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**The impact of technology on collection development in selected
academic and research libraries in the Southeastern United
States**

Smith, Merrill Fetner, Ed.D.

The University of North Carolina at Greensboro, 1991

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THE IMPACT OF TECHNOLOGY ON COLLECTION DEVELOPMENT
IN SELECTED ACADEMIC AND RESEARCH LIBRARIES
IN THE SOUTHEASTERN UNITED STATES


by

Merrill F. Smith

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the Faculty of the Graduate School at
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in Partial Fulfillment
of the Requirements for the Degree
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Approved by


Dissertation Adviser

APPROVAL PAGE

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The purpose of the study was to assess the impact of technology on collection development and the collection, and the probable impact of future technologies on collection development and the collection in selected academic and research libraries in the Southeast. An interview methodology was utilized to collect the data. Nineteen librarians from 13 libraries participated in the study. The findings of the study are not generalizable to libraries outside the study population.

The results of the study indicated that the librarians included in the study were operating within sophisticated technological environments and were knowledgeable about computer related technologies. They perceived that technology has had an impact on collection development in the following areas: management information; budget; access to the collection; usage of the collection; user demand for materials; and, to a lesser degree, cooperative collection development. They believed that the impact of future technologies on collection development would include: a trend toward "access vs. ownership"; greater attention to cooperative collection development agreements; continued expansion of electronic formats, specifically electronic

journals; continued pressure on budgets; and, the development of "workstations".

The primary influences leading to the adoption of new technologies mentioned by the participants were: improved service levels; user demand; economics; administrative support; and, the desire to be on the "leading edge". The major obstacles to realization of the potential provided by technology were: cost; legal issues; resistance to change; lack of expertise within the library; limitations of current technology and lack of standardization; publishers; archival issues; and, accreditation standards.

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CHAPTER 1

INTRODUCTION

The literature in the areas of both collection development and of technology in academic and research libraries is extensive. However, until recently, the discussion of the relationship between the two has been limited. Although the review of literature indicates recent interest in the implications of automation and technology for collection development, there has been only one in-depth study of the impact of technology on collection development. The findings of that study, completed in 1983, indicated a need for additional research.

As Arnold Hirshon states in the introduction to his article, "Vision, Focus, and Technology in Academic Research Libraries: 1971 To 2001", "libraries today are faced with planning for automation within a rapidly changing and uncertain technological environment" (Hirshon, 1988, p.215). Hirshon believes that in the past 15 years, library automation has come of age and in the next 15 years will move from second generation to third or fourth generation. In his words, "library automation is at a crossroads" (Hirshon, 1988, p. 216).

The history of library automation is primarily one of progress, but it also includes some costly mistakes. Shaw

and Culkin in their discussion of the literature indicate that many of the initial efforts to automate library processes were disastrous. They quote Koenig's characterization of the early period in the development of library automation as a time when "intention egregiously outran accomplishment, and indeed, where not only intention, but prediction and hope, were reported as accomplishment" (Shaw and Culkin, 1987, p. 267).

Purpose of the Study

The purpose of this study is to assess, through interviews, the current and probable impact of technology on collection development in selected academic and research libraries in the Southeast. A significant part of the study is directed toward providing information which may serve to assist collection development librarians "standing at the crossroads" in planning for the future.

According to Hirshon, those who will succeed will require both "vision and focus" (Hirshon, 1988, p.216). By eliciting past experience and future projections from those who have been and will be involved in making decisions, this study is intended to yield insights which may provide others with the vision and focus necessary to succeed.

Definiticns

Academic library- A library which exists within the larger framework of a college or university. The primary purpose of the library is to support the instructional and research interests of the larger institution.

Collection Development- The process of building and managing library collections.

Research library- A library which is a member of the Association of Research Libraries (ARL). For purposes of this study, research libraries in non-academic institutions will not be included.

Southeast- For purposes of this study, the Southeast is defined as the states of Maryland, Virginia, North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi, and the District of Columbia.

Technology- For purposes of this study, the use of the term technology will be confined to the application of digital and optical technology to the storage, retrieval, and transmission of information.

Limitations

This study is intended to identify computer technologies currently in use, their impact on collection development and the collection, the probable impact of future technologies on collection development and the collection, and individual and institutional demographics which may account for differences and/or commonalities in

selected academic and research libraries in the Southeastern United States. The study is restricted to libraries associated with senior-level colleges and universities.

The libraries included in the study were not selected on the basis of a random sample. The findings of the study are not generalizable to libraries outside the research population.

The primary participants included in this study are librarians with responsibility for the development of policies regarding the building and management of the library collection and for the coordination of the collection development function. These individuals were identified by a combination of preliminary information drawn from the American Library Directory, personal knowledge of library organization, or from information provided by the director or other chief administrative officer of the library. Nineteen librarians participated in the study.

Research Questions

This study can be described more accurately as exploratory rather than scientific research. According to Kerlinger, scientific research requires the ability to state the problem in terms of an hypothesis, which he defines as a "conjectural statement of the relation between two or more variables" (Kerlinger, 1986, p. 17). He considers hypotheses to be "powerful tools for the advancement of

knowledge" because they "can be tested" and because they "can be shown to be probably correct or incorrect apart from man's values and opinions" (Kerlinger, 1986, p. 19). The nature of this inquiry does not lend itself to testing the relationship between two or more variables nor to the statement of hypotheses that can be shown to be correct or incorrect independent of the values and opinions of the participants. The participants in the study were stating opinions which may have been based on values. Although it is clear from Kerlinger's discussion that the statement of measurable hypotheses is a necessary condition of scientific research, he concedes that "it is possible to conduct research without hypotheses, particularly in exploratory investigations" (Kerlinger, 1986, p. 23).

As exploratory research, this study was guided by the following questions:

- 1) What, if any, impact has technology had on collection development and/or on the nature of the collection itself in academic and research libraries?
- 2) What is the probable impact of future technologies on collection development and/or on the nature of the collection itself in academic and research libraries?
- 3) What are the primary influences leading to the adoption of new technologies in academic and research libraries?

4) What are the major obstacles or impediments to the full realization of the potential provided by technology in academic and research libraries?

5) Are similarities and differences in the perception of the impact of technology on collection development and/or the collection due to institutional and library demographics, such as: student full time equivalent (FTE); degrees granted; sources of financial support; size of library materials' budget; and, size of existing collection?

CHAPTER 2

REVIEW OF LITERATURE

Background

In 1982, the publication of John Naisbitt's bestseller, Megatrends, captured the popular imagination with its prediction that in the 1980's we would move from "Industrial Society to Information Society, from National Economy to World Economy..." (Time, Jan. 8, 1990, p.72). While Naisbitt's predictions reached a wide audience, he clearly was not the first to deal with some of the startling implications of the information age. The scholarly community has long been aware of the exponential rate of growth in all fields of knowledge, the need for scholars from all countries to communicate with their colleagues, and the increasing complexity of the scholarly communication system. Among those members of the scholarly community concerned with the information explosion are librarians in academic and research libraries who are responsible for the selection, acquisition, processing, storage, retrieval, and transmission of that information.

Visionaries in the field of library science have for some years tried to foresee the impact of that hallmark of the information age, technology, on the library of the

future. In 1978, a study funded by the National Science Foundation was conducted by F. Wilfrid Lancaster of the University of Illinois at Urbana-Champaign. Lancaster's research was, in his words, based on the "underlying premise that many types of publications can be distributed more effectively in electronic form and that, in fact, future economic factors will dictate that they be distributed electronically" (Lancaster, 1980, p.162). Forecasting from this premise, Lancaster envisioned a virtually paperless society by the year 2000. The purpose of the study was to explore the possible effects of this transition on libraries. One of its three components was the development of a scenario featuring the role of libraries and librarians in the year 2001 (Lancaster, 1980, p.167). The scenario depicted the changes which hypothetically took place in the 25 year period from 1975 to 2000. Many of these changes were driven by forces outside the library including most notably, the publishing and communication industries. By 2001, the scenario depicted publication in paper formats as almost extinct except in the area of popular reading materials. Research literature in all fields is available online or in other electronic formats only. As a result of the development of what might be referred to as user-friendly searching software, individual researchers access the literature in their fields without the assistance of search specialists. According to the scenario, these

external changes "coincided with a period of wholesale conversion from card catalogs to online catalogs, especially in academic libraries", and by the mid-1980's libraries began expanding their online catalogs to include other online databases. This trend led to the "multisource catalog" commonly found in the libraries of 2001 (Lancaster, 1980, p. 180). Lancaster's scenario further depicted the near demise of technical services departments in libraries, overall reductions in the size of staffs and collections (maintained for historical research), a shift toward purely service oriented activities, and the now familiar view of the librarian as an information consultant (Lancaster, 1980, p. 181-83).

Although there well may be many who would, in 1991, disagree with the ultimate outcome of Lancaster's scenario of the future and almost certainly with his timetable, in the 12 years since this study was initiated, the literature on library automation and advances in technology have flourished. As predicted by Lancaster, the conversion of card catalogs to online catalogs in academic and research libraries proceeded at a rapid pace throughout the 1980's. Also, as indicated in his scenario, there has been, in a number of academic libraries, a move in the direction of expanding the online catalog to include entries for frequently accessed databases not owned by the library, as well as an increasing number of libraries participating in

networks in which the holdings of all member libraries can be accessed through the online catalog in each individual library.

Drake, in Library 2000-Georgia Tech: A Glimpse of Information Delivery Now and in the Year 2000, describes the initial steps in the development of what she and others at Georgia Institute of Technology envision as the library of the twenty-first century. Bearing a strong resemblance to Lancaster's vision of an electronic library, Library 2000 developed from ideas included in the library's 1984 long range plan. Drake states that the major goal of the project was "to create a showcase library to demonstrate the application of the latest information technology in an academic and research setting." Implementation of the vision began in 1986 with the completion of a campus-wide network providing online access to the library's catalog of holdings as well as several commercial databases. Plans for Library 2000 include the extension of the network to corporate users and expansion of the catalog to provide access to additional databases. According to Drake, Library 2000 represents a decision to develop a system that "instead of trying to serve 14,000 students and faculty members in the Library, could deliver the Library to them" (Drake, 1987, p. 45-48).

