

1994

# The Internet in the business world : changing special librarians into "Cyber-Librarians"

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THE INTERNET IN THE BUSINESS WORLD:  
CHANGING SPECIAL LIBRARIANS INTO "CYBER-LIBRARIANS"

A Thesis

Presented to

The Faculty of the School of Library and Information Science  
San Jose State University

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Library Science

by

Vinita Singh

December 1994

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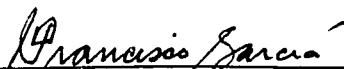
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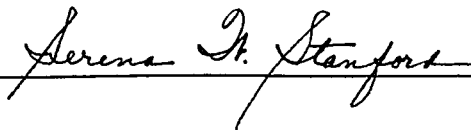
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ABSTRACT

INTERNET IN THE BUSINESS WORLD:  
CHANGING SPECIAL LIBRARIANS INTO "CYBER-LIBRARIANS"

by Vinita R. Singh

This thesis builds on Ladner and Tillman's 1991 study, "The Internet and Special Librarians: Use, Training and the Future", and focuses on Corporate Special Librarians using the Internet in a for-profit setting. Through a survey method it seeks to establish who are the Internet users, which resources are being used most, who provides the training, what is most exciting and most frustrating about using the Internet and to predict, based on their experiences, the future of the networked library/information centers with the Internet as an important reference and research tool.

This exploratory study found that corporate librarians are very aware of the serious consequences of not integrating the resources available on the Internet in their routine library work and are enthusiastically exploring the new frontiers of "cyber-space" on their way to becoming expert "Cyber-Librarians."



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INTERNET IN THE BUSINESS WORLD:  
CHANGING SPECIAL LIBRARIANS INTO "CYBER-LIBRARIANS"

CHAPTER I

INTRODUCTION

Historical Perspective

All the world connected through electronic superhighways in a global village is no longer a space age fantasy; the "tyranny of distance" can be overcome by means of telecommunication. The Internet has provided the facility for all kinds of computers and their human users to talk to each other from wherever they are geographically located. The Internet differs from an internet--which can be a network to connect certain computers in a system, sharing common databases and peripheral equipment. The Internet can be thought about in relation to its common protocols, as a physical collection of routers and circuits, as a set of shared resources, or even as an attitude about interconnecting and intercommunication. Some common definitions given in the past include: a network of networks based on the TCP/IP protocols, a community of people who use and develop those networks, and a collection of resources that can be reached from those

networks.<sup>1</sup>

The Internet is the nebulous "network of networks" connected by the Transmission Control Protocol/Internet Protocol (TCP/IP), which form the backbone of connectivity for many regional, academic, and other networks. No one owns the overall Internet, and no one really runs it-- although the system is administered by the volunteer Internet Society based in Reston, VA. From its earliest days, no idea or creation has been considered too outlandish or extreme to be denied access. Along the way, the Internet has developed what has been described as a "culture of remote intimacy," with users employing the system for everything from sharing work with far-flung colleagues to on-line discussion groups chatting electronically about an array of topics.

It all began as a military experiment at the Pentagon's Advanced Research Projects Agency (ARPA) in the late 1960s. The ARPAnet was an experimental network designed to support military research--in particular, research about how to build networks that could withstand partial outages (like bomb attacks) and still function. To send a message on the network, a computer only had to put its data in an envelope, called an Internet Protocol (IP)

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<sup>1</sup>Ed Krol, The Whole Internet: User's Guide and Catalog. (Sabastopol, CA: O'Reilly & Associates, 1992), 3.

packet, and "address" the packets correctly. The communicating computers--not the network itself--were also given the responsibility to ensure that the communication was accomplished. The philosophy was that every computer on the network could talk, as a peer, with any other computer. In 1975 ARPAnet spawned MILNET, an unclassified Department of Defense network connected to ARPANET by a gateway. The two networks together called DARPANET, were administered by DARPA (Defense Advanced Research Projects Agency) and formed the basis for the Defense Data Network (DDN) program. This network was created in order to link the Defense Department with its suppliers across the nation and eventually this became just *the Internet*.

