is, it reflects the practitioner's point of view. On the contrary, public librarians were more likely to consider other library types.

Research Question 2: What are the main topic categories of the public-library-related articles?

Five subject categories were determined for the 56 articles entirely or partially about public libraries Each article was assigned to exactly one category. Categories were. cataloging, collection, history, management, networks/consortia, and services (Figure 1). History and services surpassed the other categories, with 19 (34%) and 17 (30%) articles,

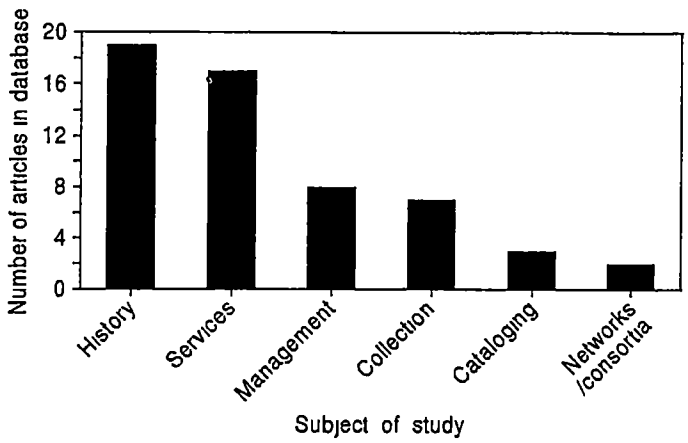

Figure 1 Number of articles about each subject in the public-library-related subset of the database. Counts represent the single dominant study subject for each of the 56 articles

respectively, followed by management with 8 (14%), collection with 7 (13%), cataloging with 3 (5%), and networks/consortia with 2 (4%) articles (Figure 1).

All 19 of the history articles were from two journals: *Libraries and Culture* (13) and the *Library Quarterly* (6) Nine of the articles in this category were about public libraries only, and 10 included other library types in the study Specific subjects in this category ranged from local histories (e g., "'The Milestones of Science' Collection The Public Library and the Conservation of Buffalo's Cultural Heritage") to international topics ("Arthur E Bostwick and Chinese Library Development A Chapter in International Cooperation"), as well as past readership patterns and trend analysis ("Gender, Culture, and the Transformation of American Librarianship, 1890-1920")

Seven of the 19 articles in the history subject category were about 3 or more library types (e.g , public, academic, and school), indicating the general nature of these studies Examples of these articles are "Tunnel Vision and Blind Spots What the Past Tells Us About the Present: Reflections on Twentieth-Century History of American Librarianship" and "From Acting Locally to Thinking Globally· A Brief History of Library Automation " This finding

implies that public libraries are considered integral to the concept and development of the overall universe of American libraries The fraction of all articles written about library history that included public libraries was not determined, however, only that many studies of history including public libraries also considered other library types *Libraries and Culture* and *Library Quarterly*—the journals in which every article in this category was published—were the only journals with more public-library-related research studies than academic or other library types.

Articles in the category of services, which numbered almost as many articles in the history category (Figure 1), focused primarily on libraries providing access or delivering information rather than the effect of information on users or the educational role of public libraries This is compared with historical studies, which were largely about libraries in a social context Seven of the 17 studies in the services category were about reference, both traditional and Internet/web associated Other topics included user studies (e g , "Online Library Catalog Search Performance by Older Adult Users"), and five studies of public access to the Internet through public libraries (two of them by Bertot and McClure) Electronic information resources were the dominant focus throughout the services category articles

The eight studies categorized as management were variable with respect to topics. They included articles on user fees, staff management, library embezzlement, library standards, and community analysis The category of collection, with seven articles, included collection development (two by Senkevitch and Sweetland on adult fiction), the development of specialized collections in public libraries (e g , "Library and Genealogical Society Cooperation in Developing Local Genealogical Services and Collections"), and two on the effectiveness of children's literature book reviews (both coauthored by K Bishop).

Two of the three cataloging articles were by Drabenstott and Simcox on subject

headings The other was about online subject access, using catalogers from public and academic libraries as participants

Are the articles in the public-library-related article subset relevant to the needs of public library practitioners? A rough idea of their relevancy can be gauged by comparing the studies in the public-library-related article subset of this project to two previous studies in which public librarians identified research categories about which they would be interested in reading The three top research needs expressed by British public librarians surveyed in Lynam, Slater, and Walker's study (1982) were (1) community information, (2) education (professional and user training), and (3) user studies (interpreted by this author as studies involving actual users and studies conducted on behalf of a particular user segment, e.g , "The Readability of Medical Information on InfoTrac," which analyzed the database using a computer program on behalf of users with low literacy skills) Reviewing the public-library-related articles, 20 (36% of the public-library-related articles in this study) were found to fall within these categories. 6 about community information, 3 about education (2 user education and 1 continued professional education), and 11 about user studies This is an average of 6.6 articles per category

The top 5 categories identified by the 23 public library leaders interviewed in Van Fleet and Durrance's (1993) study as research areas they would be most interested in reading about were (1) reference effectiveness, (2) children's services, (3) user surveys (defined here as research that invited direct user input rather than a researcher's observations), (4) output measures, and (5) public library effectiveness (interpreted by this author as the effect of public library services, other than reference, on meeting user needs). Of the 22 total public-library-related articles that fell within these categories (41% of the total article subset), 8 were about reference effectiveness, 4 about children's services (3 of those were about

collection development), 7 user surveys, 2 about output measures (both only partly about these measures), and 9 about public library effectiveness. This is an average of 4.4 articles per category

These comparisons indicate a low level of intersection between the public-library-related article subset and areas of research expressed by public librarians in two previous studies While these findings support practitioner claims of the irrelevancy of published public-library-related research to their needs, they are not in any way generalizable and are only a rough indication of the degree of relevancy of this research to public librarians

Research Question 3: How many authors published one, two, or three or more articles about public libraries and what does this imply?

Fifteen (27%) of the 56 public-library-related articles were written by 10 (12%) of the 83 authors One author (Senkevitch) published 3 articles about public libraries, 9 authors published 2 articles each, and the remainder (73) published 1 article each about public libraries (Table 4) Nine of the 10 authors of 2 or more articles were academic researchers. The other (Simcox) was an academic librarian

Several of the authors of two or more articles worked in collaboration on multiple articles They included Bertot and McClure, Sweetland and Senkevitch, and Drabenstott and Simcox Studies by each pair of authors were topically related to each other Bertot and McClure published two articles on networked information systems in poor communities Sweetland and Senkevitch wrote twice together about core adult library collections Drabenstott and Simcox wrote two cataloging studies (with a third, but different author on each paper) K Bishop, who coauthored two studies, wrote about children's literature. Davis wrote one study alone and coauthored another, both were about the American library history

Evidence indicates a trend of dominance by researchers and/or researcher teams in

certain redundant areas Two of the three studies about cataloging, for example, were by Drabenstott and Simcox, and the third was about cataloging in information retrieval design K Bishop wrote two of the three articles about children's literature Sweetland and Senkevitch's works were the only studies in the group about adult collections.

In summary, there was a general distribution of authors with most authors associated with only one article in the database. There were patterns of collaboration, which is not surprising, and some subjects were addressed by only one or two authors The small number of articles about public libraries in the database, however, prohibits more generalized conclusions

Research Question 4: What occupations are leading the public library research agenda (e g , public librarians, academic researchers, or others)?

Academic researchers (including 6 graduate students) appear to be leading the public library research agenda, based on the observation that 61 (65%) of the 94 authors of public-library-related articles were academic researchers. Of these 61 researchers, eight were reported to be faculty members in nursing, geology, human factors, or other fields outside LIS For example, the article "The Readability of Medical Information on InfoTrac" was authored in part by a member of a nursing school faculty, and an article about geographical information systems in libraries was written by a member of a geology department.