A special issue of Information Technology and Libraries, published in June of 1989, was devoted to locally loaded databases in online library systems. In his

introductory essay, the editor, William Gray Potter, identified the primary trends reflected in the articles included in the issue as: "the unification of local collections, providing access to outside resources, and the incorporation of reference works and full text" (Potter, 1989, p. 100). The first trend is toward providing users with access through the online catalog to materials that were previously difficult to locate, such as journal articles, government documents, reports, etc. In some cases, libraries have indexed content notes contained in the MARC record allowing the user to access individual short stories or essays contained in collections. The second trend involves providing access to resources available outside the given library's actual collection. This may be in the form of periodical indexes which contain citations for journals not held by the library. In some cases, users are referred to interlibrary loan to obtain these materials. Some online systems allow the user to search the holdings of other libraries in the geographical area or of member libraries within consortia. For example, Georgia Institute of Technology has now loaded Georgia State University's catalog into its online system and CARL (Colorado Alliance of Research Libraries) allows access to the holdings of all the member libraries. The third trend identified by Potter and further described in the ensuing articles is the move to load full text reference works such as The Grolier Academic

American Encyclopedia into the online catalog (Potter, 1989, p. 100-103).

Each of the articles included in the special issue discussed above illustrates the trends described by Potter. In her article, "The Online Information System at Georgia Institute of Technology", Miriam A. Drake, Dean of Libraries, updates her description of the system developed at Georgia Tech . The system currently includes databases such as Magazine Index, Newspaper Index, Management Contents, Computer Index, Trade and Industry Reports, INSPEC, Applied Science and Technology, the full text of Commerce Business Daily, as well as the Georgia State library catalog. In excess of one million searches are performed annually by the library's users, 30% of these from remote sites. A document delivery system provides manual delivery and retrieval to all buildings on campus. Telefacsimile equipment (FAX) is used to deliver to off-campus sites. While Georgia Tech's library is clearly evolving into the electronic library of the future, Drake states that even though increasing amounts of information will be available in electronic formats, print materials will continue to occupy a significant role (Drake, 1989, p. 105-108).

In a concluding article, Charles A. Bailey points out that initially library automation was concentrated largely on internal library processes, while this new generation of

systems is directed toward the user. He states that "to be effective, these computer-based systems must be integrated with the traditional collections and services of the library" (Bailey, 1989, p. 178). He expects evolutionary progress toward the "elusive electronic library" with electronic formats complementing rather than replacing print materials, at least for the foreseeable future (Bailey, 1989, p. 179-180).

Collection Development and Technology

As indicated by Bailey, much of the earlier literature on technology in libraries was focused on the automation of internal processes such as cataloging. In recent years, as an increasing number of sizeable academic libraries have converted to online catalogs and implemented circulation, acquisitions, and serials control systems, the enormous implications that these systems, combined with emerging information technologies, have for the collection development process has begun to be reflected in the literature.

In a recent article, "Old Forms, New Forms: The Challenge of Collection Development", Ross Atkinson states that "there are really only two ways to build a collection: on the basis of publication, or on the basis of use." He contends that while most college libraries have relied primarily on usage as the basis for selection decisions,

larger research libraries have to some degree been able to collect on the basis of publication. He views publication based collecting as no longer feasible from an economic perspective for even the largest university libraries. As a result, "the challenge facing collection development is to calibrate its operation more precisely, to define its rationale more persuasively, and to apply its methods more rigorously in preparation for unprecedented economic and technical changes which we have only begun to experience" (Atkinson, Sept. '89, p. 518).

Atkinson's perspective is reinforced by Susan Nutter in "Online Systems and the Management of Collections: Use and Implications". Nutter's article, published in volume one of Advances in Library Automation and Networking, provides one of the more in-depth examinations of the potential impact of online systems on the decisionmaking process in collection development.

Like Atkinson, she contends that "collection development librarians are facing increasing pressures to tailor collections more precisely to user needs and to do so in a more cost-effective manner" (Nutter, 1987, p. 126). She sees management information which can be derived from computer-based systems already in place in many academic libraries as providing the means to accomplish this task. Five computer-based systems that can yield data which previously have been virtually unattainable, are discussed

in the article. These include online catalogs, external databases, acquisitions and serials control systems, circulations systems, and microcomputer applications and systems. In her view, online catalogs provide an unprecedented opportunity for the analysis and evaluation of the collection and for monitoring the direction of collection growth (Nutter, 1987, p. 126-127).

External databases, such as the bibliographic utilities, can be used in a similar manner to provide comparative analyses of collections. Another external database described by Nutter which can yield valuable comparative information is the Conspectus On-Line. Mounted on RLIN, the database contains descriptions of the holdings of the member libraries of the Research Libraries Group (Nutter, 1987, p. 130-131).

Statistics from well designed online circulation systems provide the most accurate indication of usage patterns. Nutter points out that since such statistics do not reflect in-house usage of resources, decisions should not be made on the basis of circulation statistics in isolation. However, studies of in-house usage are now much simpler due to portable devices which can read barcodes or OCR labels. Accurate data can therefore be collected as items are reshelfed (Nutter, 1987, p. 133-134).

The most significant information to be derived from acquisitions and serials control systems includes data on

actual collection growth, fiscal data, and information on the source of the selection. Finally, Nutter discusses the potential provided by spreadsheet, word processing, and ultimately data management programs which will run on microcomputers (Nutter, p.137-142). Nutter concludes with the warning that collection management librarians may be facing the challenge of moving from "an era of too little information..to a possible plethora of information" (Nutter, 1987, p.143).

An article by Goldstein and Dick touches on many of the issues raised by Nutter. Involved with the development of the Integrated Library System at the Lister Hill National Center for Biomedical Communications, they advocate that emphasis be placed on collection management and control in the design of all integrated library systems, especially the circulation module (Goldstein and Dick, 1982, p.93).

Freeman and Winters, in "Journeymen of the Printing Office", reinforce Atkinson's and Nutter's concerns regarding the challenges facing collection development librarians in the current economic and publishing environment. They state that "Managing the budget can become a juggling act. There is a decline in purchasing power resulting from the fluctuating strength or weakness of the U.S. dollar, inflation of costs per title, and the increase in the sheer amount of information published..." (Freeman and Winters, 1990, p. 87). This situation creates

a dilemma for acquisitions and for collection development librarians in which technology will play an increasingly significant role. Freeman and Winters seem to imply that advances in technology may simultaneously offer potential solutions to the problem and serve to exacerbate the existing situation. They cite the advent of the electronic journal as an additional means of scholarly communication as creating yet another evaluation problem for collection development librarians. Since it is not yet clear what review process will evolve for such journals, the collection development librarian will be faced with determining the value to the collection with little to no criteria for evaluation. Among the potential solutions that Freeman and Winters foresee to the current crisis of information is the issue of "access vs. ownership (via online fulltext databases)" and the concomitant necessity for cooperative collection development, "providing access and not necessarily ownership" (Freeman and Winters, 1990, p. 89).

In an article on the current status of cooperative collection development among research libraries, Joe Hewitt, contends that "technology now provides the means to overcome many of the traditional barriers to cooperative programs and that there has been a fundamental shift in the scope and nature of interlibrary cooperation after the advent of online bibliographic networks" (Hewitt, 1987, p. 190). Despite this, Hewitt and Shipman found in their study that

although there appeared to be widespread acceptance of the "idea" of cooperative collection development, there seemed to be an inability to articulate the substantive and practical aspects of the idea (Hewitt and Shipmen, 1987, p. 226).

In the area of the emerging optical technologies, several authors seemed to agree that it is too early at this stage to gauge the effect on collection development in other areas. Meta Nissley in her article, "Optical Technology: Considerations for Collection Development", states that optical technology should be viewed as another means of collecting and disseminating information and integrated into the collection in much the same way as other nonprint sources have in the past. While its storage and access capabilities have many advantages from a collection management perspective, there are still many questions regarding applications, costs, and benefits. She sees its most immediate impact being in the area of reference but operating still along side print sources and online searching (Nissley, 1988, p. 11-14).

Paul Metz seems to agree with Nissley's assesement of the current situation. In "Collection Development in Academic Libraries: New Media, New Choices", he begins by saying "that nothing has had its death so prematurely announced as the book." He cites "an embarrassment of riches" in looking at the options currently available to the

user in academic libraries. Such riches will continue to pose challenges for collection development (Metz, 1987, p.298c-298d).

In a recent article included in Hewitt's Advances in Library Automation and Networking, Arnold Hirshorn cautions that while the advantages of CD-ROM could make it the medium of choice in the future, librarians should be thinking less in terms of this particular medium (which could have a limited life) and more in terms of any technology "that can store, retrieve, and transmit digitized information in a relatively high-speed and compact high-density format." He points out that there are unanswered questions regarding what will happen to the accumulated backfiles when CD-ROM is replaced by newer formats. He states that the answer for academic libraries is not in looking at present products but in assessing whether the products provide the ability "to capitalize on the inherent advantages of the medium" (Hirshon, 1987, p.235-236).

William Gray Potter, Director of the University of Georgia Libraries, in "Insurmountable Opportunities: Advanced Technology and the Academic Library", provides what he refers to as a synthesis of the literature published in the area of technology and academic libraries over the past 5 years (Potter, 1990, p. 166). Potter argues that "...technological innovations are converging to offer new systems for library and information services. Each of the

individual areas of technological innovation has fostered some application in libraries. However, if we stir these areas together, the following whole begins to take place" (Potter, 1990, p. 178). The whole to which Potter refers includes the following technological components: the online catalog; connectivity; evolution of bibliographic and information utilities; workstations; expert systems; hypertext; electronic publishing; and, optical storage (Potter, 1990, p. 178-181). A system which incorporates all of these components, beginning with a well designed online catalog as the initial access point, would provide an "environment that offers a universe of bibliographic information, and eventually the full text of documents, to the reader" and would, in effect, "evolve into an online library" (Potter, 1990, p. 181). Potter acknowledges that although the technology for this system currently exists or will soon be available, there are other issues which must be addressed prior to its becoming a reality. These include financial, social, and organizational issues.