In 1986 the National Science Foundation (NSF) backbone called NSFNET was installed to provide access to the five supercomputer centers. Up to this point, the world's fastest computers had only been available to weapons developers and a few researchers from very large corporations. By creating supercomputer centers, the NSF was making these resources available for any scholarly research. Because they were so expensive, they had to be shared. This created a communications problem: there was a need to connect the centers together and to allow the clients of these centers access. At first, the NSF tried to use the ARPAnet for communications, but this strategy

failed because of bureaucracy and staffing problems. In response, NSF decided to build its own network, NSFNET based on the ARPAnet's IP technology. Over the years, the network grew to include universities and laboratories around the world.<sup>2</sup>

Until very recently, the Internet was the preserve of research labs, universities and the government. In 1991, legislation for the National Research and Education Network (NREN) addressed the need to provide access to the network to K-12 students and educators, community users, libraries and businesses. This prospect made academic researchers bemoan the loss of their proprietary right, and they were concerned that with the increased traffic there would not be enough bandwidth and so transmission time would suffer. Thus they tried to block access to the very population that foots the bill, the taxpayers, instead of working toward a common framework with enough "conceptual bandwidth" to include everyone.<sup>3</sup>

President Clinton and Vice President Gore view the coming efforts to hook up homes as well as workplaces electronically as "a historical turning point" in the capability to "move ideas, data and images around the

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<sup>2</sup>Ibid, 21-23.

<sup>3</sup>Tom Grundner. "Whose Internet Is It Anyway?- A Challenge." Online (July 1992): 6.

country and around the world." Gore sees this development as "by all odds the most important and lucrative marketplace of the 21st century."<sup>4</sup> The Clinton administration seeks to "promote a seamless, interactive, user-driven communication network, ensure its security and reliability and extend the 'universal service' concept....to make sure that information resources are available to all at affordable prices."<sup>5</sup> Larry Irving, head of the Commerce Department's National Telecommunication and Information Administration, said: "I want the information highway to be connected to Harvard and Howard....one of the highest priorities of this agency is to ensure universal access."<sup>6</sup> Whether the dream of affordable universal access comes true or not, the Internet is poised to become a staple of modern business and public communication.

There are vital reasons to provide taxpayers with access to electronic mail, government information, and other resources via libraries and community computer systems.<sup>7</sup> A global information infrastructure has the

<sup>4</sup>Herbert I. Schiller, "The Information Highway: Public Way or Private Road?" The Nation (July 12, 1993): 64.

<sup>5</sup>Carla Lazzareschi and Jube Shiver, "Clinton to Unveil InfoHighway Blueprint," Los Angeles Times, 15 September 1993, 1(D)-2(D).

<sup>6</sup>Ibid.

<sup>7</sup>Tom Grundner, "Whose Internet Is It Anyway?--A

potential to reduce the disparity between the information rich and the information poor, between the more and less developed areas of the world, and between large and small organizations.<sup>8</sup> The Internet could be the basis of a free social information facility in the electronic era. For basic access, all that is needed is a telephone line, a modem, a computer, and some communication software. If a family is unable to afford it, maybe the local public school, the library, the post office, or a kiosk at K-Mart could provide the telecommunication connection.

The old barriers of sexism, ageism, and racism are not present, since you can't see the person to whom you are "speaking". You get to know the person without preconceived notions about what you think he or she is going to say based on visual prejudices you may have, no matter how innocent. Not that electronic mail is always a harmonic convergence of like souls adrift in the cyberspace cosmos; of course there are arguments and tirades called "flames". But for the most part, the electronic community is willing to help each other.<sup>9</sup>

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Challenge," Online (July 1992): 6-10.

<sup>8</sup>Judith D. Ahrens and Gerardo A. Esquer, "Internet's potential as a global information infrastructure: A case study and assessment," Journal of Global Information Management (Fall 1993): 18.

<sup>9</sup>Jean Armour Polly, "Surfing the Internet: An Introduction," Wilson Library Bulletin, June 1992, 39.



As an information technology asset, the Internet is fast becoming the greatest communications system and information technology resource the world has ever known. It consists of over 6,000 networks in 50 countries on all continents. More than 20 million people use the Internet each day and it connects over 30 million computers with 1,000 more added daily.<sup>10</sup>

### Internet in the Business World

The Internet was not always open and hospitable to business users. The NSFNET "Acceptable Use Policy" stated as a general principle, "NSFNET backbone services are provided to support open research and education in and among U.S. research and instructional institutions, plus research arms of for-profit firms when engaged in open scholarly communication and research. Use for other purposes is not acceptable."<sup>11</sup> This policy provided support to open research and education and kept the "business for profit" activities away from the Internet. In 1991 a group of commercial network service providers formed the Commercial Internet Exchange (CIX) and the

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<sup>10</sup> Doing Business On The Internet: Information Technology on the Information Superhighway, (Seminar) Los Angeles, CA: Embassy Suites/LAX, March 30, 1994.