There were more than two times as many academic librarians as public librarians writing about public libraries in the study database (Table 3). There were more than 7 6 times as many academic researchers (including graduate students) as public librarians writing about public library issues in the database There were nearly (7 compared to 8) as many "other" authors as public librarians writing about public libraries. The data thus indicate that, compared with other author groups, academic researchers dominate the authorship of articles

Table 4. Frequency of Authorship in the Public-Library-Related Article Subset

Number of papers published by an author	Number of authors publishing that many articles	Percent of authors	Cumulative percent of authors
3	1	1.2	1.2
2	9	10 8	12.0
1	73	88 0	100 0

about public libraries and as such, may define the research agenda Thus, public librarians appear to have a limited role in guiding research about public library issues, at least as represented by articles in the study database Compare this to academic library related research, where the majority of authors are practitioners. What difference does it make if practitioners lead authorship in a field? It is possible that practitioners have a different (perhaps more pragmatic) point of view than academic researchers and may therefore study different subjects or use different approaches A lack of participation by public librarians as authors on research articles about public library issues, even as collaborators, indicates that public library research may lack the potentially valuable viewpoint of practitioners articulating some of the most important problems facing public libraries Further research examining this issue may be needed to determine if public librarians can better participate in research that can help solve their most pressing problems.

General Discussion

Evidence generated from this study indicates that public library issues may not be adequately addressed in the research literature and so may not be adequately addressed in

overall research conducted in LIS and published in the U.S. At the least, public library research is underrepresented in the research literature. For example, more than 75% of the research reported in the study database of articles was about academic libraries compared with the less than 25% about public libraries Further, the fact that almost half of the public-library-related research articles also included research about other library types might indicate an imbalance in research priorities and conduct On the other hand, research article counts do not necessarily quantify solutions developed for problems facing public libraries, nor have the relative research needs of different library types been quantified In any case, most LIS research in the study database did not concern public libraries

Obstacles that may lead to this disparity can occur at any step in the research process, and the explanation is probably a combination of several or all Biases or perceived usefulness by editors and/or referees may contribute to a relatively small public-library-related research literature A relatively large fraction of public-library-related research may be poorly conceived or conducted and so fail to pass through journal gatekeepers A substantial fraction of public-library-related research may also be published through other venues other than the journals considered in this study, such as the publication *Public Libraries*, state library journals, or ERIC. That research may also be presented in workshops or integrated into manuals and would therefore not appear in the journals reviewed here Clearly, public librarianship produces an important body of literature, but the fact that much of the research is published and read separately from other LIS research indicates that it is tangential to the dominant research agenda exemplified in refereed scholarly journals On the contrary, research about academic libraries is found in numerous general and academic-library-related journals.

The proportion of scholarly LIS literature addressing public library issues may also be

comparatively small because it is not being done in the first place Further, the number of U S public librarians with advanced degrees (and so more likely to be in a position to conduct research) may publish in proportion to their numbers While it is true that librarians interested in conducting research may be more attracted to employment in academic libraries than in public libraries, the dominance of academic librarians as authors is also evidence of the success of publication incentives built into the academic library practice. Why are similar incentives not found in public libraries for public librarians? Practitioners in all kinds of libraries, including academic librarians, assert that they lack the time to conduct research, and many do not recognize the relevance of research to their day-to-day work (Lynam, Slater, and Walker 1982, Van Fleet and Wallace 1992, Hernon and Schwartz 1999). Yet more than half the published research reviewed in this study was conducted by academic librarians. This suggests systematic support by the academic community for research—support that is needed in order to allocate funds, time, training, and other assistance necessary. This support does not appear to be present in the public library community

How does this lack of participation by public librarians affect what kind of research is conducted? Based on this study, public librarians do not participate heavily in shaping the research agenda Opportunities for valuable research based on ongoing library practice may therefore be missed and that "lost" research is therefore unavailable to be added to the knowledge base, despite a wealth of subjects "amenable to research" (Van Fleet and Wallace 1992) This in turn may contribute to a lack of interest by public librarians in reading research articles, and in perceiving utility in that research If relatively few public librarians read public library research, who is the research for? Are academic researchers conducting research for themselves or on the perceived needs of practitioners?

If research is a critical element in the creation and diffusion of innovation, then more

public-library-related research may be needed if public libraries are to adapt to a changing environment and serve their users well Improved channels of communication and increased interaction, allowing a better flow of information and ideas between practitioners and academic researchers, might raise the quality and amount of innovation

Increased research collaboration between public library practitioners and academic researchers is one strategy that is speculated on in the literature for improving research and professional communication. Several factors suggest that this kind of collaboration might work especially well in LIS. For example, recommendations for encouraging improved communication through increased collaboration and cooperation between public libraries and library schools, and between public librarians and academic researchers were made by Van Fleet and Durrance (1993) Rabinowitz (1996) attempted to narrow the theory-practice gap by integrating a course specifically addressing the gap between theory and practice into LIS undergraduate curriculum. This was designed to help future practitioners be better research consumers and better understand and use the research process Special funding provided explicitly for collaborative research between researchers and practitioners in the nonprofit sector is another strategy initiated by the Aspen Fund (Schuman and Abramson 2000).

Factors already in place indicate that increased collaborative research in LIS could be encouraged. The anti-research attitude among practitioners may not be intrinsic (Lynam, Slater, and Walker 1982) Rather, it may be an environmental factor or a system norm (Rogers and Shoemaker 1971) and therefore changeable The existing collaborative work that already exists between academic researchers and academic librarians may serve as an example for public librarians and academic researchers Also, LIS's interdisciplinarian nature has already established a pattern of collaboration between LIS professionals and researchers in other fields, such as computer science and history. Another factor that might engender

collaboration is that some academic researchers began as practitioners themselves and might therefore have contacts already in place Also, citation analysis (Van Fleet 1993) found that public librarians and academic researchers already cite each other in public library publications, indicating that to some extent they are familiar with each other's work and are interested in similar areas of study Collaborative research may be engendered by U S public library leaders, many of whom view "themselves as contributors to the professional dialogue rather than as [merely] recipients of information" (Van Fleet and Durrance 1993). As opinion leaders within the public library system, their support of research, expressed in this study, might influence adoption of new patterns of increased cooperation between researchers and public librarians Finally, if collaborating with academic researchers, public librarians do not need to have the full range of research skills, but can rely on their collaborators for this knowledge Conversely, practitioners can continue to practice during research, perhaps revealing implicit knowledge and habits that might otherwise elude the academic researchers' notice The result is "more fullness of knowledge" (Macduff and Netting 2000)

Factors against collaboration, however, are strong. The perception that academics and practitioners see research (as well as other professional matters) in a fundamentally different way seems entrenched in the public library culture (Van Fleet and Durrance 1993). The fact that an openness to research was higher among library practitioners who were not formally trained than those who had received a professional education indicates the depth of this entrenchment (Lynam, Slater, and Walker 1982) This suggests that the professional culture itself is a dominant factor in the dismissal by public librarians of formal research as irrelevant or unnecessary

CHAPTER V

CONCLUSION AND FUTURE RESEARCH

Conclusion

This study was exploratory in nature It was designed to provide preliminary data concerning the attention paid to U S public libraries in scholarly refereed LIS journals, and to raise questions and direction for future research That the data point to a notable disparity between the amount of research done in academic libraries compared with public libraries is clear. These findings may not be generalizable, however, but are limited to the journals and the time periods included in the study Nonetheless, past studies examining library research, together with clear evidence of a practitioner-academic communication gap and a general lack of interest in formal research by public librarians indicate that a broader study would be likely to find that a serious disparity exists throughout the entirety of scholarly LIS published research. This is not to say that too much research is done about academic libraries, only that much less is done about public libraries The picture might change somewhat if journals such as *Public Libraries* and state library publications were considered, but the amount of research in publications targeted to academic and other types of libraries might counterbalance their contribution.