Related Studies

Research studies of the impact of technology on collection development in academic libraries are relatively few in number. The review of literature did yield two dissertations germane to the topic. The first of these is directly related and examined several of the same research

questions. The study was conducted by Mary Grantham Wolfe in 1981 at the University of Pittsburgh. The purpose of Wolfe's study was "to determine the perceptions of academic research library directors, collection development librarians, and network directors of the present and future impact of technology on the collections and collection development policies of the academic library" (Wolfe, 1983, p.16). Her major thesis was "that a person's perception of the effects of future technology on the collection and collection development policy of academic libraries (P) is a function of three variables: present involvement with technology (t), demographic items such as age, sex, and educational background (d), and the personality factor of resistance to technology (pf) (Wolfe, 1983, p.16). The population sample for the study included the directors of academic libraries holding membership in the Association of Research Libraries, collection development librarians in these same libraries, and the directors of online library networks. The survey method was used for data gathering (Wolfe, 1983, p. iv).

The findings of Wolfe's study of most relevance to this study are those involving current and future technologies and their impact on collections and collection development. In terms of current use of technologies, Wolfe found that the primary technologies in use included an online cataloging system, online databases, and a computerized

circulation system, and, in fewer cases, an in-house computerized accounting system and an acquisitions system. Her findings on the impact of the technologies in use suggested that the primary effects of the technologies had been in expanded use of the collection and of interlibrary loan services (Wolfe, 1983, p.97-98).

Wolfe's conclusions in regard to future technologies and their impact related primarily to the predicted addition of online catalogs which could be accessed from remote sites. Again, these findings suggested that the participants viewed the impact of technology primarily in terms of improved access (Wolfe, 1983, p.98-99).

In Wolfe's discussion of her interpretations of the data and her recommendations for further research, there were several suggestions which have implications for this study. In regard to the instruments used to gather her data, Wolfe posed the possibility that the similarities of the findings may have been encouraged by respondents' perception that the statements were "ambiguous or offensive" or by the respondents' "frustration" with the length of the questionnaire (Wolfe, 1983, p.101). Such reactions to questionnaires have been noted by Schatzman and Strauss who mention "annoyance and frustration-even fury- in a respondent's inability to express himself to his own satisfaction" (Schatzman and Strauss, 1973, p.72). The interview method used in this study should have alleviated

the possibility of such feelings on the part of the participants.

This study also addresses two of Wolfe's suggestions for further research. Since her study was confined to personnel in major research libraries, she suggests that there could be differences if smaller academic libraries were included in the sample population. The participants in this study included librarians from academic libraries that are not ARL libraries. Wolfe also suggests that the next 10 years of experience with technology could change the results she found in her study (Wolfe, 1983, p.111). In the 10 years since her study was completed, there has been sizeable growth in the use of technology in libraries as evidenced by the literature.

The other study which is related to this study was conducted by Susan Neuman in 1986, again at the University of Pittsburgh. Neuman attempted to determine "the extent to which Management Information Systems influence strategic planning for collection development in academic libraries". Surveys were sent to directors and collection development officers in member libraries of the Association of Research Libraries. The results of the study indicated that "libraries are using some automated tools for collection development planning, that the institutional Management Information/Decision Support Systems are not being

considered as part of collection development planning..." (Neuman, 1986). In her suggestions for further research Neuman mentions the need for more information on "the effect of automation on the availability of information for decision making, and the exploitation of library automation systems for management information systems" (Neuman, 1986, p.75). This study does yield information in these areas.

CHAPTER 3 METHODOLOGY

Population

The population for this study consisted of 19 librarians in 13 selected academic and research libraries in the Southeastern United States. The study was restricted to libraries associated with senior-level colleges and universities. These colleges/universities ranged from those granting degrees no higher than the baccalaureate to comprehensive doctoral granting institutions. The libraries were selected on the basis of geographical region (Southeastern United States), personal knowledge of the technological environment of the library, and/or descriptions found in the literature.

Of the 13 libraries included in the study, six are research libraries, five are large academic libraries, and two are small academic libraries. The six research libraries are designated as such on the basis of membership in the Association of Research Libraries. The five designated as large academic libraries are cited in the ACRL Library Statistics (Association of College and Research Libraries) and support PhD-level programs in specific

disciplines. The two small academic libraries provide support for undergraduate programs (Appendix A).

The primary participants in the study are those librarians identified as having primary responsibility for the development of collection development policies and coordination of the collection development process. Depending on the organizational structure of the library, these are designated as such by titles such as, head of collection development, assistant director or assistant university librarian for collection development, collection development librarian, and university bibliographer. In some cases, the coordination of collection development is assigned to the head of acquisitions, or in the smaller institutions, to the library director.

The initial contact at each library was made with the librarian with primary responsibility for collection development. In some cases, this contact person identified other personnel within the library who should be interviewed. This was usually a person who shared in collection development responsibilities or who had expertise in the area of library automation or "systems". This process of identifying additional participants as the study progressed was similar to what Murphy refers to as "snowball sampling" (Murphy, 1980, p. 79).

Librarians with collection development responsibilities were identified by a preliminary

examination of the American Library Directory and/or by personal knowledge of library organizational structure. In libraries where this information was not available from these sources, the directors or heads of acquisitions at the selected libraries were asked to identify the librarian with primary responsibility for coordinating collection development. Of the 19 librarians interviewed, nine were either heads of or assistant directors for collection development, three were either heads of or assistant directors for technical services, three were directors, and four were heads of acquisitions. Two of the librarians were from small academic libraries, 11 were from research libraries, and six were from large academic libraries (Appendix B).

Instrumentation

The purpose of this study is to assess the current and probable impact of technology on collection development in selected academic and research libraries in the Southeast. Prior research studies cited as most relevant to this study utilized a survey methodology. While the survey methodology makes it possible to work with a larger sample, it limits the participants' responses to predetermined choices. Since this study involves qualitative rather than quantitative research, the interview method was chosen as the primary means of collecting data. As Murphy points out, the

interview "involves in-depth analysis rather than broad coverage" (Murphy, 1980, p.77).

Interviews provide "the variation and the nuance lost in questionnaire construction" and allow participants the opportunity to express themselves to their own satisfaction (Schatzman and Strauss, 1973, p.72). This flexibility is one of the greatest strengths of the interview method. By allowing the participants to explain and to expand on their responses, the researcher can "adjust to evolving circumstances, add subjects as the study moves along, and keep probing" for the actual facts. The intensive interview can be considered an "exploratory tool that can get at the nitty-gritty of program operations, revealing what actually happened, why, and with what impact" (Murphy, 1980, p. 77). As a result the researcher gains a richer, fuller understanding of the problem.

There are essentially two approaches to interviewing. These include the very formal structured interview in which the researcher works from a standardized list of questions and the less formal variations in which the researcher "is at liberty to vary the sequence of questions, to explain their meaning, to add additional ones and even to change the wording" (Moser and Kalton, 1972, p. 270). The former is perhaps best suited to large scale opinion polls. For the purposes of this study, a more informal approach was used. While a series of questions was developed and covered in

sequence in each interview, the format allowed the respondent to talk freely in a conversational style.

The researcher developed a series of questions . They covered three general areas: institutional and library demographics; collection development policies and procedures; and, the impact of technology on collection development and/or collections.

The demographic questions were included for purposes of comparison. They were intended to establish the relative size and complexity of both the institutions and the libraries. This information was used in the analysis of data to determine if commonalities or differences in the responses might be attributed to these factors. In the research and large academic libraries, these statistics were checked against those reported in the ARL Statistics, the ACRL University Library Statistics, and the American Library Directory. For the two small academic libraries, the American Library Directory was used to verify the statistics. There were some not unexpected discrepancies between the participants' responses to these questions and the statistics reported in the other sources. This is quite common in the reporting of library statistics since as Working notes, "library statistics can be misleading and need to be approached cautiously". In addition to the possibility of outright errors in counts, there is the " more subtle issue of definitions and catagories, over space

and over time" (Werking, 1991, p. 7-8). These discrepancies are not significant for purposes of this study since the statistics are being used solely to establish general background information on the relative size of the libraries included in the study.

The questions included one broad question related to the collection development policies and procedures within the library. This question was intended to provide background information. Its primary purpose was to establish the context within which technology was utilized in collection development within a given library.

The third area included questions directly related to the study. Participants were asked to identify the technologies currently in place in their own libraries and to describe their impact on collection development and/or collections in terms of actual changes which may have taken place as a result of their implementation. In addition, they were asked to assess the probable or potential impact of future technologies on collection development and/or the collections. They were also asked to discuss the primary influences leading to the adoption of new technologies and the major obstacles to the realization of the potential provided by technology (APPENDIX C).

The interview questions were reviewed in advance by Dr. Keith Wright and Dr. Beatrice Kovacs from the Department of Library and Information Services at the University of North

Carolina at Greensboro. Minor modifications were made to the questions to increase clarity and to ensure consistency of coverage in each interview.

Two preliminary interviews were conducted to test the interview questions. Of the two participants, one was the Head of Acquisitions in a large academic library supporting PhD programs and one was the Collection Development Librarian in a small academic library supporting undergraduate programs (Appendix B). As a result of these interviews, some adjustments were made in the procedures followed prior to and during the interviews. In the first of the preliminary interviews, the participant had not been prepared adequately by the researcher. Due to the lack of preparation, he was unable to respond to some of the questions without inappropriate leading from the researcher. The procedures were modified to provide for more detailed information regarding the content of the study prior to the interview. In addition, the researcher tried to restrict comments in later interviews to statements or requests for clarification or elaboration on points mentioned by the participant.

Two problems were noted in the second preliminary interview. Perhaps in reaction to the first interview, the researcher failed to interact at all with the participant beyond the initial asking of the question. This was noted by the participant who suggested that comments indicating

confirmation and understanding of the response would be useful. The second problem was related to the setting in which the interview was conducted. The setting did not provide adequate privacy resulting in considerable background noise. This proved to be distracting to both the researcher and the participant. In addition, it did not allow for transcription of the audio tape recording of the interview which resulted in the loss of most of the data. Subsequent interviews were conducted in a private office or conference room. The researcher tried to modify further the interview techniques in order to strike a balance between too little interaction and inappropriate leading of the participant in later interviews.

No substantial revisions were made to the actual interview questions following the preliminary interviews. Both participants seemed to understand the questions and to respond appropriately.

Procedures

All participants were contacted in advance by telephone to obtain their agreement to participate in the study and to arrange a time and place for the interview. They were given an estimate of the time required for the interview so that they could set aside adequate time in their schedules. Although the actual questions were not given to them in advance of the interview, they were given an explanation of

the purpose of the study and, as a result of the preliminary interviews, a thorough description of the topics that would be covered in the interview.