<sup>11</sup>Richard J. Smith & Mark Gibbs, Navigating the Internet (Indianapolis, Indiana : Sams Publishing, 1993), 11.

Internet became accessible to business, bypassing NSFNET. "This business-driven expansion ensures that the Internet will become ubiquitous. In the very near future, even small businesses and all schools (down to primary schools) will be able to have Internet connections. Ultimately (and also soon), an Internet connection in your house will be no more unusual than a telephone line."<sup>12</sup>

Daniel C. Lynch, founder of Interop, a computer-networking trade show, was driven by the radical notion that all the industry's data networking gear should communicate and should be shared. By breaking down the walls between proprietary vendors and forcing them to adhere to a single industry standard known as TCP/IP--a protocol suite used by all computers connected to the Internet--he inadvertently paved the way for the commercial Internet.<sup>13</sup>

Business subscribers are increasingly turning to the Internet to handle some of their most critical corporate communications. John Shore, President of Entopic Research Laboratory Inc. in Washington DC, sends documents using his computer linked to the Internet. He says: "When it absolutely, positively has to get there I wouldn't think of

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<sup>12</sup>Ibid, 13.

<sup>13</sup>John Markoff, "Up From the Computer Underground," The New York Times, 27 August 1993, 1(C).

using an overnight delivery service." Via the Internet, companies can carry on intra-company and inter-company communication, develop new products, offer customer support, collaborate, take orders for merchandise, receive electronic publications, edit documents and retrieve data from specialty databases. Howard Funk, initiator of the Internet program at IBM, claims "The only limitation on what you're going to be able to do with the Internet is your imagination."<sup>14</sup>

Despite the lingering influence of Acceptable Use Policies (AUP) that still restrict large portions of the Internet to non-commercial traffic, the Internet is becoming an essential utility for business communications, on a par with the public switched telephone network. In fact, the growing reliance of businesses of all sizes on the Internet, both for access to an array of information sources and for point-to-point traffic, has motivated carriers to create parallel, commercial networks offering Internet access unimpeded by AUPs.<sup>15</sup>

Internic, a collaboration of AT&T's Bell Laboratories in New Jersey, General Atomics in San Diego and Network

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<sup>14</sup>Jayne Levin, "Getting Caught Up in the Internet," The Washington Post, 17 May 1993, 5(E).

<sup>15</sup>Dave Trowbridge, "Internet's Anarchy Beckons to Business Around the World," Computer Technology Review 13 (18 August 1993): 18.

Solutions Inc. in Herndon, VA was created to help speed Internet use among non-technical subscribers, mostly individuals and small businesses. The Internic Reference Desk (800-444-4345) offers introductory materials and hints on using the network. It can also refer to more than three dozen commercial services selling Internet access.

Nineteen ninety four has been an explosive year for business growth on the Internet. Home Shopping Network opened for business offering next day delivery on more than 22,000 items. CommerceNet, a Palo Alto, California based company offers businesses of all kinds and sizes the opportunity to list information about their products and services online. So far their participating vendor list reads like a "Who's Who" of the business world--National Semiconductor, Lockheed, Dun & Bradstreet, Intel, Hewlett-Packard, Apple, Bank of America, and dozens other major players. Their product and service directories offer graphical, browseable catalogs, giving shoppers a variety of ways to locate and purchase these products and services.<sup>16</sup> To open a storefront on CommerceNet you can become a subscriber for as little as \$1,250 annually or a sponsor with an annual membership fee of \$35,000 with other options in the middle. Anyone with an Internet access can

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<sup>16</sup>"Doing Business on the Internet: CommerceNet Sets the Standard for the Global Online Marketplace," Internet Business Advantage, Premier Issue, (October 1994): 10-11.

freely browse CommerceNet's offerings by accessing its home page, URL:<http://www.commerce.net>. To address their clients' security concerns CommerceNet is testing a new version of a popular World Wide Web browser with built-in public key cryptography. CommerceNet's Secure Mosaic will enable buyers and sellers to authenticate each other's identity to exchange sensitive information securely. More information about Secure Mosaic can be obtained from its home page at URL:<http://south.ncsa.uiuc.edu/security.html>.

Initially the Internet was perceived as a rich information resource that the business world needed to access to make informed decisions regarding their products and markets. Using the Internet as a platform for advertising and selling of products may turn out to be one of its most relevant aspects for corporations.