A relative lack of research about public libraries may result in a lack of innovation and an inability of public libraries to adapt to changes and new demands Public librarians may not be getting the information they need Solutions to problems and the development and testing of innovations is a critical function of research and the dissemination of research through scholarly publications and other means. If public library problems are not the subject of enough research, or if the research conducted is largely irrelevant to or ignored by practitioners, then it fails in this mission with respect to public libraries

The status of public library practitioners and of public libraries themselves may be undermined if there is a lack of relevant research and of practitioner participation in that research. Marginalization within a profession may reduce public librarians' power within the LIS culture, perhaps resulting in a reduced ability to have their requirements met, including programming and funding (Pungitore 1995)

Formal research is intended to contributed to the general knowledge base that allows a profession to define and redefine itself, question its dogmas, and integrate new ideas and paradigms (Abbott 1988, Rayward 1990) The relatively small amount of public-library-related research included in the LIS knowledge base reduces exposure of these inquiries and related issues to members of the professional community not normally associated with public libraries, including systems developers, information specialists, academics, and researchers from other fields. Public library issues risk becoming marginalized within the professional literature and research programs Further, the knowledge base itself becomes skewed If the dominant scholarly literature is primarily about academic libraries and public-library-related research is tangential, academic libraries will become the norm, and academic library users will tend to represent all users. That is, if the problems of public libraries are different from those of academic libraries, and public library users have different needs than academic library users, then the LIS research community will not adequately address the needs of public libraries and their users

Ideally, scholarly research is a dialog between various segments of a profession. Interaction between researchers and practitioners is fundamental to the creation and dissemination of new information (Van Fleet 1993, Pungitore 1995), especially in a service profession where the "different perspectives and responsibilities for the development of effective practice based on a relevant conceptual framework complement each other" (Van

Fleet 1993). Yet a communication gap in LIS is recognized by practitioners and academics (Lynam, Slater, and Walker 1982, Van Fleet and Durrance 1993, Raber and Connaway 1996, Rabinowitz 1996; Macduff and Netting 2000; and others) The connection between good practice and ongoing formal research is unrecognized by many practitioners in all types of libraries (Lynam, Slater, and Walker 1982, Dimitroff 1995). Except in academic libraries, where in some cases research is required and/or rewarded, there is little incentive for practitioners to conduct research Different perceptions of the role of academia and research between academic researchers and public library practitioners is to some degree entrenched in the public library culture (Van Fleet and Wallace 1992, Van Fleet and Durrance 1993; Schuman and Abramson 2000) This culture itself conveys to practitioners that research is largely irrelevant (Lynam, Slater, and Walker 1982; Esteibar and Lancaster 1992). It is also possible that lacking sufficient input by practitioners during research design and planning, research that is conducted is often irrelevant or inaccessible to practitioners The academic culture may also discourage collaboration between academic researchers and practitioners in research projects (Macduff and Netting 2000) This difference in academic and public library cultures within the LIS profession may also contribute to a lack of research about public library issues

Solutions to problems of public libraries are certainly found in many sources, from online discussion lists and telephone conversations, to instruction manuals and workshops. Formal research, as defined in this study, is not the only source of solutions and innovation. But it is critical to the process because of its role in the building of a knowledge base, its ability to legitimize public library purposes, needs, and practitioners, and its ability to identify and isolate problems and to create solutions Without sufficient and sufficiently varied formal research, the ability of public libraries and librarians to function is reduced Without more

and better communication between researchers and practitioners, including the participation of more public librarians, or the conduct of sufficient research relevant to public libraries, public libraries may lose their effectiveness

Results from this study may not be generalizable, but they nevertheless indicate that a problem exists with potentially serious consequences detrimental to the effectiveness and long-term viability of public libraries. If public libraries are to play a major role in U.S education and society and meet the needs of their patrons, they require the innovation, information, professional support, and practitioner status provided through research Public libraries and librarians must remain stakeholders in the research and knowledge generation process and participate in their own definition, scope, responsibilities, and research. The LIS academic community also must not let go of this fundamental source of legitimacy for their own work

Future Research

This study found a relative lack of research about public libraries in general LIS scholarly journals Study limitations, however, may limit the generalizability of this conclusion Further research is required to reduce the uncertainty about whether public library needs are being met by present research. Specific tasks that could be conducted in the future to advance the research conducted in this study, and some related research questions, include.

1 Address the methodological limitations of this study by using the entire population of general LIS scholarly journals (or randomly select a sample from the entire population), a greater span of time for each journal (e g , ten years), and a panel of experts to verify article selection and subject determination. These improvements would conspicuously increase the

study's validity and the meaning of its findings

2 Extend the study to include scholarly journals targeted for specific kinds of librarianships, including the public library journals such as *Public Libraries* and state library publications, as well as academic, special, and school library journals A guiding research question would be, does the proportion of total articles directed at public libraries and public library issues remain the same or do general LIS journals show different patterns of research topics?

3. Compare these findings with historical data Related research questions are, how do these results compare to a similar group of journals 10 or 20 years ago? Have research priorities regarding U S public libraries changed over time? Were public libraries ever the norm in research? What do the answers to these questions imply about LIS research priorities, and the kind of research that is done?

Beyond the methods and questions of this particular study, other relevant issues can be raised·

1 Is there evidence to support the contention that a lack of formal research about public libraries negatively affects their ability to adapt and/or develop new practices? Is there evidence that public library users are affected by the relative shortage of public-library-related research? Would different research output result in different library services for different kinds of library users, or in different interfaces or information retrieval systems, for example?

2 Are the reasons and consequences of a communication gap between practitioners and academics specifically related to public libraries well understood? Are public libraries affected by poor communication between library researchers and public librarians? If so, how? Does this poor communication cause public library problems to be insufficiently studied by LIS researchers and/or findings from that research insufficiently disseminated to public

librarians? Is research about academic libraries relevant to public library practice?

3 How does the culture of librarianship affect what research gets done and where? Why do academics choose to focus on academic libraries more than public libraries? How can the overt and latent elements of library culture that discourage discourse between public librarians and academia be overcome? Is it important to overcome them?

4 What are the roles of editors, referees, and other agents of the publication process in determining what gets published where about public libraries? How do editors and referees calculate the interest of public librarians in reading research and how does that influence what gets published where? Are public library publications marginalized within LIS? What does it mean if most public-library-related research is published in specialized publications, state publications, ERIC, or other outlets where it does not reach the whole LIS community? Does this perpetuate the overall marginalization of public libraries and librarians?

5 Examine the communication process and dissemination of research in public libraries, conducting research similar to that of Pungitore (1995) and Van Fleet and Durrance (1993) Who are the change agents and how does innovation in public libraries come about? How is that affected by the development of the LIS profession and academia?

Investigation of these issues may clarify the problems raised in this study and, if necessary, suggest possible remunerative action. The central questions are Is there really a deficiency of formal research about public libraries? Do public libraries suffer because of it? Does the participation of practitioners in research, both as consumers and participants, matter in the ability of public librarians to do their job effectively? The challenges to public libraries are substantial and expectations are high. Further study of these issues is warranted.