Since intensive interviewing can yield large amounts of data, the researcher used a tape recorder to record each entire interview. The disadvantage of this approach is that some respondents may be uncomfortable with it. However, the alternatives, notetaking or reconstruction from memory, present problems with the fullness and accuracy of the data. Notetaking distracts the researcher from giving full attention to the respondent and reconstructing the interview from memory almost certainly results in gaps and distortions in the data (Burgess, 1982, p. 118).

In order to alleviate potential discomfort, permission to record the interviews was requested in advance. In addition, the reason for recording them was explained to each of the participants. None of the librarians declined to participate in the study nor did they object to the use of the tape recorder. The majority of the participants appeared to be relaxed and comfortable during the interviews and did not seem to be affected by the use of the tape recorder. Only two reported that they were "aware" of the recorder. They apparently were conscious during the interviews of trying to speak clearly and loudly enough to be picked up by the recorder.

All of the interviews were conducted in the libraries where the participants were employed. Most took place in the participant's office or a conference room. They varied in length from 45 minutes to one and one-half hours.

Since the data-gathering methodology involved intensive interviews with 19 participants, it produced a voluminous amount of data to be analyzed. As indicated earlier, in an effort to ensure a verbatim record of the interviews, the interviews were tape recorded. Topics or issues which emerged in the preliminary interviews were incorporated into later interviews through elaboration on or clarification of the interview questions. This approach was an attempt to build what Schatzman and Strauss refer to as "comparability in content" to interviews with all participants (Schatzman and Strauss, 1973, p.75).

The data were transcribed into a word processing program and analyzed for content comparability. The primary method of analyzing the final data was through content analysis. Krippendorff defines content analysis as "a research technique for making replicable and valid inferences from data to their context" (Krippendorff, 1980, p. 21). Krippendorff points out that content analysis has been defined and classified in numerous ways by previous researchers. Its use in this study is to provide a means of identifying commonalities and differences in terminology, frequency with which words and/or phrases are used by

participants, and juxtaposition of these words/phrases in relation to each other. Such an approach is intended to establish the language or terminology associated with technology and collection development in libraries and provide a framework for making inferences from the data.

Krippendorff characterized content analysis in terms of

- (a) its unobtrusive nature
- (b) its ability to consider unstructured material
- (c) its context sensitivity
- (c) its ability to analyze large volumes of data.

He states that computers can aid in content analysis by "processing large amounts of data (d) with high speed" (Krippendorff, 1980, p. 119). For this reason, the study utilized computer programs originally developed at Columbia University by Dr. Theodore C. Hines for manipulation of text patterns using SNOBOL IV. Since 1970, Dr. Kieth Wright has written computer programs in pattern matching computer languages such as SNOBOL IV and SPITBOL. These programs have been revised at The University of North Carolina at Greensboro to operate on the the mainframe computer utilizing the SPITBOL language which is a compiled version of the earlier language. These programs create permuted sentences which can be sorted so that each significant word in text and its proximity to other words in text can be analyzed.

Each of the interview questions relating to the impact of technology on collection development was loaded into the text analysis program. All responses to each question were then run against each other to produce a table of frequently mentioned words, terms, or phrases. The program excluded "function words" such as: a, an, the, of, and others from the word count. These results were used, in conjunction with a thorough analysis of each of the complete interviews, by the researcher to make inferences from the data.

CHAPTER 4

RESULTS

This study was guided by five research questions intended to assess the current and future impact of technology on collection development in academic and research libraries. An interview methodology was used to collect the data for the study. A series of interview questions was developed to answer the research questions and to provide descriptive data relevant to these questions (Appendix C). As indicated in Chapter 3, the interviews were tape recorded and later transcribed for analysis. To aid in the analysis of content a computer program was used to produce a table of word frequencies (Table 1).

Word Frequency Analysis

Table 1 graphically displays the results of the computer analysis of significant words and their frequency in the text of the interviews. An analysis of the word frequencies table provides relevant information regarding the issues and concerns of the participants in this study and relates directly to the ensuing discussion of the descriptive data and the research questions posed by the study.

In examining word frequencies across the interview questions, several issues emerge. First, the participants included in the study are knowledgeable of computer related technologies. Computer related technical terms are used by the participants a total of 707 times throughout the interviews. These include references to computers (71), databases (149), disks (81), files (43), CD-ROM (117), networks (55), and online (121) services. Although not used as frequently, they discuss workstations (11), uploading (5), mainframe (29), and software (25).

The participants are concerned with the current economic situation in which they find themselves. They mention financial issues a total of 480 times. Their discussion included budget (64), costs (88), dollars (26), funds (52), buy (98), money (107), and pay (45). In current operations, they view cost as a major factor in developing access systems. They foresee problems with cost-sharing, and they see cost as a major obstacle to future developments involving technology. There is some concern over what they view as a growing trend toward viewing information as a "commodity to be bought and sold."

Although the participants remain concerned about the integrity of the local collection (223), there is much discussion of access (156). While continuing to place value on the maintenance and growth of the collection, the

participants view access to information in journals, in databases, and in other libraries as a trend.

A further indication of their concern with collections and access issues can be seen in their discussion of journals (106), serials (89), "article level access" (50), books (135), documents (44), indexes (79), and materials (91). There was also considerable discussion of expansion of formats, including electronic (77) publications.

These librarians are committed to supporting the curriculum and the research interests of the faculty. Although they mention users (20) infrequently, they discuss students (49) and faculty (106) as users of library services. They demonstrate a concern with the usefulness (258) and service (70) of their libraries and systems, discussing collections most often in terms of user needs (92).

They mention publishers 57 times, with the most mention (26) occurring in response to the question regarding obstacles to the full realization of the potential provided by technology. Participants view publishers as well as costs as major obstacles to change.

Although the literature in library studies makes frequent reference to draft standards, lack of standardization, and National Information Standards Organization (NISO) standards for bibliographic information, standards are mentioned only 15 times throughout the

interviews. They are not discussed at all in the question related to obstacles. Individual participants discuss problems with implementing technologies because of the lack of standardization, but there is no overall consensus that this is a major obstacle.

The participants use the words know (194), think (378), and information (201) frequently in their discussion. They view their profession as requiring a great deal of knowledge, thinking, and information. Their discussion of collection development and acquisitions is framed within the context of fiscal or subscription years (229).

Descriptive Data

The first technology related interview question was intended to determine the extent of current utilization of technology in each of the libraries included in the study (Appendix C). Its purpose was to establish the context within which the participants' perceptions of the impact of technology were formed.

Table 2 lists the technologies currently utilized in the 13 libraries. The data indicate that all of the librarians are operating within an increasingly sophisticated technical environment. This is consistent with the findings of the computer analysis of word frequencies which demonstrated that participants were knowledgeable in the area of computer related technologies (Table 1).

With two exceptions, the majority of both public and technical services within the libraries have been automated either through large online systems or through microcomputer based systems. Of the two libraries which have not yet automated services, one is a small academic library and the other is a large academic library. In both cases, librarians are in the planning or implementation stages of automating services. One of the libraries has already signed a contract for an integrated library system which includes the online public access catalog, circulation system, and acquisitions system. The other will be purchasing an integrated system with a similar configuration but has not yet chosen the specific system.

The two technical service areas that are not yet automated in several of the libraries include acquisitions and serials control. Two of the large academic libraries have serials control systems as part of their integrated systems and five others, three research and two large academic libraries, have serials check-in systems provided by their serials subscription vendor. The three research libraries and one large academic library that do not yet have automated acquisitions systems have chosen a system and are in various stages of implementation. One of the small academic libraries which has chosen CD-ROM technology for automation will be adding the acquisitions module as soon as

it becomes available from the vendor. All 13 of the libraries will then have an automated acquisitions system.

Online cataloging and online reference searching were found in 12 of the 13 libraries. Only the small academic library utilizing CD-ROM based systems did not participate in an online cataloging network or offer online searches. Most of the libraries did report a drop in the number of online searches as a result of the addition of CD-ROM indexing and abstracting services. This newer technology is being utilized in all 13 of the libraries included in the study.

Four of the 13 libraries, two research and two large academic libraries, have loaded external databases including indexing, abstracting, and full text reference sources into their online catalogs. Six libraries, four research and two large academic, provide access to the holdings of one or more other libraries through their online catalogs. The online catalogs of five of the libraries, three research and two large academic, can be accessed from remote sites by faculty and students via a campus network.

Research Questions

The researcher developed five research questions to guide the conduct of this study. These questions include:

- 1) What, if any, impact has technology had on collection development and/or on the nature of the collection itself in academic and research libraries?
- 2) What is the probable impact of future technologies on collection development and/or on the nature of the collection itself in academic and research libraries?
- 3) What are the primary influences leading to the adoption of new technologies in academic and research libraries?
- 4) What are the major obstacles or impediments to the full realization of the potential provided by technology in academic and research libraries?
- 5) Are similarities and differences in the perception of the impact of technology on collection development and/or the collection due to institutional and library demographics, such as: student full time equivalent (FTE); degrees granted; sources of financial support; size of library materials' budget; and, size of existing collection? For purposes of comparative analysis, the participants' responses to these questions have been grouped into categories on the basis of similar characteristics.

The first of the research questions addressed by this study was intended to determine the impact technology has

had on collection development and/or on the nature of the collection itself in the academic and research libraries included in the study. The most frequently cited impact of technology has been in the area of management information which has proven useful in the decisionmaking process in collection development. Seventeen of the 19 librarians gave examples of such information which had been derived from the following sources: microcomputer spreadsheet applications; acquisitions systems; circulation systems; online catalogs; CD-ROM collection analysis tools and indexing and abstracting services. This emphasis on information is reflected in the word frequency analysis which shows that the participants used the term 201 times throughout the interviews. It was used most frequently (125 times) in response to the two questions regarding the impact of technology (Table 1).

Microcomputer spreadsheet programs are used extensively by the librarians to prepare budgets, to track expenditures by fund, subject, country of origin, etc., to trace pricing patterns, and to assess the distribution of the collection by subject area. Similiar, frequently more detailed, information can be obtained from acquisitions systems. The librarians mentioned ability to track expenditures on a title by title basis by fund and by LC class or subject area. Such information is used to manage grant or special project funds, to determine the percentage of the budget

going to monographs and to serials on a subject basis, and to project rates of growth of the collection.