By 1998, the total number of Internet users is expected to top 100 million. Today a large number of companies, including half of the Fortune 1000, are on the Internet. For most companies, it is a time of experimentation and exploration. As of May 1993, about 400 companies had reserved Internet protocol addresses; the Internet can currently accommodate some 2 million addresses.<sup>17</sup>

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<sup>17</sup>Jayne Levin, "Businesses are Making the Internet Connection," InfoWorld 15 (24 May 1993): 71.

The boom would be even greater, if not for concerns regarding security. Commercial customers do worry about how to protect their network against unauthorized access. An ideal electronic information network would provide a directory of all who subscribe, yet the Internet lacks a complete directory.<sup>18</sup> The Privacy Enhanced Mail (PEM) effort began in 1985 as an activity of the Privacy and Security Research Group under the auspices of the Internet Architecture Board. The primary focus of the effort to develop PEM is the provision of security services such as integrity and data origin authentication for E-Mail users in the Internet community.<sup>19</sup>

The relatively open, interactive nature of the Internet has certainly fostered creativity and information sharing despite the reservations of corporate users. Extremely sensitive data may not have any reason to be on the Internet; on the other hand the Internet community is working hard to make the cyberspace a safe place for businesses. The Computer Emergency Response Team (CERT) maintains an extensive FTP site and mailing list on security matters. It operates a 24 hour command center for

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<sup>18</sup>Subhash Bal, "A for-profit Internet," Telecommunications (International Edition) 27 (August 1993): 61.

<sup>19</sup>Stephen T. Kent, "Internet privacy Enhanced Mail," Communication of the ACM 36 (August 1993): 50.

exploring, documenting, and disseminating information about security vulnerabilities of computers on the Internet. There are several security-focused mailing lists and Usenet newsgroups such as alt.security, as well.

Over time, Information Systems groups have realized that a few basic cautionary steps like using obscure passwords, changing passwords frequently, and using router-based security measures go a long way in keeping the online data safe. Some companies have opted for installing a firewall--a stand alone computer that screens all incoming traffic. "Advanced router software and fire walls aren't the only security options. PSI, ANS, AT&T, Sprint, and other Internet service providers market specialized, turnkey software solutions and advanced hardware security packages, costing \$5,000 and up."<sup>20</sup>

The Internet has the potential to completely change the way people interact and do business worldwide. The time has never been better for businesses of all sized to go online, to carve out a solid business niche, find the right customers, and discover new ways to generate profits. John Young, Chairman of Smart Valley Inc., speaking of CommerceNet said, "This venture is one of the cornerstones in our vision of creating an electronic community that will

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<sup>20</sup>"Plugging Holes in your Net: Keeping Online Data Safe," Internet Business Advantage, Premier Issue, (October 1994): 6.

transform the way we work, live and learn."

### The Role of Special Librarians

Christopher Locke, former editor of Internet Business Journal, points out: "Remember when a fax machine seemed an option? Now everyone has one. The same holds true today for a corporate Internet address.... companies that have no presence in this new arena will quickly fade from view." Very simply put, for fun, for business, for research, the Internet is the entree to thousands of databases around the world and Special Librarians are its logical users.

What defines a Special Librarian? Special Librarians are librarians who work in "information organizations sponsored by private companies, government agencies, not for profit organizations, or professional associations" as well as in "specialty units" in public and academic libraries.<sup>21</sup> Over the last ten years there has been a debate about what should library professionals be called; suggestions include Information Specialist, Information Czar, Corporate Information Manager, Information Control Officer, Information Navigator, Information Engineer, Information Wizard, Library Goddess, and Robo-Librarian. The most intriguing is perhaps "Cybrarian" coined by

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<sup>21</sup>Ellis Mount, University Science and Information Centers: An Introductory Text (Washington DC: Special Library Association, 1992), 2.



Michael Bauwens in his "Cybrarian Manifesto", published on the listserv PACS-L where he painted a picture of his virtual library that will replace the paper based library. Paperless libraries are still far from a reality and one does not have to renounce the past in order to embrace the future. The title "Cyber-Librarian" by keeping the word "librarian" intact, acknowledges and maintains the bond with the past while boldly facing the new world of cybernetic information storage and processing.

This study is concerned primarily with special librarians working in the private sector, who are in a position to provide vital information that can aid a company in its research and development needs as well as in formulating its market strategy. These "Cyber-Librarians" serving today's corporations have to treat the resources available on the Internet as research and reference tools. How will these professionals announce their connection with the virtual library through cyberspace? They would have to convey the fact that they manage information, identify relevant sources, analyze data, network among experts, have technical expertise, understand information highways, and are comfortable in cyberspace as they turn into "Cyber-Librarians".