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APPENDIXES

APPENDIX A

Summary Data: Journals, Library Types, Scope Notes

Journal	Number of Articles by Library Types Studied					Scope Notes
	Total	Public	Academic	School	Special	
Libraries & Culture V 32–34	25	13	8	2	11	"explores the significance of collections of recorded knowledge—their creation, organization, preservation, and utilization—in the context of cultural and social history, unlimited as to time and place."
Library & Information Science Research, V 19–21	23	9	9		1	"focuses on the research process in library and information science as well as research findings and, where applicable, their practical applications and significance. The papers should interest researchers, practitioners, . . . and others interested in the application of library and information science research to discovery, planning, problems solving, and decision making."
Library Resources and Technical Services, V 41–43	21	3	17	1	1	"support the theoretical, intellectual, practical, and scholarly aspects of the profession of collection management and development, acquisitions, cataloging and classification, preservation and reformatting, and serials . . .The audience for LRTS includes practitioners, students, researchers, and other scholars with an interest in collection development and technical services and related activities in all types of libraries." (http:www.ala.org/alcts/lrts/guide.html).
Reference and User Services Quarterly, V 36–38	20	7	15	1	2	"all aspects of library service to adults, and reference service and collection development at every level and for all types of libraries."
Journal of Interlibrary Loan V 7–9	18	1	16	0	3	"devoted to interlibrary loan and document delivery problems and the expanding roles of interlibrary loan librarians . . . The more inclusive and up-to-date title marks the clear direction of this field, making the journal more useful than ever to libraries of all types." (http://www.haworthpressinc.com)

Appendix A (continued)

Journal	Number of Articles by Library Types Studied					Scope Notes
	Total	Public	Academic	School	Special	
The Library Quarterly V 67–69	18	13	10	8	6	"Contributors to LQ have included practitioners, educators, and students, from library and information science. . . . Subjects that are considered within the scope of LQ range widely over aspects of library and information science and related fields." (http://www.journals.uchicago.edu/LQ/scope.html)
Library Collections, Acquisitions, and Technical Services V 21–23	15	0	15	0	0	"a comprehensive publication designed to bring together many of the specializations within the broad areas of library collection management and technical services including, but by no means limited to, acquisition of books and serials in academic, public, school and special libraries . . ."
JASIS V 48–50	13	2	12	1	2	"devoted to the various fields of documentation and information science and serves as a forum for discussion and experimentation."
*The Reference Librarian** V 25–30	13	1	13	0	1	"Reports on topics of current concern and practical value to all reference librarians!" (http://www.haworthpressinc.com)
Serials Review V 22–24	13	1	13	1	2	"a source of continuing education for serials, acquisitions, and collection development librarians and all other individuals involved in various facets of serials work. Its content covers both practical day-to-day issues and cutting edge developments."
Reference Services Review V 24–26	11	0	11	0	0	"to review and evaluate a wide variety of publications having reference value within academic, public, school, and special library settings."

Appendix A (continued)

Journal	Number of Articles by Library Types Studied					Scope Notes
	Total	Public	Academic	School	Special	
Technical Services Quarterly V 14–16	11	0	10	0	1	"keeps its readers informed of current developments and future trends in computers, automation, and advanced technologies in the technical operations of libraries and information centers . . . publishes up-to-the-minute information that technical services professionals and paraprofessionals need to ease the transition of the changes in the field and take full advantage of automated systems that ultimately make collections more accessible to users." (http://www.haworthpressinc.com)
Information Processing and Management V 33–35	8	1	8	0	0	"reporting of . . . management of information resources, libraries, information centers, systems, and networks . . ."
Collection Management V 20–22	7	1	5	1	0	"to provide practical experience and results of applied research for librarians who are responsible for all phases of developing and maintaining collections within all types of libraries."
Journal of Library Administration V 26–28	7	1	7	0	1	"the primary source of information on all aspects of the effective management of libraries. Stressing the practical, this valuable journal provides information that administrators want to know and need to know in order to most efficiently and effectively manage their libraries. The journal seeks out the most modern advances being made in professional management and applies them to the library setting. . . .truly an indispensable addition to any professional's library (http://www.haworthpressinc.com)
Information Technologies and Libraries, V 16–18	6	1	5	0	0	"publishes material related to all aspects of library and information technology . . ."
*The Serials Librarian*** V 33 (no. 1,2); V 35 (no. 3,4); V 36–37	4	0	4	0	0	"devoted to all major aspects of serials librarianship in academic, public, medical, law, and other special libraries."

Appendix A (continued)

Journal	Number of Articles by Library Types Studied					Scope Notes
	Total	Public	Academic	School	Special	
Cataloging & Classification Quarterly, V 25–27	3	0	3	0	0	"devoted to all aspects of bibliographic organization and control for all forms of library materials in all types of libraries."
Library Administration and Management V 11–13	3	2	2	0	1	"Manuscripts should be of timely and practical interest to those involved in a range of managerial roles in public, academic, and special libraries." (http://www.ala.org/lama/la&m/guide.html)
Library Hi Tech V 14–16	2	0	2	0	0	"international in scope, and defines technology in the broadest possible terms to include the full range of tools that librarians and their customers employ." Please note that this is a statement made by the new publisher, MCB University Press. The publisher for the volumes reviewed in this study was Perian Press. Journals published at that time did not include scope notes.
TOTAL	241	56 (23%)	185 (76%)	20 (8%)	33 (13%)	

**The Reference Librarian* is published in two volumes per academic year, with two issues per volume.

***Hodges Library at the University of Tennessee Knoxville was missing issues 1 and 2 from volume 35 and all of volume 34 of *The Serials Librarian*. Issues 1 and 2 from volume 33 were used to make up the difference.

APPENDIX B

PUBLIC-LIBRARY-RELATED ARTICLES (COMPLETE DATA)

Articles (alphabetical order by first author)

Toward "The Perfection of Work": Library Consortia in the Digital Age
JLA, 28(2), 1 (1999)
Library type(s). Public Academic Special
Subject: Networks/Consortia
LA Alexander, AW*

The Readability of Medical Information on InfoTrac. Does it Meet the Needs of People with Low Literacy Skills?
RQ, 37(2), 155 (1997)
Library type(s) Public Academic Special
Subject: Services
RA Baker, LM
RA Wilson, FL
OT Kars, M

Impacts of Public Access to the Internet Through Pennsylvania Public Libraries
IT&L; 16(4), 151 (1997)
Library type(s). Public
Subject. Services
RA *Bertot, JC***
RA *McClure, CR*

U.S. Public Library Outlet Internet Connectivity Progress Issues and Strategies
L&ISR; 21(3), 281 (1999)
Library type(s) Public
Subject Services
RA *Bertot, JC*
RA *McClure, CR*

Public Libraries and Networked Information Services in Low-Income Communities
L&ISR, 21(3), 361 (1999)
Library type(s): Public
Subject: Services
RA Bishop, AP
ST Tidline, TJ
RA Shoemaker, S
ST Salela, P

Reviewing Children's Books: A Content Analysis
LQ, 68(2), 145 (1998)
Library type(s): Public School
Subject Collection
RA *Bishop, K*
RA Van Orden, P

From Acting Locally to Thinking Globally. A Brief History of Library Automation
LQ; 67(3), 215 (1997)
Library type(s) Public Academic School Special Other
Subject. History
RA Borgman, CL

Compliance with Public Library Standards in the State of Ohio
L&ISR; 20(1), 69 (1998)
Library type(s)· Public
Subject: Management
ST Cha, M
RA Pungitore, VL

The Establishment of Library Networking Model for the Caribbean Region· A Delphi Study
J ILL; 7(2), 51 (1996)
Library type(s) Public Academic Special
Subject Networks/Consortia
LA Chavez-Hernandez, MT

Using Public Library Reference Collections and Staff
LQ, 67(2), 155 (1997)
Library type(s) Public
Subject: Services
RA Childers, TA

Testing the Accuracy of Information on the World Wide Web Using the AltaVista Search Engine
RQ, 38(4), 360 (1998)
Library type(s) Public
Subject: Services
LA Connell, TH
LP Tipple, JE

Wars in American Libraries. Ideological Battles in the Selection of Materials
L&C; 33(1), 40 (1998)
Library type(s) Public School
Subject: History
RA *Davis, DG Jr*