Circulation systems yield information on use of the collection. One of the participants noted that while usage was not the only criteria for selection, "the more we learn about how the collection is used, the better job we can do developing the collection." Others noted the value of information on use patterns in doing serials reviews and, in the smaller libraries, of identifying the percentage of the older collection which is circulating.

Several mentioned the impact of CD-ROM technology in collection analysis or assessment. Electronic indexing and abstracting services are seen by some as a means of identifying periodicals needed for the collection. One CD-ROM product, designed as a collection analysis tool, is being used by a number of the libraries to compare their collections to a chosen peer group of libraries. This product allows the libraries to make comparisons based on broad subject areas and to identify gaps in the collection on a title specific basis. One librarian using this system acknowledged its usefulness for program review, but stated that it had no actual impact on the collection unless funds were available to fill in the identified gaps.

In those libraries with highly developed online catalogs, the ability to "do lots of things that are very sophisticated that relate to collections" was noted by one

librarian and supported by similar statements from others. Although not intended as a management generating system, the online catalogs which incorporate external indexing and abstracting data bases can provide information on the total number of searches conducted in a specific database and can identify users by types, such as faculty, graduate student, undergraduate student. Information of this nature can be used in selection and deselection of databases. It is also possible to match library holdings against titles cited in the most heavily used of the indexing and abstracting data bases.

Following management information, the next most frequently mentioned impact of technology has been on the library materials budget. Twelve of the 19 participants cited impact on budget as one of the primary areas affected by technology. Again, as indicated earlier, the word frequency analysis reinforces that this is a major concern of these librarians. There were a total of 480 references to financial considerations with 112 of these located in the response to this question (Table 1). The impact on budget was seen in very similar terms by 11 of the 12 librarians who mentioned it. Its perceived impact can be summarized by the following statements from the participants:

It has impacted on our budget and that has not been insignificant. Inflationary increases are the only increases we've ever had in our materials budgets. New initiatives all have to be funded from that increase. If you look at CD-ROM products, they are

significantly more than we have paid for traditional references. Our reference librarian is really deciding that she will cut back her monograph budget to support new CD-ROM sources.

The biggest impact is that we've got all this other stuff we have to buy... and there has not been an increase in the materials budget to pay for it. We've got the problem of inflation running rampant,... traditional print publications growing every year at the same time that new formats abound. So we're being squeezed by that.

The monograph budget is low and serials have been cut, partly to subsidize the system. But as long as we can support what I see as our core, our unique areas, ... then I'm fine with it.

There is no question these things are very expensive. I have no doubt it will eventually have a fairly large impact on budget and the way we collect...we need to collect more and more of these things, so it may mean collecting fewer and fewer books.

In general, as indicated in these statements, the impact of technology on budget is seen as problematic. The one exception to this was from a librarian who felt that the information derived as a result of technology had assisted in more efficient expenditure of funds.

Nine of the 19 participants thought that technology had resulted in increased demand for materials. Several of them mentioned that students seemed to perceive that citations located in an electronic source meant that the library owned

the title. This is thought to have led to an increase in requests for purchase and for interlibrary loan services.

Two related areas, access and usage, were cited as having been affected by technology. Technology is thought to have increased access to the collection by six of the 19 librarians. And, increased access leads to increased use of the collection. Four other librarians mentioned that usage of the collection had increased as a result of the improved access provided by technology. The word frequency analysis does indicate that the participants are interested in both access to and use of the collection. Access appeared 42 times in response to this question, while some form of the word "use" appeared 78 times (Table 1).

At this time, only five of the 19 librarians think that technology has had an impact on collection development policy. This may be due to differing interpretations of policy and procedure. Policy revisions cited by the five were related to provisions for selecting and funding electronic sources which involve the purchase of equipment, licensing agreements, etc. As one librarian stated, "we crossed a traditional line in terms of funding of equipment and licensing agreements from the materials budget". Other

librarians raised this issue but seemed to see it as a procedural problem rather than a policy issue.

Cooperative collection development has been enhanced by technology in the opinion of only two of the 19 librarians, at this point in time. They feel that by improving document delivery through telefacsimile equipment, cooperative agreements regarding serials cancellations among area libraries have been facilitated. These two librarians both belong to the same consortium which is made up of three libraries with a shared online catalog and a long history of cooperative agreements. This history of cooperation may have set the stage for technology to have a more immediate impact than in other situations. One other librarian, also part of a consortium environment, indicated that resource sharing has been increased by providing access through their online catalogs to the holdings of all six member libraries. In this case, it was not felt that there had been that much progress made as yet in actual cooperative collection development agreements.

The second research question sought to determine the probable impact of future technologies on collection development and/or on the nature of the collection itself in academic and research libraries. In response to this question, most of the librarians predicted the continuation of present trends and many of the same issues surfaced in the interviews. However, there was less unanimity and more

concern about unresolved issues reflected in the responses to this question. The trend most often discussed was the movement toward what many of the librarians referred to as "access versus ownership".

Twelve of the 19 participants indicated that they believed that libraries were "moving more toward an access environment." This trend was noted by librarians in research and large academic libraries and was related most often to concerns about the economic feasibility of being able to "have it all." Some of the participants see this trend in a positive light while others have reservations about it. The following statements illustrate these differences in perspective:

It will change the collection. There will always be reference, special collections and rare books, and a certain core collection based on local needs. It's used often enough that it's cheaper to own it. ...It's going to be a very gradual process. What do we spend now, 3% to 4% of our budget on access. It will take a long time to reach even 10%, longer for 30%, still longer for 50%, but it will eventually get there.

I think what we're seeing is that each library is going to be able to acquire a smaller and smaller portion of the intellectual output worldwide. Each year, there is more and more published in both journal and book formats and we can afford a smaller and smaller part of it as we're spending more and more on it. Whether electronic information delivery will correct this problem for us, who knows. Nobody's said that's going to be cheap either.

I think what's going to really drive us is money and not technology. The cost of materials is so high, course the the cost of technology is high too. It remains to be seen whether we're going in the right direction or the wrong direction. We're putting money

into technology to provide people with the largest universe of materials and we're saying we'll get it for you and we'll get it fast, but we're not going to have it here.

I prefer not to see it in those terms as long as funding remains solid. I think you can have both, ownership of the things you need and they have access. Movement in this direction may be dependent on the philosophy of administration. Going into the access mode means a reduction in the materials budget.

The word frequency analysis also reflected this ambivalence about the value of access over development of the collection. Several of the librarians, in their discussion of this issue, referred to the need to define the "core" collection of materials which should be owned by the library, with technology providing the means to access and obtain other less essential materials. One librarian described this in terms of a circle in which the core is defined as what the library will commit to providing within the library. Librarians must then define the outer rim of the circle to include those things which can't be owned by the library but to which there is a commitment to provide access. Another suggested that in the future it might be that collection development would become a matter of selecting which journals to provide access to.

However, no one envisions a future in which libraries will cease to maintain a collection since access implies ownership by someone. Many seem to share the view of a librarian who stated that "collection development in the

future is going to be more of a challenge. The emphasis will be on information. That information might come out of printed materials, it might come on a CD-ROM, from online databases mounted on the catalog, from another library, or it might come from a commercial database. But the thing is what we need to give people is a channel to get to it."

Another issue mentioned more frequently in response to this question regarding the future was that of cooperative collection development. Eleven of the 19 librarians perceived that an access environment would increase the need for cooperative collection development and that technology might provide the means of accomplishing what has been elusive in the past in terms of practical application. They still believe that it is a "tricky" area and one that will require further expansion of technical capabilities.

Ten of the 19 librarians discussed further expansion of electronic formats as a part of the collection of the future. They anticipate more full text sources available on CD-ROM, in the form of databases mounted on the online catalog, and in the form of electronic journals.

Some of the other areas discussed in response to this question might be classified as continuations or enhancements of current trends. Five of the 19 librarians cited continued impact on the budget, three mentioned enhanced access to the collection and to the holdings of

other libraries, and four anticipate more sophisticated management information.

While no one actually used the term "workstation" in response to this question, as indicated by the word frequency analysis, it was mentioned in the overall discussion (Table 1). Two of the librarians in response to this question did describe what is frequently referred to in the literature as a workstation. They envisioned faculty researchers sitting at their computers in their offices or homes with the ability to access other collections or databases, to request the information, and to receive it without ever entering the library.

The third research question was intended to identify the primary influences leading to the adoption of new technologies in academic and research libraries. The most frequent response to this question was that technology provides the opportunity to improve service levels. Fifteen of the 19 participants answered this question in terms such as "provides improved access", "better, faster service", "offers a better level of service", "the need for increased access to information."

Nine of the librarians stated that user demand was a major influence leading to the adoption of new technologies. This applied to both faculty and students.

Eight cited costs or economics as being a factor. While few saw technology as lowering costs, some saw it as a

means of "doing more for less or at least slowing the rate of growth", "stablizing costs", or eventually providing a solution to the increasing cost of materials.

Five participants believed that a desire to be on the "leading or cutting edge of technology" was an important influence in the adoption of new technologies. This seemed to be related to the total academic environment in terms of attitude toward technology. This desire was cited almost exclusively by librarians in institutions with a highly technical curricular emphasis.

Administrative support for new technologies was mentioned by five of the participants. This included both library and university administration. One librarian felt that university administrators found technology "sexier to fund than books."

Two of the librarians mentioned the perceived need to provide students with exposure to technology. They believe students going on to graduate school or into professions will encounter computer related technologies and that it is part of the college or university's role to ensure familiarity with such technologies.

The fourth research question sought to identify the major obstacles to the full realization of the potential provided by technology. As indicated by the analysis of word frequencies (Table 1), cost was seen by the majority of

the participants as the major obstacle. Seventeen of the 19 librarians cited cost as the primary problem.

Six of 19 librarians mentioned what might be termed legal issues as obstacles to the full realization of the potential provided by technology. These included statements regarding "copyright considerations", "licensing agreements", and "royalties". While only one of the librarians actually cited publishers as the major obstacle, there was some discussion of the role of publishers in working out these legal issues by several of the librarians. In addition, the legal issues were incorporated by some into the issue of cost. This may account for the frequency (26) with which the word publishers appeared in response to this question in the analysis of word frequencies (Table 1). In much of the discussion there was the implication that publishers may be the biggest barrier to resolving the legal issues and bringing down the costs associated with them.