The traditional view of a librarian as "custodian of a collection of books" is becoming rather quaint and

irrelevant. The vision of a virtual library without walls and without books has not yet come to pass, but today's libraries are significantly different than just a few years ago when OPACs (Online Public Access Catalogs) were not a library fixture, document delivery was not possible electronically, and patrons did not get connected to catalogs and databanks half-way around the world via a computer terminal. In his address to the Special Libraries Association's annual conference in Atlanta, Georgia, 1994, Dr. Stuart Sutton reminded his audience not to relinquish their historical role as makers of tools--like LCSH (Library of Congress Subject Headings) and other organizational schemes--that are used to practice the profession. Today the librarians have ventured out onto the Internet with Archie, Veronica, WAIS, WWW and other access tool, but these are tools created by others. To be a significant role player in the information world there is a necessity of wedding the existing professional knowledge base with new knowledge in order to create new tools and new service models for new contexts. Also as librarians we build opinion pieces of networked information by what we point to. For example, librarians out in front putting up Mosaic clients, servers and home pages are not only authoring in a new environment, they are doing collection development and structuring information architectures of

resources located on the global Internet and on the library's own servers. Special librarians were the first in the profession to recognize the inadequacy of a service model in which the patron's need for a specific answer is addressed by providing a number of resources potentially containing that answer. The attributes necessary to deliver full service are: (1) the right information, (2) to the right person, (3) at the right time. To these attributes must now be added: (4) at the right place, (5) in the right form, and (6) at the right price.<sup>22</sup> In this period of change, a cyber-librarian is comfortable in both worlds and is savvy enough to know where the right resources are and how to deliver them to the patron in a timely fashion.

"Companies face two major challenges in the new economy: to leverage the intellectual strengths of their own people and to read the collective minds of rapidly-emerging new markets. In both cases, listening and learning are absolutely critical, and there is no better 'place' to practice those virtues today than the global

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<sup>22</sup>Stuart A. Sutton, "Core Competencies for the Information Professions and the Evolution of Skill Sets," 1994, Special Libraries Association Annual Conference, Atlanta.

Internet."<sup>23</sup> Statistics, newspaper indexes, full-text periodicals, chemical databases, bookstore catalogs and much more are available on many OPACs (Online Public Access Catalogs). Library catalogs accessible on the Internet number in the hundreds, and many of the best offer more than just the library catalog. With dozens of locally mounted databases, the new OPAC becomes a mini databank, and Internet access can make the most distant catalog as easy to search as the one next door. Since the library already has invested in the hardware and software to run the OPAC, why not mount local interest files as well? With increased Internet access searchers worldwide would benefit.<sup>24</sup>

Much has been written about the changes that will determine the information profession in the year 2000. Lucy Wegner of the University of Southern California, in a program on Internet sponsored by California Academic and Research Librarians (CARL) (Fall 1993), said that the user community will decide what role librarians will play. In her words, using the Internet will become "Frontline Reference," and will connect the seeker and the sought thus

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<sup>23</sup>Christopher Locke, "What's My Motivation: Stalking the Global Internet," Internet World, 5 (March/April 1994) : 37.

<sup>24</sup>Greg R. Notess, "Offspring of OPACs: Local Databases On the Net," Database (June 1993): 108.

providing information anywhere, in any form.

These are times of fundamental upheavals in both the business and library worlds. All around us, corporations are being downsized, rightsized, reengineered, and reinvented. Special librarians are evolving to meet the needs of these dramatically new entities. They have to possess specific skills and competencies:

a) ability to access electronic and print sources, know navigational skills for all networks, facilitate exchanges with other librarians, identify outside experts, and recognize pockets of undiscovered data

b) assess technology for information delivery and be able to deliver it in any form best suited or desired by the customer

c) evaluate the quality of the information sources - besides being accurate, timely, and complete, above all they should be relevant

d) organize information so it is useable, going beyond just cataloging and shelving to systematizing information in ways which are meaningful to the customer

e) anticipate the information needs of the customer. This entails intimate knowledge of the goals and objectives of the company, its suppliers, partners, customers, and distributors--it is necessary for the librarian to spend the time to electronically "manage by walking around"

f) know how to provide the best linkage to the best sources of information--taking a "just in time" approach to information instead of "just in case." In most cases information will not be stored but the routes to the information will be recorded so that the path can be traced<sup>25</sup>

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<sup>25</sup>Marydee Ojala, "Core Competencies for Special Library Managers of the Future," Special Libraries 84 (Fall 1993): 230-233.