Master Reference Librarians for a New Age A Study of Characteristics and Traits
Ref L; 28(59), 203 (1997)
Library type(s) Public Academic Special
Subject. Services
LA DeVries, J
LA Rodkewich, PM

School Library Media Center and Public Library Collections and the High School Curriculum
CM, 20(1/2), 99 (1995)
Library type(s)· Public School
Subject: Collection
RA Doll, CA

Do Librarians Understand the Subject Headings in Library Catalogs?
RQ; 38(4), 369 (1999)
Library type(s): Public Academic
Subject: Cataloging
RA *Drabenstott, KM*
LA *Simcox, S*
OT Williams, M

End-User Understanding of Subject Headings in Library Catalogs
LRTS, 43(3), 140 (1999)
Library type(s): Public
Subject: Cataloging
RA *Drabenstott, KM*
LA *Simcox, S*
OT Fenton, EG

The Question of Gender in Library Management
LA&M, 11(4), 231 (1997)
Library type(s): Public Academic Special
Subject: Management
RA Fisher, W

Blazing the Way: The WPA Library Service Demonstration Project in South Carolina
L&C; 32(4), 427 (1997)
Library type(s): Public
Subject: History
LA Gorman, RM

At the Pleasure of the Board Women librarians and the Los Angeles Public Library, 1880-1905
L&C, 34(4), 349 (1999)
Library type(s): Public
Subject: History
RA Hansen, DG
ST Gracy, KF
OT Irvin, SD

From Translation to Navigation of Different Discourses: A Model of Search Term Selection During Pre-Online Stage of the Search Process
JASIS; 49(4), 312 (1998)
Library type(s): Public Academic Special
Subject: Services
RA Iivonen, M
RA Sonnenwald, DH

Using Public Libraries to Provide Technology Access for Individuals in Poverty: A Nationwide Analysis of Library Market Areas Using a Geographic Information System
L&ISR; 21(3), 299 (1999)
Library type(s). Public
Subject Services
RA Jue, DK
RA Koontz, CM

OT Magpantay, JA
LA Seidl, AM
OT Lance, KC

Partial Coordination. II A Preliminary Evaluation and Failure Analysis
JASIS, 49(14), 1270 (1998)
Library type(s). Public Academic
Subject· Cataloging
RA Kambil, A
RA Bodoff, D

A Critical Look at the Availability of Gay and Lesbian Periodical Literature in Libraries and Standard Indexing Services
SR; 22(4), 71 (1996)
Library type(s)· Public Academic School Special
Subject: Collection
LA Kilpatrick, TL

The Xujiahui (Zikawei) Library of Shanghai
L&C; 32(4), 456 (1997)
Library type(s) Public Special
Subject. History
LA King, G

Public Opinion Toward User Fees in Public Libraries
LQ; 68(2), 183 (1998)
Library type(s): Public
Subject. Management
RA Kinnucan, MT
RA Ferguson, MR
RA Estabrook, L

The World Wide Web is Here· Is the End of Printed Reference Sources Near?
RQ; 36(3), 422 (1997)
Library type(s): Public
Subject Services
LP Koutnik, C

Library and Genealogical Society Cooperation in Developing Local Genealogical Services and Collections
RQ; 37(1), 37 (1997)
Library type(s)· Public Academic Special Other
Subject· Collection
LP Litzer, DS

Gender, Culture, and the Transformation of American Librarianship, 1890–1920
L&C; 33(1), 51 (1998)
Library type(s)· Public
Subject History
RA Maack, MN

Autonomy and Accommodation. Houston's Colored Carnegie Library, 1970–1922
L&C; 34(2), 95 (1999)
Library type(s) Public
Subject· History
RA Malone, CK

Safeguarding the Nation's Past· Chamfort's Brief Career at the Bibliothèque Nationale
L&C, 34(4), 373 (1999)
Library type(s) Public
Subject· History
OT Oliver, BW

Using Geographic Information Systems to Analyze Library Utilization
LQ, 67(1), 24 (1997)
Library type(s). Public
Subject Management
RA Ottensmann, JR

What to Read and How to Read. The Social Infrastructure of Young People's Reading, Osage, Iowa, 1870 to 1900
LQ, 68(3), 276 (1998)
Library type(s)· Public School Special
Subject. History
RA Pawley, C

Approaches to Studying Public Library Networked Community Information Initiatives A Review of the Literature and Overview of a Current Study
L&ISR, 21(3), 327 (1999)
Library type(s). Public
Subject: Services
RA Pettigrew, KE
RA Durrance, JC
RA Vakkari, P

The Wonderful World of Books Librarians, Publishers, and Rural Readers
L&C, 32(4), 403 (1997)
Library type(s) Public
Subject: History
RA Preer, J

Soviet-American Library Relations in the 1920s and 1930s· A Study in Mutual Fascination and Distrust
LQ, 68(4), 390 (1998)
Library type(s) Public Academic School Special
Subject History
RA *Richards, PS*

Library Services and the African-American intelligentsia Before 1960
L&C; 33(1), 91 (1998)
Library type(s) Public Academic
Subject History
RA *Richards, PS*

Espresso and Ambiance What Public Libraries can Learn from Bookstores
LA&M, 12(4), 200 (1998)
Library type(s) Public
Subject: Management
LP Sannwald, W

Community Analysis. Research That Matters to a North-Central Denver Community
L&ISR; 21(1), 7 (1999)
Library type(s) Public
Subject Management
LP Sarling, JH
LA Van Tassel, DS

Reference Service Evaluation and Meta-Analysis. Findings and Methodological Issues
LQ; 67(3), 267 (1997)
Library type(s) Public Academic
Subject. Services
LA Saxton, ML

Evaluating Public Library Adult Fiction: Can We Define a Core Collection?
RQ; 36(1), 103 (1996)
Library type(s): Public
Subject Collection
RA **Senkevitch, JJ*****
RA *Sweetland, JH*

Public Libraries and Adult Fiction. Another Look at a Core List of "Classics"
LRTS; 42(2), 102 (1998)
Library type(s)· Public
Subject Collection
RA **Senkevitch, JJ**
RA *Sweetland, JH*

Internetworking an Urban Community. A Longitudinal Study of Approaches to Introducing Adult New Users to Electronic Information Resources
L&ISR; 19(3), 249 (1997)
Library type(s) Public
Subject. Services
RA **Senkevitch, JJ**
RA Wolfram, D

Online Library Catalog Search Performance by Older Adult Users
L&ISR, 20(2), 115 (1998)
Library type(s) Public
Subject· Services
ST Sit, RA

Public Libraries and Embezzlement An Examination of Internal Control and Financial Misconduct
LQ, 67(1), 1 (1997)
Library type(s) Public
Subject Management

RA Snyder, H
RA Hersberger, J

Conversation in Information-Seeking Contexts· A Test of an Analytical Framework
L&ISR; 19(3), 217 (1997)
Library type(s)· Public School
Subject Services
RA Solomon, P

On Their Own Librarian's Self-Directed, Work-Related Learning
LQ; 69(2), 173 (1999)
Library type(s). Public Academic School Special
Subject Management
RA Varlejs, J

"The Milestones of Science" Collection. The Public Library and the Conservation of Buffalo's Cultural Heritage
L&C, 34(3), 262 (1999)
Library type(s): Public
Subject History
LP Walters, DL
ST Petty, ME

From Revolution to Evolution. The Transformation of the Bibliothèque Nationale into the Bibliothèque Nationale de France, Through the Lens of Popular and Professional Reports
LQ, 69(3), 324 (1999)
Library type(s) Public
Subject History
LA Wenzel, SG

Tunnel Vision and Blind Spots What the Past Tells Us About the Present Reflections on the Twentieth-Century History of American Librarianship
LQ, 69(1), 1 (1999)
Library type(s): Public Academic School Special
Subject· History
RA *Wiegand, WA*