Four of the 19 felt that resistance to change was an obstacle. One mentioned the need to bring people into the profession who are "not only jewel book people but at the same time are comfortable talking about the legitimate advantages of technology."

Three of the participants thought that the technology itself still had limitations that amounted to obstacles within the library setting. These included problems related to networking of different formats and lack of ability to

store images electronically. Closely related was the concern on the part of two of the librarians with lack of standardization.

Lack of expertise within the library was an obstacle for four of the 19 librarians. In the words of one of them, "it can be a little overwhelming to figure out how to do everything, how to network inhouse, what works with what, the kind of software needed, etc."

Other issues were raised in the discussion of obstacles. Two librarians expressed concern over archival issues such as the long term stability of the electronic formats, changes in the hardware needed to access the format, or storage of electronic journals. One mentioned accreditation standards as an obstacle, since they are largely based on quantitative measures related to ownership.

The fifth research question was related to the role of demographics in accounting for similarities and differences in the perception of the impact of technology on collection development. Based on the analysis of the responses, it does not appear that similarities and differences can be linked directly to demographics. This may be due to the overall size of the population and the uneven distribution of the libraries within the population. Only two small-college libraries were included in the population. In addition, there was, in many areas, very little difference in the demographics of the large academic libraries and the

research libraries. As a result the population was heavily skewed toward larger libraries.

In each of the small college libraries, the professional background of the librarian interviewed included collection development in a much larger institution. This may have affected their perception of the issues in such a way as to make their responses more similar to those of the collection development librarians in the larger libraries.

Discernible differences seem to be a matter of degree and primarily related to current level of technological development. The small academic libraries and one of the larger academic libraries are less technologically advanced than the larger academic and research libraries. However, all three are actively involved with technology in either the planning or implementation stages.

There are variations in stages of technical development among the larger libraries that is not related specifically to demographics. The only demographic factor which seemed to make a difference in level of current technological development was curricular emphasis. The two most advanced libraries in terms of technology support technical and engineering curricula and research. However, a third institution with a similar curricular emphasis was not among the most technologically advanced of the libraries.

In summary, the results of this study indicate that the librarians included in the study are operating within technological environments and that they are knowledgeable about computer related technologies. They perceive that technology has had an impact on collection development in the following areas: management information; budget; access to the collection; usage of the collection; user demand for materials not owned by the library; and, to a lesser degree cooperative collection development. They believe that the impact of future technologies on collection development will include: a trend toward "access vs. ownership"; greater attention to cooperative collection development agreements; continued expansion of electronic formats, specifically electronic journals; continued pressure on materials budgets; and, the development of "workstations".

The primary influences leading to the adoption of new technologies mentioned by the participants are: improved service levels; user demand; economics; administrative support; the desire to be on the "leading edge"; and, the need to expose students to technology. Among the obstacles to realization of the potential provided by technology identified by the participants are: cost; legal issues; resistance to change; lack of expertise within the library; limitations of current technology and lack of standardization; publishers; archival issues; and accreditation standards.

Due to limitations of the study, it was not possible to establish a direct relationship between similarities and differences in the perceptions of the participants and differences in the demographics of the libraries. A larger population with more even distribution of libraries within the population might yield more definitive information.

FREQUENCIES OF SELECTED WORDS
from
Interviews with Collection Development Librarians

Word	1	2	3	4	5	totals
ACCESS	37	42	44	17	16	156
acquisitions	31	48	19	2	6	106
article level access	14	16	13	3	4	50
AUTOMATING (ION)	18	18	6	7	2	51
BASE (as in data)	65	34	21	19	14	153
BOOKS MONOGRAPHS	18 9	55	41	8	13	135
BUDGET (ING)	6	34	14	5	5	64
BUY	21	31	29	4	13	98
CATALOG (S,ING)	82	46	34	12	9	201
CD ROM COMPACT DISK	52 5	20	20	10	15	117
CIRCULATION	14	21	4	1	3	43
COMPUTERS MICROCOMPUTER (S)	12 5	22	16	11	10	71
COLLECTION	17	112	66	7	21	223
CONSORTIUM	7			5	3	15
COSTS See Also BUDGET	13	18	15	26	16	88
DATA BASE(S)	70	29	21	14	15	149

Word	1	2	3	4	5	Totals
DISKS	37	17	12	3	12	81
DOCUMENTS	10	15	19	0	0	44
DOLLARS	3	8	5	3	7	26
ELECTRONIC (systems, journals, etc.)	17	10	34	3	13	77
FACULTY	65	21	10	3	7	106
FILES	10	26	6	0	1	43
FUNDS	6	26	15	2	3	52
INDEX (ING,ES)	37	15	14	10	3	79
INFORMATION	22	63	62	33	21	201
INTERLIBRARY	8	18	6	0	1	33
JOURNALS (contrast with BOOKS)	17	25	45	3	16	106
KNOW	39	15	78	21	41	194
LIBRARY (IES, IANS)	70	87	76	30	44	307
MAIN FRAME (computers)	15	5	3	4	2	29
MATERIALS	8	34	33	7	9	91
MONEY See Also COSTS, BUDGET, DOLLARS	19	26	21	9	32	107
NEED (S)	15	24	33	17	13	92
NETWORKS	17	12	14	1	11	55
ONLINE	48	34	23	9	7	121
PAY	11	9	8	3	14	45
PERIODICALS	11	12	3	0	0	26
PUBLISH (ERS)	9	8	10	4	26	57
SEARCH (ES)	35	19	11	3	3	71
SERIAL See Also JOURNALS	23	43	22	0	1	89
SERVICE (S)	17	35	9	7	2	70
SOFTWARE	11	6	0	5	3	25

Word	1	2	3	4	5	Total
SOFTWARE	9	6	0	3	5	23
STANDARDS	2	3	5	0	5	15
STUDENTS	15	13	11	7	3	49
SYSTEM (S)	76	58	18	11	10	173
TECHNOLOGY (IES)	10	38	30	38	29	145
THINK	52	153	118	51	56	378
USE (USES, USEFUL) (in sense of utility)	69	78	58	20	33	258
USERS	10	4	0	2	4	20
YEARS	37	47	24	6	15	229

TABLE 2

ELECTRONIC TECHNOLOGIES CURRENTLY UTILIZED
IN ACADEMIC AND RESEARCH LIBRARIES INCLUDED IN STUDY

<u>Type of Technology</u>	<u># of Libraries</u>	<u>Types of Libraries</u>
Online cataloging	12 of 13	Research 6 of 6 Academic 5 of 5 Sm.Acad. 1 of 2
Online public access catalog	10 of 13	Research 6 of 6 Academic 4 of 5 Sm.Acad. 0 of 2
Circulation system	10 of 13	Research 6 of 6 Academic 4 of 5 Sm.Acad. 0 of 2
Acquisitions system	7 of 13	Research 3 of 6 Academic 4 of 5 Sm.Acad. 0 of 2
Serials control system (integrated system)	2 of 13	Research 0 of 6 Academic 2 of 5 Sm.Acad. 0 of 2
Serials check-in (vendor produced)	5 of 13	Research 3 of 6 Academic 2 of 5 Sm.Acad. 0 of 2
Online ordering systems (vendor produced)	3 of 13	Research 0 of 6 Academic 1 of 5 Sm.Acad. 2 of 2
PC based acquisitions system	1 of 13	Research 0 of 6 Academic 0 of 5 Sm.Acad. 1 of 2

TABLE 2 (Cont'd.)

PC based management information systems	12 of 13	Research 6 of 6 Academic 5 of 5 Sm.Acad. 1 of 2
CD-ROM public access catalog	1 of 13	Research 0 of 6 Academic 0 of 5 Sm.Acad. 1 of 2
CD-ROM circulation system	1 of 13	Research 0 of 6 Academic 0 of 5 Sm.Acad. 1 of 2
CD-ROM cataloging	1 of 13	Research 0 of 6 Academic 0 of 5 Sm.Acad. 1 of 2
CD-ROM sources (indexing & abstracting services, full text)	13 of 13	Research 6 of 6 Academic 5 of 5 Sm.Acad. 2 of 2
Online searching	12 of 13	Research 6 of 6 Academic 5 of 5 Sm.Acad. 1 of 2
Online catalog incorporating external data bases (indexes, full text reference sources)	4 of 13	Research 2 of 6 Academic 2 of 5 Sm.Acad. 0 of 2
Online catalog incorporating catalogs of other libraries	6 of 13	Research 4 of 6 Academic 2 of 5 Sm.Acad. 0 of 2
Campus networks providing remote access to online catalog	5 of 13	Research 3 of 6 Academic 2 of 5 Sm.Acad. 0 of 2

* Sm. Acad.= Small Academic

CHAPTER 5

DISCUSSION

Summary

This study examined the current and future impact of technology on collection development in selected academic and research libraries in the Southeastern United States. Data from 19 librarians in five research, six large academic, and two small academic libraries indicate that technology has had an impact on collection development in these libraries and that the participants anticipate a continuation of this trend in the future.

In order to establish the technological context within which the participants were operating, they were asked to describe the level of current use of technology within the library. An analysis of their responses revealed that the majority are operating within a highly developed technological environment and that the participants are knowledgeable of computer related technologies. In all but two of the libraries most of the technical and public services functions have been automated either through large online systems or microcomputer based systems. Personnel in the two libraries in which most functions have not yet been automated are currently in the planning and/or

implementation stages. In both libraries, they have chosen to purchase an integrated library system.

The librarians included in the study thought that technology had had an impact on collection development in a variety of ways. The largest number of librarians cited management information used in the decision making process in collection development as an area in which technology had a major impact. Such information is being derived from microcomputer spreadsheet programs, acquisitions systems, circulation systems, online catalogs, and CD-ROM sources. Most of this information is used to track and analyze expenditures, collections, and usage patterns.

The second most frequently cited impact of technology has been on the library materials budget. These librarians are concerned with the current economic situation in their libraries and feel that largely static budgets are under pressure from inflation, increased publishing output (especially in the journal literature) and expanding electronic formats. While the majority think that the newer formats provide an improved level of service, their cost by comparison with traditional print materials is a source of this concern.