Based on these attributes we can see that the role of the information center or library must be redefined from one of reaction to pro-action. The value of the information center has to be made obvious to the highest echelons of the company and the information providers (Special Librarians) have to become key players in the decision making loop. "As a start, we need to understand that corporations view information resources differently than do information managers. The corporation measures information as a commodity, rather than as an inherently 'good' thing."<sup>26</sup>

The Internet provides universal connectivity and communication, is cost effective and readily available, offers a vast range of resources and beckons the future of telecommunication. Corporate librarians realize that what is good for business is also good for them. It is very important for them to become the eyes and ears of market trends by cultivating excellent Internet skills to provide their clients the information needed to keep their businesses flourishing.

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<sup>26</sup>Helen F. Gallate, "Corporate Politics and the Information Professional," Online (July 1993): 48.

## CHAPTER 2

### LITERATURE REVIEW

Before 1991 the traditional Internet research community was small, homogenous, technologically sophisticated and united by general agreement on what the Internet was good for and what was good for the Internet. Since they spoke the same language, followed the same rules, had access to the same information, knew how to communicate with colleagues, their main concern was to find technology solutions to the networked communication problems, not the content or the human communicators.

Most of the theses, dissertations and studies on the Internet reflect this bias, the majority being done from the systems or systems management point of view rather than that of the end user. Of the ten studies reviewed, seven are systems based while three focus on library user related issues. The technical studies were all completed from 1989 to 1993, while the user based studies were from 1991 to 1993.

The first seven studies explored and analyzed various technical aspects of the networked environment of the Internet in order to improve existing systems of communication technology or to design new systems. None of

these studies has a direct bearing on the topic of this study about the use of the Internet by corporate librarians other than the fact that they explore the technological foundations for use. The early studies' focus on systems or systems management is understandable because during the early development phase the technology had to be mastered before it could be usefully applied to human communication activity. These studies are: *"An Architecture For Domain-Based Distributed Systems Management (Internet Management)"* by Baoyu Wang for a Computer Science Ph.D Degree in 1989, at the University of Lancaster (United Kingdom); *"On The Modelling And Performance Analysis Of End-To-End Connections In Interconnected Networks"*, Andrew John Vernon's Ph.D. dissertation in 1989 from the University of Waterloo, Canada, Department of Electrical Engineering; *"Univers: The Construction Of An Internet-Wide Descriptive Naming System"*, a 1990 thesis by Clair Michael Bowman of the University of Arizona, Department of Computer Science; *"Optimization Models and Algorithms for Interconnecting Data Networks (DATA NETWORKS)"* a 1991 Ph.D. dissertation by Song-Chyau Liang of University of Southern California, School of Engineering; *"Pricing In Multiple Service Class Computer Communications Networks"* was a 1992 Ph.D. thesis by Ronald Paul Cocchi, from the University Of Southern California, Department of Computer Science; and



Jane Ordille's 1993 Ph.D. thesis from the University of Wisconsin - Madison, School of Computer Science, titled, "*Descriptive Name Services For Large Internets*". Only one 1991 study "*Mapping Thoughts: Visual Interfaces For Information Retrieval (Interface Design)*" by Thomas Kevin Gillespie, Ph.D. thesis at the University Of California, Berkeley, dealt with a library related technical subject.

The first study to move away from the technical research aspect of the Internet was "*Public Libraries and the Internet/NREN: New Challenges, New Opportunities*" by the Syracuse University, School of Information Studies. It focused on the significance of the 1991 legislation for the National Research and Education Network (NREN) on the public library community: The study tried to determine the level of awareness of the evolving role for the public library in the networked environment and to recommend specific roles, services and activities that would insure access to the Internet by all citizens. The study was conducted from August 1991 through June 1992 and its findings were:

- . There is much work to be done in increasing the awareness of the public library community about the significance of the National Research and Education Network (NREN).
- . Policy makers have yet to understand the range of issues affecting the public library's involvement in the networked environment.

- . Specific roles, services and activities in the networked environment have yet to be identified.
- . There are opportunities for public libraries to take a leadership role in developing innovative information services over the national high speed networks.