Main Street Public Library· The Availability of Controversial Materials in the Rural Heartland, 1890-1956
L&C, 33(1), 127 (1998)
Library type(s) Public
Subject· History
RA *Wiegand, WA*

Library Consultant in Indonesia· The Work of A.G W Dunningham
LQ; 69(1), 57 (1999)
Library type(s) Public Academic School Special
Subject History
RA Williamson, WL

Criteria for Reviewing Children's Books

LRTS, 43(1), 1 (1999)
Library type(s) Public School
Subject. Collection
LP Wilson, M
RA *Bishop, K*

Toward a Reconceptualization of Information Seeking Research Focus on the Exchange of Meaning
IPM, 35(4), 871 (1999)
Library type(s) Public Academic
Subject. Services
RA Yoon, K
RA Nilan, MS

Arthur E Bostwick and Chinese Library Development· A Chapter in International Cooperation
L&C, 33(4), 389 (1998)
Library type(s)· Public Academic Special
Subject· History
LA Yu, PC
RA *Davis, DG Jr*

From the People of the United States of America The Books for China Programs During World War II
L&C, 32(2), 191 (1997)
Library type(s)· Public Academic School Special
Subject: History
LA Zhou, Y
LA Elliker, C

The Internet and Reference Services· A Real-World Test of Internet Utility
RQ; 38(2), 165 (1998)
Library type(s)· Public
Subject Services
LA Zumalt, JR
LP Pasicznyuk, RW

Author Occupation Codes

RA - Researcher, academic
LA - Librarian, academic
LP - Librarian, public
ST - Student
OT - Other

Journal Abbreviations

C&CQ	*Cataloging & Classification Quarterly*
CM	*Collection Management*
IPM.	*Information Processing and Management*

IT&L.	*Information Technologies and Libraries*
J ILL·	*Journal of Interlibrary loan, Document Delivery & Information Supply*
JLA.	*Journal of Library Administration*
JASIS	*Journal for the American Society of Information Science*
L&C	*Libraries and Culture*
LCATS	*Library Collections, Acquisitions and Technical Services* (formerly *Acquisitions Practice and Theory*)
LA&M:	*Library Administration and Management*
L&ISR	*Library & Information Science Research*
LHT·	*Library Hi Tech*
LQ:	*The Library Quarterly*
LRTS.	*Library Resources and Technical Services*
Ref L:	*The Reference Librarian*
RQ	*Reference and User Services Quarterly* (formerly *RQ*)
RSR:	*Reference Services Review*
S Lib.	*The Serials Librarian*
SR.	*Serials Review*
Tech Services Q	*Technical Services Quarterly*

* Authors in plain font wrote 1 article
** Authors in *italic font* wrote 2 articles
*** Author in **bold font** wrote 3 articles

APPENDIX C

FORTRAN PROGRAM USED FOR DATA ANALYSIS

The Fortran (*For*mula *Tran*slation) program used to analyze the database was written to comply with the American National Standard for Fortran 77 (ANSI X3 9–1978), with one extension lower case alphabetic letters were used for most of the coding because it is aesthetically superior (in the author's opinion) to the standard Fortran character set which includes only the 26 upper case alphabetic letters, the 10 numeric digits, the blank, and 12 symbols (i.e , + - * / = ( ) , ' $ ·) As far as the author is aware, all Fortran 77 compilers allow lower case letters, so the use of this extension did not affect program portability The program is fully compatible with the standard for Fortran 90