Several of them thought that technology had resulted in increased demand for materials from both faculty and students. Enhanced access to and usage of the collection was also thought to be a result of technology by several of

the librarians in the study. A relatively small number of the librarians reported an impact on collection development policy and on the practical application of cooperative collection development agreements.

In response to the question regarding the future impact of technology on collection development, the majority of the librarians mentioned a trend toward increased access to information which might be obtained from sources outside the library rather than from sources owned by the library. This trend was viewed with ambivalence by a number of the librarians. For the most part, they want to maintain the integrity of their own collections, but feel that it may no longer be economically feasible to provide all the information needed to support the curriculum and research of the institution within the library itself.

Many of the librarians felt that the future impact of technology would result in more emphasis on cooperative collection development. Historically, a problematic area in terms of the practical application of the "idea", they perceive that there are still many issues to be resolved before it becomes a pervasive reality. The other areas that these librarians thought would be affected by future technologies included further expansion of electronic formats, especially electronic journals, continued pressure on budgets, increasingly sophisticated management

information, and continuation of expanded access to other collections.

The study sought to identify the primary influences leading to the adoption of new technologies and the major obstacles to the realization of technology's potential. This group of librarians thought that improved service levels were the primary influence. Other influences mentioned as playing a role included user demand, economic factors, the desire to be on the "leading edge", administrative support, and the need to prepare students for work involving computer related technologies. Clearly, the major obstacle was perceived to be the high cost of technology. Others included the need to resolve legal issues associated with electronic formats, the need for publishers to negotiate costs and agreements, resistance to change, lack of expertise within the library, limitations of technology and lack of standardization.

The study also attempted to determine if similarities and differences in responses were the result of demographic differences in the libraries. It was not possible to substantiate a direct relationship based on the population included in the study.

Relationship of Findings to Prior Research

The findings of this study address issues raised in prior related studies cited in the review of literature. In

her 1981 study of the impact of technology on collection development, Wolfe found that the technologies in use included online cataloging systems, online database searching, computerized circulation systems, and in fewer cases, in-house accounting systems, and acquisition systems. She predicted that future technologies would include online catalogs that could be accessed from remote sites (Wolfe, 1983, p. 97-98). In her recommendations for further research, she suggested that the next 10 years of experience might change the results found in her study (Wolfe, 1983, p. 111). Clearly, in the 10 years since the Wolfe study, there have been rapid, major advances in technological development in this population of libraries. Ten of the 13 libraries have online catalogs and two others will have one within the next year. Five provide remote access through campus networks. Others are in the process of developing such networks. Technologies not mentioned in the Wolfe study were found in the libraries included in this study. Enhancements to the online catalog including the loading of indexing and abstracting databases, full text databases, and/or the catalogs of other libraries were found in nine of these libraries. CD-ROM technology, not yet available at the time of the Wolfe study, was found in all 13 of these libraries.

Wolfe's findings in regard to the impact of technology on collection development suggested that the primary effects

had been in expanded use of the collection and of interlibrary loan services. In terms of the future impact of technology, Wolfe found that the respondents again saw the impact in terms of enhanced access to and usage of the collection (Wolfe, 1981, p. 97-99). In conjunction with the technological advances which have taken place in the intervening years, it is clear that the participants in this study view technology as having had a much broader and more substantive impact on collection development and that they now perceive the future impact as involving more far reaching changes in collection development.

Another related study cited in the review of literature was conducted by Susan Neuman in 1986. She examined the extent to which management information systems were used in planning for collection development in academic libraries. In her suggestions for further research, she noted the need for information on the exploitation of library automation systems for management information (Neuman, 1986, p.75). The findings of this study indicate that these librarians are making extensive use of their automated systems to derive information for decisionmaking and planning in collection development.

Many trends mentioned in the literature do seem to be taking place in the libraries included in this study. Librarians in this population are utilizing some or all of the systems mentioned by Susan Nutter in her article,

"Online Systems and the Management of Collections: Use and Implications", to derive management information for decision making in collection development. Both Nutter and Ross Atkinson noted the need for more precision in the tailoring of collections to user needs in the current economic climate. The participants in the study appeared to be aware of the need for and actively involved in defining their collections more precisely in terms of the curricular and research interests of their institutions.

Observations of the Researcher

The researcher anticipated that there might be distinctive differences in the participants' perception of the impact of technology on collection development and that, if so, such differences might be attributed to differences in the size and complexity of the libraries. As indicated in Chapter 4, it was not possible to establish such a relationship on the basis of the population included in this study. In fact, the researcher observed that, in some cases, there was more difference in the responses of participants in the same library than in the responses of participants from libraries of a different size. This was most evident in the attitudes of participants in discussions of the "access versus ownership" issue. A few participants seemed concerned that the movement in this direction threatened the integrity of the local collection. This

difference in attitude among participants from the same or similar libraries suggested that differences in perception may be related to values which are based on the professional background of the individual. Since this study did not address the academic preparation or professional experiences of the participants, the relationship between background and perception can be described as an impression developed by the researcher rather than a finding of the study.

The participants' discussion of the trend toward increased emphasis on access and the growth of electronic formats raised numerous issues that in their view are yet to be resolved. One librarian in his discussion of the impact of future technologies on collection development touched on many of the concerns mentioned by others within the context of obstacles to the full realization of the potential provided by technology. He noted that the trend toward access was dependent on the development of networking capabilities among libraries. In his view the technology for the development of "electronic super highways" capable of transmitting "vast amounts of data" is going to be in place within the next five years. His concern is that libraries are not going to be ready to take advantage of these capabilities since other related issues may not be resolved within this timeframe. The primary issues identified in his discussion were touched on by several other librarians.

As reported in the findings, financial issues head the list of concerns. Electronic access to other collections or commercial sources is sometimes seen by librarians as an answer to the financial inability to acquire increasingly expensive journals and other materials. However, individual libraries may experience difficulties in funding the technology necessary to connect to the electronic networks.

A trend toward access also implies greater emphasis on cooperative collection development. If libraries are going to depend on access to other collections, then there must be some assurance that the information will be available in other collections. In the opinion of this particular librarian and several others, cooperative collection development structures are not yet in place to provide this assurance. In the current economic environment, libraries are being forced to cancel subscriptions to "high cost, low use" journals. Without widespread cooperative collection development structures, the libraries may be canceling many of the same titles.

A related issue of concern to some of these librarians is that the growth of electronic formats may shift the responsibility for maintenance and preservation of information to the private sector. This raises the specter of information as a "commodity to be bought and sold" and that the value of preserving it may be judged in terms of its commercial value only.

The current trends identified by these librarians, about which there is a surprisingly high level of agreement, seem to be viewed as a source of opportunity for the expansion and improvement of access to information. On the other hand, most librarians included in the study acknowledge that there are increasingly complex issues related to these trends that must be resolved in the immediate future.

Conclusions

It appears from the findings of this study that libraries may be in a period of transition from the "traditional" library to something that resembles, in some aspects, the Lancaster model of the library of the future. This transition period promises to be one in which collection development librarians will be facing challenges similar to those described by Freeman and Winters in "Journeymen of the Printing Office." As implied by Freeman and Winters, technology may offer potential solutions to problems facing today's collection development librarians but may, in the immediate future, exacerbate the existing economic situation. Clearly, the librarians in the study see some of the implications of technology as problematic in terms of funding and for the future of the collection. Most feel that there are many issues related to technological

advances and collection development which are yet to be resolved.

Resolving these issues will require that librarians exercise the "vision and focus" discussed by Arnold Hirshon in "Vision, Focus, and Technology in Academic Research Libraries: 1971 to 2001" (Hirshon, 1988). It seems essential that librarians take an active role in managing the growth and direction of technology within academic libraries rather than responding to it.

Recommendations for Further Research

The findings of this study suggest several areas in need of further research. Due to the limitations of the study, the findings are not generalizable to libraries outside the study population. A similar study involving a larger, randomly selected population might yield more definitive information. In addition, the number of libraries in the study and their distribution in terms of size and complexity did not allow for a conclusion regarding the relationship between demographic differences and similarities and differences in the perceptions of the participants. Further research involving a larger population with a more even distribution of research, large, and small academic libraries might be useful. Another factor to be considered in such research might be the

professional preparation and experiences of the participants.

Some implications of the study also suggest areas for further research. Research on the role of librarians in managing rather than responding to technological change could be very useful for practitioners.

Another implication of the study is related to the future of the monographic collection in academic and research libraries. Monographic budgets, as noted by many of the participants, are under increasing pressure from growth in the number and cost of serials, and from expansion of electronic formats. Research into the future of the scholarly monograph would have widespread significance for libraries, scholarly publishers, and the scholarly community as a whole.

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APPENDIX A

LIST OF COLLEGE/UNIVERSITY LIBRARIES
DESCRIPTIVE STATISTICS

College/University: Clemson University
 Library: Clemson University Library
 Student FTE: 16,000
 Highest Degree Granted: PhD
 Primary Source of Financial Support: State Funding, Tuition
 Total Library Materials Budget: \$2,200,000
 Monograph Budget: \$500,000
 Serials Budget: \$1,700,000
 Other:
 Monograph Volumes: 700,000
 Serial Subscriptions: 7,000
 Library Staff FTE: 80
 Professional Staff: 26
 Classified Staff: 54
 Other Libraries/Media Centers: 3
 Independent: Nursing Media Center
 Departmental or Branch: Architecture; Special Collections

College/University: Duke University
 Library: Perkins Library
 Student FTE: 9,749
 Highest Degree Granted: PhD
 Primary Source of Financial Support: Tuition, Endowments
 Total Library Materials Budget: \$4,362,000
 Monograph Budget: \$1,731,000
 Serials Budget: \$2,427,000
 Other: \$204,000
 Monograph Volumes: 3,668,935
 Serial Subscriptions: U/A
 Library Staff FTE: 270
 Professional Staff: 94
 Classified Staff: 176
 Other Libraries: 11
 Independent: Law, Medical, Medical Sciences
 Departmental or Branch: Reserve and Media, Biology and
 Forestry, Chemistry, Divinity, East Campus, Engineering,
 Business, Music