Two critical factors were development of a strategic plan for new services and better use of the new networked technologies. "It might be experimentation with an Internet connection--as currently being done at the Liverpool public library, Liverpool, NY; or it might be developing services appropriate for network delivery--such as that done by the North Carolina state library."<sup>27</sup> To sum up the recommendation:

The evolving role for the public library in the networked environment can incorporate the traditional safety net role that insures access to the network by all citizens. But its role should also expand into "electronic navigator and intermediary,": it should be "provider of electronic information to remote users," "coordinator of local community electronic information resources," and "switching station for electronic information resources and services." But these roles must be created; visions for these roles are needed now; and immediate public library involvement in the design and structure on the Internet/NREN is needed to insure that the public library is a key player and stakeholder in the evolving national networked information society.<sup>28</sup>

The Syracuse study could be considered the

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<sup>27</sup>Charles R. McClure, Joe Ryan, Diana Lauterbach, & William E. Moen, Public Libraries and the INTERNET/NREN: New Challenges, New opportunities (Syracuse, NY: Syracuse University, 1992), 28.

<sup>28</sup>Ibid, 29

background for the significant effects of the Internet on the larger library profession and even though it did not directly address any issues related to special libraries or librarians, its findings and recommendations most likely apply equally to special librarians. They too must see themselves as "stakeholders in the evolving national networked information society" and develop a vision of their role as "electronic navigator and intermediary" for their special clientele. The study for this thesis sought to find answers from the special librarians to the question of how they perceive their role in an environment that includes the Internet as a vital source of communication, research and marketing in the corporate world.

The next major research report relating to library usage of the Internet was published in 1993 by OCLC (Online Computer Library Center, Inc., Ohio). It was titled *"Assessing Information on the Internet: Towards Providing Library Services For Computer-Mediated Communication"*. The OCLC Internet Resource project sought to investigate the nature of electronic textual information available through remote access using the Internet, and the practical and theoretical problems associated with creating machine-readable cataloging (MARC) records for these objects using current USMARC format for computer files and Anglo-American Cataloguing Rules, 2nd ed., revised.

The OCLC study found that the Internet is a rapidly growing environment that facilitates and encourages the creation and dissemination of electronic information objects. As data storage costs drop, bandwidth increases, and Internet access broadens, the problems of discovering, accessing, and using information on the Internet will likely compound in the absence of additional information management tools and services. Tools such as Archie, Gopher and WAIS begin to address the problem of information management of remote-access electronic information objects, but the Internet information management systems are not well integrated within existing library infrastructures.

The project offered the following recommendations:

- . To implement the creation of machine-readable cataloging records (MARC) for remotely accessible electronic information objects.
- . To monitor the user effectiveness of records created for providing description and access information.
- . To extend cataloging rules and formats to include interactive network systems and services.<sup>29</sup>

The issues investigated by OCLC are of value and concern to the whole library community. Of particular relevance to this thesis is the finding that as access to

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<sup>29</sup>Martin Dillon, Erik Jul, Mark Burge, & Carol Hickey, Assessing Information On The Internet: Toward Providing Library Services for Computer-Mediated Communication (Dublin, Ohio: OCLC Online Computer Library Center, Inc., Office of Research, 1993). 33-36.

the Internet spreads, the usage of its resources will be hampered in the absence of advanced organizational tools such as Archie, Veronica and WWW, which must be integrated into network information management systems within the library infrastructure. The study for this thesis sought to discover the widening use of these tools, beyond E-Mail, by special librarians.

Sharyn Ladner and Hope Tillman's 1991 study titled, *"The Internet and Special Librarians: Use Training and the Future"* is most relevant to the present thesis. In their words, "Our purpose in conducting this research is not to determine the extent of use by special librarians, but to find out how and for what purposes a self-selected group of professionals, who are themselves specialists in the retrieval, organization and dissemination of information, use these networks. We also wanted to find out how these special librarians became aware of the Internet and how they learned how to use it."<sup>30</sup> This exploratory study was conducted in 1991 using qualitative methods that strive to understand a phenomenon as a whole in an attempt to make sense of the situation without manipulating or imposing preexisting expectations on the research setting. Towards this end a survey instrument was designed, and after a

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<sup>30</sup>Sharyn J. Ladner and Hope N. Tillman, The Internet And Special Librarians: Use, Training and the Future (Washington, DC: Special Libraries Association, 1993). 5.

"call for participation" request 54 participants were identified. Of these participants 65% came from an academic setting, 15% from government or public agency, 9% from corporate, 9% from not-for-profit organizations and 2% were other, non library personnel.