The Fortran code is reproduced on the following five pages.

```
*=====================================================================
* Fortran program for analysis of library publication data   27 May 2000
*
* Margaret G  Goodbody, M S  thesis project, University of Tennessee
*
* Note  this program contains lower case letters, which is an extension
* to the ANSI standard for Fortran 77, but which is available with
* (nearly) all modern Fortran 77 compilers  Otherwise, the code adheres
* strictly to the ANSI standard
*
* The main program calls two subroutines  Shell and sort2
*---------------------------------------------------------------------
      Program thesis
*---------------------------------------------------------------------
* Variable definitions
*
* auname  author name (last, initial(s)) (in input file)
* file1   input  file name (same directory as program)
* fileo   output file name (same directory as program)
* i       DO variable
* ijrnl   journal index number
* j       DO variable
* jblabl  job names (words)
* jbname  abbreviations of job names
* jjend   ending   index for author name alphabetization
* jjrnl   journal abbreviations (up to 15 characters)
* jjstrt  starting index for author name alphabetization
* jlngth  length (characters) of journal abbreviation in input file
* jobtyp  job (occupation) of article author
* journl  journal name (abbreviated)
* jtname  code names of job (occupation) types of authors
* kartcl  number of articles in database
* klibty  number of articles about each library type
* libtyp  library type (in input file)
* ltlabl  library types (words)
* ltname  library type identifiers
* m       index in nJob, job type
* mxjtyp  number of author job types
* mxltyp  number of library types
* mxplan  maximum number of public library article authors allowed
* mxstyp  number of types of subjects (topics) studied
* n       number of names in list to be alphabetized (input to Shell)
* naupbl  number of authors of public library articles in database
* nJob    number of authors with this job studying this library type
* njrnll  number of articles published by journal about each libtyp
* njrnl   number of journals (not articles) read so far from input file
* njrnls  maximum number of journals in database
* nplanm  number of articles about public libraries by planam
* nSub    number of public-library articles about subject j
* planam  public library article author names
* public  is a public library included in study (logical)
* record  database record (journal article citation)
* sblabl  study subject (words)
* sbname  study subject identifiers
* subtyp  study subject (in input file)

      integer    i, j, jjend, jjstrt, kartcl, naupbl, m, n
      integer    mxjtyp, mxltyp, mxstyp
      parameter (mxjtyp = 5, mxltyp = 5, mxstyp = 7)
      character  libtyp(mxltyp)*2, ltname(mxltyp)*2, ltlabl(mxltyp)*10
      integer    klibty(mxltyp)
      character  subtyp(mxstyp)*2, sbname(mxstyp)*2, sblabl(mxstyp)*10
      character  jobtyp*2, jbname(mxjtyp)*2, jblabl(mxjtyp)*20
      integer    nJob(mxjtyp,mxltyp), nSub(mxstyp)
      integer    mxplan, njrnls, njrnl, ijrnl, jlngth
      parameter (mxplan = 1000, njrnls = 20)
      integer    nplanm(mxplan)
      character  auname*50, planam(mxplan)*50, journl(njrnls)*15
      character  jjrnl*15
      integer    njrnll(njrnls,mxltyp)
      character  file1*12, fileo*12, record*50
      parameter (file1 = 'thesis in', fileo = 'thesis out')
      logical    public
*---------------------------------------------------------------------
* Database format
*
* J Abbrev vol(no), p (year)
* AA BB CC DD          library types (up to mxltyp)
* EE FF GG HH          study subject types (up to mxstyp)
* KK Author, AB        author job, author name (last, initials)
* LL Author, CD          repeat for all authors (one per line)
* ____________         blank line (not needed for last record)
*
* Database codes
*
* NOTE  'other' category for ltname was eliminated for final thesis
*
* Author's job titles (jbname)
*
*   LA librarian, academic library
*   LP librarian, public library
*   RA researcher, academic
*   ST student
*   OT other
*
* Library type (research about) (ltname)
*
*   AC academic (university/college)
*   PU public
*   SC school (not university/college)
*   SP special
*   OT other
*
* Research type
*
*   CA cataloging
*   CO collection
*   HT history
*   MT management
*   NW networks
*   SV services
*   NA not applicable (for non-public library studies)

      data jbname / 'LA', 'LP', 'RA', 'ST', 'OT' /
      data jblabl / 'Librarian, academic', 'Librarian, public',
     &              'Researcher, academic', 'Student', 'Other' /
      data ltname / 'AC', 'PU', 'SC', 'SP', 'OT' /
      data ltlabl / 'Academic','Public','School','Special','Other' /
      data sbname / 'CA', 'CO', 'HT', 'MT', 'NW', 'SV', 'NA' /
      data sblabl / 'Cataloging', 'Collection', 'History',
     &              'Management', 'Networks', 'Services', 'N/A' /
*---------------------------------------------------------------------
* Open files and initialize stuff

      open(10,file=file1)
      open(11,file=fileo)
```

```
      write  (6,500) file1
  500 format (/2x,'Reading data from ', a12/)

      kartcl = 0
      naupbl = 0
      njrnl  = 0
      do 10 i = 1, mxltyp
        klibty(i) = 0
   10 continue
      do 11 j = 1, mxltyp
        do 12 i = 1, mxjtyp
          nJob(i,j) = 0
   12   continue
   11 continue
      do 13 i = 1, mxstyp
        nSub(i) = 0
   13 continue
      do 14 j = 1, mxltyp
        do 15 i = 1, njrnls
          nJrnlL(i,j) = 0
   15   continue
   14 continue

*  Read database

  100 format (a50)
  101 format (20(a2,1x))
  102 format (a2,1x,a50)
    1 read(10,100) record
        kartcl = kartcl + 1

*       get journal abbreviation (up to 15 characters) from record and
*       journal index number ijrnl  Initialize jjrnl for output table

        i     = 2
        jjrnl = '               '
  423   if (i  le  njrnls+1) then
          if (record(i i)  eq  ',') then
            jlngth       = i-1
            jjrnl(1 jlngth) = record(1 jlngth)
          else
            i = i + 1
            go to 423
          end if
        else
          go to 920
        end if
        j = 1
  424   if (j  le  njrnl) then
          if (jjrnl  eq  journl(j)) then
            ijrnl = j
          else
            j = j + 1
            go to 424
          end if
        else
          njrnl = j
          if (njrnl  gt  njrnls) go to 930
          ijrnl        = njrnl
          journl(njrnl) = jjrnl
        end if

*       library types studied

        read (10,101) (libtyp(i), i = 1, mxltyp)
        public =  false
        i      = 1
   50   if (libtyp(i)  ne  '  ') then
          if (libtyp(i)  eq  'PU') public =  true
          j = 1
   55     if (libtyp(i)  ne  ltname(j)) then
            j = j + 1
            if (j  gt  mxltyp) go to 950
            go to 55
          else
            klibty(j) = klibty(j) + 1
          end if
          if (i  lt  mxltyp) then
            i = i + 1
            go to 50
          end if
        end if

*         how many articles about which library types were published in
*         which journals

        i = 1
  566   if (libtyp(i)  ne  '  ') then
          j = 1
  567     if (j  le  mxltyp) then
            if (libtyp(i)  eq  ltname(j)) then
              nJrnlL(ijrnl,j) = nJrnlL(ijrnl,j) + 1
            else
              j = j + 1
              go to 567
            end if
          end if
          if (i  lt  mxltyp) then
            i = i + 1
            go to 566
          end if
        end if

*       subjects (for public libraries only)

        read(10,101) (subtyp(i), i = 1, mxstyp)
        if (public) then
          i = 1
   60     if (subtyp(i)  ne  '  ') then
            j = 1
   61       if (subtyp(i)  ne  sbname(j)) then
              j = j + 1
              if (j  gt  mxstyp) go to 951
              go to 61
            else
              nSub(j) = nSub(j) + 1
            end if
            i = i + 1
            if (i  gt  mxstyp) go to 951
            go to 60
          end if
        end if

*       author job classification(s) and name(s)

    2   read (10, 102, end=3) jobtyp, auname
          if (jobtyp  eq  '  ') go to 1
```

```
*         Keep track of names of authors of articles about public
*         libraries

          if (public) then
            j     = 1
   62       if (j  le  naupbl) then
              if (auname  eq  planam(j)) then
                nplanm(j) = nplanm(j) + 1
              else
                j = j + 1
                go to 62
              end if
            else
              naupbl          = naupol + 1
              planam(naupbl) = auname
              nplanm(naupbl) = 1
            end if
          end if

*         Keep track of job types of authors by library type studied

          j = 1
   65     if (j  le  mxjtyp) then
            if (jobtyp  eq  jbname(j)) then
              m = j
            else
              j = j + 1
              go to 65
            end if
          else
            go to 952
          end if

*         Keep track of author occupations by library type(s) studied

          i = 1
   66     if (libtyp(i)  ne  '  ') then
            j = 1
   67       if (j  le  mxltyp) then
              if (libtyp(i)  eq  ltname(j)) then
                nJob(m,j) = nJob(m,j) + 1
              else
                j = j + 1
                go to 67
              end if
            end if
            if (i  lt  mxltyp) then
              i = i + 1
              go to 66
            end if
          end if
        go to 2
    3 continue

      write  (6,501) fileo
  501 format (2x,'Writing output to ',a12/)

* Sort names by number of articles published about public libraries

      call sort2(naupbl,nplanm,planam)

* Write output  Begin with count of database records

      write  (11,600) kartcl
  600 format (10x,'Number of articles in database is ',i4)

*     then number of articles about each library type

      write  (11,601)
  601 format (/10x,'Number of articles about each library type'/)