College/University: Emory University
 Library: Woodruff Library
 Student FTE: 9,000
 Highest Degree Granted: PhD
 Primary Source of Financial Support: Tuition, Endowments, Grants
 Total Library Materials Budget: \$2,300,000

Monograph Budget: \$1,150,000
 Serials Budget: \$1,150,000
 Other:
 Monograph Volumes: 989,103
 Serial Subscriptions: 7,500
 Library Staff FTE: 208
 Professional Staff: 65
 Classified Staff: 143
 Other Libraries: 6
 Independent: Law, Health Sciences, Theology, Oxford College
 Departmental or Branch: Chemistry, Candler (AV, reserves)

College/University: George Washington University
 Library: Gelman Library
 Student FTE: 15,000
 Highest Degree Granted: PhD
 Primary Source of Financial Support: Tuition, Grants, Endowments
 Total Library Materials Budget: \$2,500,000
 Monograph Budget: \$550,000
 Serials Budget: \$1,750,000
 Other: \$200,000 (Access budget)
 Monograph Volumes: 1,250,000
 Serial Subscriptions: 12,000
 Library Staff FTE: 178
 Professional Staff: 54
 Classified Staff: 124
 Other Libraries: 2
 Independent: Law, Health Sciences
 Departmental or Branch:

College/University: Georgia Institute of Technology
 Library: Price Gilbert Library
 Student FTE: 12,500
 Highest Degree Granted: PhD
 Primary Source of Financial Support: State, Federal Grants
 Total Library Materials Budget: \$2,200,000
 Monograph Budget: \$250,000
 Serials Budget: \$1,700,000
 Other: \$250,000 (data bases)
 Monograph Volumes: 2,000,000
 Serial Subscriptions: 11,000
 Library Staff FTE: 90
 Professional Staff: 45
 Classified Staff: 45
 Other Libraries: 2
 Independent: Institute of Paper Science
 Departmental or Branch: Architecture

College/University: Georgia State University
 Library: Pullen Library
 Student FTE: 14,000
 Highest Degree Granted: PhD

Primary Source of Financial Support: State, Grant Funds
 Total Library Materials Budget: \$1,300,000
 Monograph Budget: \$160,000
 Serials Budget: \$1,140,000
 Other:
 Monograph Volumes: 1,500,000
 Serial Subscriptions: 8,370
 Library Staff FTE: 110
 Professional Staff: 40
 Classified Staff: 70
 Other Libraries: 2
 Independent: Law, Instructional Resources Center
 Departmental or Branch:

College/University: University of Georgia
 Library: University of Georgia Libraries
 Student FTE: 28,000
 Highest Degree Granted: PhD
 Primary Source of Financial Support: State Funding
 Total Library Materials Budget: \$4,700,000
 Monograph Budget: \$1,128,000
 Serials Budget: \$3,572,000 (inc. monographs rec. on approval)
 Other:
 Monograph Volumes: 2,900,000
 Serial Subscriptions: 17,000
 Library Staff FTE: 250
 Professional Staff: 75
 Classified Staff: 175
 Other Libraries: 2
 Independent: Law
 Departmental or Branch: Science

College/University: Hampden-Sydney College
 Library: Eggleston Library
 Student FTE: 970
 Highest Degree Granted: Bachelor's
 Primary Source of Financial Support: Tuition, Annual Fund
 Campaigns, Endowments
 Total Library Materials Budget: \$224,000
 Monograph Budget: \$112,000
 Serials Budget: \$106,300
 Other: \$5,700 (compact discs, data base searching)
 Monograph Volumes: 160,361
 Serial Subscriptions:
 Library Staff FTE: 11
 Professional Staff: 5
 Classified Staff: 6
 Other Libraries: 0
 Independent:
 Departmental or Branch:

College/University: North Carolina State University
Library: D.H. Hill Library
Student FTE: 27,000
Highest Degree Granted: PhD
Primary Source of Financial Support: State
Total Library Materials Budget: \$3,200,000
 Monograph Budget: \$576,000
 Serials Budget: \$2,624,000
 Other:
Monograph Volumes: 1,200,000
Serial Subscriptions: 15,000
Library Staff FTE: 165
 Professional Staff: 43
 Classified Staff: 122
Other Libraries: 2
 Independent: Veterinary Medicine
 Departmental or Branch: Design

College/University: University of North Carolina
Library: Davis Library
Student FTE: 21,000
Highest Degree Granted: PhD
Primary Source of Financial Support: State, Grants
Total Library Materials Budget: \$3,300,000
 Monograph Budget: \$957,000
 Serials Budget: \$1,848,000
 Other: \$495,000
Monograph Volumes: 3,750,000
Serial Subscriptions: U/A
Library Staff FTE: 322
 Professional Staff: 117
 Classified Staff: 205
Other Libraries: 10
 Independent: Law, Health Sciences
 Departmental or Branch: Chemistry, Math and Physics, Zoology,
 Music, Art, City and Regional Planning, Undergraduate Library,
 Institute of Government Library

College/University: Oglethorpe University
Library: Oglethorpe University Library
Student FTE: 950
Highest Degree Granted: Masters (education only)
Primary Source of Financial Support: Tuition, Endowment
Total Library Materials Budget: \$190,000
 Monograph Budget: \$119,700
 Serials Budget: \$68,400
 Other: \$900 (video discs)
Monograph Volumes:
Serial Subscriptions:
Library Staff FTE: 7
 Professional Staff: 3

Classified Staff: 4
Other Libraries: 0
Independent:
Departmental or Branch:

College/University: Virginia Commonwealth University
Library: James Branch Cabell Library
Student FTE: 21,000
Highest Degree Granted: PhD
Primary Source of Financial Support: State
Total Library Materials Budget: \$2,667,000
Monograph Budget: \$1,060,470
Serials Budget: \$1,573,530
Other: \$33,000 (audiovisuals, CD-ROM if non-continuing)
Monograph Volumes: 850,000
Serial Subscriptions: 9,700
Library Staff FTE: 149
Professional Staff: 44
Classified Staff: 105
Other Libraries: 4
Independent:
Departmental or Branch: Medical Library, 3 Learning Resources
Centers

College/University: Wake Forest University
Library: Z. Smith Reynolds Library
Student FTE: 5,000
Highest Degree Granted: PhD
Primary Source of Financial Support: Tuition, Endowments
Total Library Materials Budget: \$1,300,000
Monograph Budget: \$494,000
Serials Budget: \$806,000
Other:
Monograph Volumes: 860,000
Serial Subscriptions: 5,500
Library Staff FTE: 45
Professional Staff: 21
Classified Staff: 24
Other Libraries: 3
Independent: Business, Law, Medical
Departmental or Branch:

APPENDIX B

LIST OF LIBRARIANS INTERVIEWED

Preliminary Interviews

Phil Mulvaney, Collection Development Librarian
Mary Washington College Library

Barbara Winters, Head of Acquisitions
James Branch Cabell Library
Virginia Commonwealth University

Research Participants

Deana Astle, Head of Technical Services
Robert Muldrow Cooper Library
Clemson University

Barry Baker, Assistant Director for Technical Services
University of Georgia Libraries

Amy Dykeman, Head of Technical Services
Price Gilbert Memorial Library
Georgia Institute of Technology

Charles Getchell, Assistant Director for Collection Development
Z. Smith Reynolds Library
Wake Forest University

John Haar
Head of Collection Development
James Branch Cabell Library
Virginia Commonwealth University

Margaret Rogers Hunt, Head of Collection Development
D.H. Hill Library
North Carolina State University

Richard Jasper, Head of Acquisitions
Woodruff Library
Emory University

Steven Johnson, Head of Acquisitions
Robert Muldrow Cooper Library
Clemson University

Connie McCarthy, Assistant University Librarian
Perkins Library
Duke University

William Meneely, Head of Collection Development
Pullen Library
Georgia State University

Corrie Marsh, Head of Acquisitions
Gelman Library
George Washington University

David Norden, Director
Eggleston Library
Hampden-Sydney College

Ronnie Pittman, Collection Development
D.H. Hill Library
North Carolina State University

William Gray Potter, Director
University of Georgia Libraries

John Ryland, Director
Oglethorpe University Library

John Shipman, University Bibliographer
Davis Library
The University of North Carolina at Chapel Hill

Jane Threadwell, Director of Collection Management
Woodruff Library
Emory University

Marilyn Williamson, Head of Acquisitions
Price Gilbert Library
Georgia Institute of Technology

John Yelverton, Assistant Director for Collection Development
University of Georgia Libraries

APPENDIX C

INTERVIEW QUESTIONS: THE IMPACT OF TECHNOLOGY ON COLLECTION
DEVELOPMENT IN SELECTED ACADEMIC AND RESEARCH LIBRARIES IN THE
SOUTHEASTERN UNITED STATES

DEMOGRAPHIC QUESTIONS

1. What is the college/university's total student FTE?
2. What is the highest degree granted? If PhD granting institution, in what fields/disciplines ?
3. What is the primary source of financial support for the institution? for the library? State, federal, local, endowment, tuition, etc. How are funds allocated to the library? Lump sum, line item, formula, etc.
4. What is the total library materials budget? Percentage allocated to monographs, serials -journal subscriptions, standing orders (titles), av, optical and digital formats?
5. What is the size of the existing collection? Number of book titles/volumes, journal subscriptions, standing orders, av, optical and digital formats?(titles)
6. What is the size of the library staff (FTE), # of professional librarians, number of staff involved in acquisitions and collection development?
7. Are there other libraries-departmental, branch, or independent/learning resources or media centers on campus?
8. Do these libraries have any effect on collection development in the main library?

COLLECTION DEVELOPMENT QUESTIONS

1. Describe the library's collection development policies and procedures? Personnel involved? Participation by teaching faculty?

IMPACT OF TECHNOLOGY QUESTIONS

1. What are the specific types of electronic technologies currently in place in the library? online cataloging?

online public access catalog?
automated circulation system?
automated acquisitions system?
online data base searching?
optical formats such as CD-ROM, video discs, CD-I, optical
digital discs, other?

2. What, if any, impact have these technologies had on the collection development policy and/or the collection?
management information?
resource sharing?
expansion of formats?
impact on budget?
3. What is the probable or potential impact of future technologies on collection development policies and/or collections? At this university-ideally.
4. What are the primary influences leading to the adoption of new technologies?
5. What are the primary obstacles or impediments to full realization of the potential provided by technology?