      do 201 i = 1, mxltyp
        write (11,111) ltlabl(i), klibty(i)
  201 continue
  111 format (10x,2x,a10,i5)

*     then number of author job types by library type studied

      write  (11,602)
  602 format (/10x,'Number of author job types by library type'/)
      do 202 i = 1, 8
        write (11,112) (ltlabl(j)(i i), j = 1, mxltyp)
  202 continue
  112 format (10x,22x,10(4x,a1))
      write (11,*)
      do 203 i = 1, mxjtyp
        write (11,113) jblabl(i), (nJob(i,j), j = 1, mxltyp)
  203 continue
  113 format (10x,2x,a20,20i5)

*     then number of articles in each journal by library type studied

      write (11,609)
  609 format(/10x,'Number of articles in each journal by library type'/)
      do 209 i = 1, 8
        write (11,112) (ltlabl(j)(i i), j = 1, mxltyp)
  209 continue
      write (11,*)
      do 210 i = 1, njrnls
        write (11,120) journl(i), (nJrnlL(i,j), j = 1, mxltyp)
  210 continue
  120 format (10x,7x,a15,20i5)

*     then number of articles by subject for public library studies

      write  (11,604)
  604 format (/10x,'Number of articles by subject for public library ',
     & 'studies'/)
      do 204 i = 1, mxstyp
        write (11,111) sblabl(i), nSub(i)
  204 continue

*     then authors of articles about public libraries with the number
*     of publications by each author

      write  (11,605)
  605 format (/10x,'Public-library article authors',
     &         ' (preceeded by number of articles)'/)

* Alphabetize authors within common publication counts, starting with
* highest count (note, counts are in ascending order in nplanm)

      jjstrt = naupbl
  114 format (10x,2x,i3,1x,a50)

* If at least two records are left, some sorting may be needed
```

```
  650 if (jjstrt  gt  1) then
        jjend = jjstrt

*     if count occurs only once, write record and move on

        if (nplanm(jjstrt)  ne  nplanm(jjstrt-1)) then
          write (11,114) nplanm(jjstrt), planam(jjstrt)
          write (11,  *)
          jjstrt = jjstrt - 1
          go to 650
        end if

*     otherwise determine number of authors with this count and sort

  651   jjend = jjend - 1

*         if only two authors are left and they have the same count,
*         do a simple comparison and write records

        if (jjend  eq  1  and  jjstrt  eq  2) then
          if (planam(jjend)  gt  planam(jjstrt)) then
            write (11,114) nplanm(jjstrt), planam(jjstrt)
            write (11,114) nplanm(jjend ), planam(jjend )
          else
            write (11,114) nplanm(jjend ), planam(jjend )
            write (11,114) nplanm(jjstrt), planam(jjstrt)
          end if

*         but if more records follow the current end point keep going

        else if (jjend  gt  1) then

*             See if current end point is final end point  If so, get n

          if (nplanm(jjend)  ne  nplanm(jjend-1)) then
            n = jjstrt - jjend + 1

*                 If n is 2, do a simple comparison and write

            if (n  eq  2) then
              if (planam(jjend)  gt  planam(jjstrt)) then
                write (11,114) nplanm(jjstrt), planam(jjstrt)
                write (11,114) nplanm(jjend ), planam(jjend )
              else
                write (11,114) nplanm(jjend ), planam(jjend )
                write (11,114) nplanm(jjstrt), planam(jjstrt)
              end if
              write (11,*)

*                 otherwise sort and write sorted portion of planam

            else
              call Shell (n, planam(jjend))
              do 652 i = jjend, jjstrt
                write (11,114) nplanm(i), planam(i)
  652         continue
              write (11,*)
            end if
            jjstrt = jjend - 1
            go to 650
          end if
          go to 651

*         otherwise there are no more records, so do a sort and write

        else if (jjend  eq  1) then
          n = jjstrt - jjend + 1
          call Shell (n, planam(jjend))
          do 653 i = jjend, jjstrt
            write (11,114) nplanm(i), planam(i)
  653     continue
        end if

*     otherwise write the single record left

      else
        write (11,114) nplanm(1), planam(1)
      end if

* Program termination, including error (if any) meesages

      stop 'Normal end of program'

  920 print*, 'Apparent error in journal abbreviation (> 15 chars)'
      print*, 'check for semicolon '';'' in record ', record
      go to 999

  930 print*, 'ijrnl  gt  njrnls in record ', record
      go to 999

  950 print*, 'Apparent error in library type in record ', record
      print*, 'libtyp, ltname ', libtyp, ltname
      go to 999

  951 print*, 'Apparent error in subject type in record ', record
      print*, 'subtyp, sbname ', subtyp, sbname
      go to 999

  952 print*, 'Apparent error in job type in record ', record
      print*, 'jobtyp, jbname ', jobtyp, jbname
      go to 999

  999 stop 'Abnormal end of program'
      end

* Shell ================================================================
*
* Shell sort from Press et al  (1996) modified for a character array
*
* FYI  Shell was the algorithm developer's name, this is not based on
*      moving walnut shells around
*
* Press WH, Teukolsky SA, Vetterling WT, Flannery BP (1996) Numerical
*   Recipes in Fortran 77  The Art of Scientific Computing  Cambridge
*   University Press, Cambridge
*-----------------------------------------------------------------------
      Subroutine Shell (n,a)
      integer   i, inc, j, n
      character a(n)*50, v*50

      inc = 1
    1 inc = 3 * inc + 1
      if (inc  le  n) go to 1
    2 inc = inc / 3
      do 3 i = inc + 1, n
        v = a(i)
```

```
      j = i
    4 if (a(j-inc)  gt  v) then
        a(j) = a(j-inc)
        j    = j - inc
        if (j  le  inc) go to 5
        go to 4
      end if
    5 a(j) = v
    3 continue
      if (inc  gt  1) go to 2
      return
      end

* sort2 ==========================================================
*
* Quicksort from Press et al  (1996), modified for author names  That
* is, the array 'brr' is a character array and additional local
* variables were added to the routine to allow transfer of character
* values
*
* Do NOT confuse 'el' (l) and 'one' (1)
*
* Press WH, Teukolsky SA, Vetterling WT, Flannery BP (1996) Numerical
*   Recipes in Fortran 77  The Art of Scientific Computing  Cambridge
*   University Press, Cambridge
*-----------------------------------------------------------------------
      Subroutine sort2 (n,arr,brr)
      integer    n, m, nstack
      parameter (m = 7, nstack = 50)
      integer    arr(n)
      integer    a, i, ir, j, jstack, k, l, istack(nstack), temp
      character  b*50, brr(n)*50, tempb*50

      jstack = 0
      l      = 1
      ir     = n
    1 if (ir-l  lt  m) then
        do 12 j = l+1, ir
          a = arr(j)
          b = brr(j)
          do 11 i = j-1, l, -1
            if (arr(i)  le  a) go to 2
            arr(i+1) = arr(i)
            brr(i+1) = brr(i)
   11     continue
          i        = l - 1
    2     arr(i+1) = a
          brr(i+1) = b
   12   continue
        if (jstack  eq  0) return
        ir     = istack(jstack)
        l      = istack(jstack-1)
        jstack = jstack-2
      else
        k        = (l+ir) / 2
        temp     = arr(k)
        arr(k)   = arr(l+1)
        arr(l+1) = temp
        tempb    = brr(k)
        brr(k)   = brr(l+1)
        brr(l+1) = tempb
        if (arr(l)  gt  arr(ir)) then
          temp    = arr(l)
          arr(l)  = arr(ir)
          arr(ir) = temp
          tempb   = brr(l)
          brr(l)  = brr(ir)
          brr(ir) = tempb
        end if
        if (arr(l+1)  gt  arr(ir)) then
          temp     = arr(l+1)
          arr(l+1) = arr(ir)
          arr(ir)  = temp
          tempb    = brr(l+1)
          brr(l+1) = brr(ir)
          brr(ir)  = tempb
        end if
        if (arr(l)  gt  arr(l+1)) then
          temp     = arr(l)
          arr(l)   = arr(l+1)
          arr(l+1) = temp
          tempb    = brr(l)
          brr(l)   = brr(l+1)
          brr(l+1) = tempb
        end if
        i = l + 1
        j = ir
        a = arr(l+1)
        b = brr(l+1)
    3   continue
          i = i + 1
        if (arr(i)  lt  a) go to 3
    4   continue
          j = j - 1
        if (arr(j)  gt  a) go to 4
        if (j  lt  i) go to 5
        temp   = arr(i)
        arr(i) = arr(j)
        arr(j) = temp
        tempb  = brr(i)
        brr(i) = brr(j)
        brr(j) = tempb
        go to 3
    5   arr(l+1) = arr(j)
        arr(j)   = a
        brr(l+1) = brr(j)
        brr(j)   = b
        jstack   = jstack + 2
        if (jstack  gt  nstack) then
          print*, 'NSTACK too small in sort2'
          stop
        end if
        if (ir-i+1  ge  j-l) then
          istack(jstack)   = ir
          istack(jstack-1) = i
          ir               = j - 1
        else
          istack(jstack)   = j - 1
          istack(jstack-1) = l
          l                = i
        end if
      end if
      go to 1
      end
```

VITA

Margaret Goodbody was born in New York City She grew up in Tenafly, New Jersey and attended public schools In 1982 she graduated from Bates College (Lewiston, Maine) with a B A in history Since that time she has lived in Ketchum, Idaho; Chicago, Illinois, Ithaca, New York; Falmouth, Massachusetts, Livermore, California, and Oak Ridge Tennessee She is moving soon to Maryland She has worked as a chambermaid, word processor, professional babysitter, waitress, secretary, cashier, academic fundraiser (nine years), tutor, file clerk, editor, data enterer, database manager, and more She now hopes to be a librarian She began her Master of Science degree in Information Sciences at the University of Tennessee, Knoxville, in the fall of 1998 and completed it in the summer of 2000 She enjoys teaching adults, particularly English as a Second Language, and is interested in literacy and immigration issues She lives with Jeff (golfer, plant ecophysiologist, computer programmer, skillful editor and writer, bacon provider, and more) and with cats extraordinaire, Blue and Red