Ladner and Tillman wanted to find out: (1) how special librarians used the Internet and its resources, (2) how they found out about the Internet and learned to use it, (3) how their use of the Internet compared to their use of internal computer-based communications systems within their own organizations, (4) for how long they had been using it and (5) how they paid for access to the Internet. Finally, (6) what the special librarians perceived to be the major advantages and disadvantages of the Internet use in the special library environment.<sup>31</sup>

They reported that the average length of time the participants have been using the Internet was two years, and it was used by those special librarians for electronic mail, file transfer and searching remote databases. The majority of respondents reported using the Internet for E-Mail, while substantially fewer reported non-E-Mail applications. Ninety three percent of all users used the Internet for work related E-Mail, 61% for bulletin boards, e-journal and other forums, 39% for Telnet, 37% for FTP,

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<sup>31</sup>Ibid, 2.

22% for research and publication and 11% of all users reported using the Internet for personal communication. Since multiple responses were possible, the total of percentages exceeds one hundred. According to the authors the high percentage of respondents using computer discussion lists may be a function of their sampling procedure since they recruited participants through posting on nine library-related discussion lists.<sup>32</sup>

The Ladner and Tillman study provided a sobering view of the future for Special Librarians as it predicted two scenarios of the special library in the networked organization: a) the special librarian will rise to become a key player in information management within the information-age organization, or b) the special library will disappear, an obsolete relic of the industrial age. The authors wanted to illustrate with these two scenarios that special librarians cannot afford to wait and see what happens with the Internet and other advanced technologies affecting information management and retrieval. Based on their study, they predicted the demise of the special library if special librarians did not stretch to meet the needs of today's post-industrial, information age, networked organization.<sup>33</sup>

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<sup>32</sup>Ibid, 21.

<sup>33</sup>Ibid, 66.

*The Internet and Special Librarians* is full of accounts of creative ways people are using the Internet in libraries and is also a sobering, futuristic look at librarianship. "This book wakes us up, gives us a shake, and shows us how our profession is changing because of the Internet. If we want to keep our jobs, our libraries, and our profession alive, we must lead the electronic movement and provide access to these new forms of information."<sup>34</sup>

Following the trail forged by Ladner and Tillman, three years later this study wanted to find the answers to essentially the same questions they were asking in 1991, but with a focus on the corporate librarian community. The special librarian population they surveyed included only 9% corporate librarians, probably because few of them had an Internet connection before 1991: Most corporate librarians surveyed in this 1994 study got their Internet connections after 1991. The survey instrument for this thesis was based on the Ladner and Tillman design and in addition sought to include questions regarding the use of added navigational capabilities like Archie, Veronica, Gopher, WAIS, WWW, Hytelnet and Mosaic that are beyond E-Mail, FTP and Telnet. It also looked for answers to what these navigational tools are used for by these librarians.

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<sup>34</sup>Joan Tuss, "Roadmaps to the Internet: Finding the Best Guidebook for Your Needs," Online 18 (January 1994): 26.



## CHAPTER 3

### METHODOLOGY - SURVEY INSTRUMENT DESIGN

The aim of this study is to follow the line of inquiry presented by Ladner and Tillman in their 1991 study of special librarians and their use of the Internet, with a focus primarily on corporate librarians and information providers. For the purpose of this study, Ladner and Tillman's survey instrument was adapted with modifications to explore information about the use of the Internet by librarians in a for-profit corporate setting.

The descriptive survey instrument used for this thesis seeks to explore the connection between known navigational tools of the Internet and the communication and search behavior patterns of the group of special librarians under study and uses a qualitative approach to record and report the findings factually without imposing any preexisting expectations. The study is not primarily concerned with the percentage of corporate librarians with an Internet connection but with the uses to which the Internet connection is put.

The survey began by asking personal information about the respondents and then their permission to be quoted by name or anonymously. A returned survey was considered the

consent to participate in the study by a particular librarian. If they checked 'yes' to receive the final survey results they had to have their E-Mail address on the survey. The next section of the survey was the actual questionnaire which had the first eight questions designed so that all the information could be filled in quickly by putting a check mark against the applicable choices. Under "others" there was some writing required. Questions 9-11 asked for an evaluation of the Internet interface based on personal experiences. These questions explored what these librarians felt to be the advantages or disadvantages of using the Internet in their libraries and why did they perceive the Internet to be important to the future of the profession.

A sample survey was sent for critique to the thesis advisors and to Lynne Bidwell, a librarian at Apple Corporation and past president of SLA, San Andreas Chapter. The final version was approved as a questionnaire that would be relatively easy to fill out and would require minimum amount of writing. While filling the actual survey Lynne said, "This is a very good survey. It took a short time to answer, and I felt compelled to comment on questions 9-11."

The target population was derived mainly from the Special Libraries Association's annual directory, from

which one hundred names of librarians who worked in a corporate or business library setting and had an E-Mail address were picked. Other librarians included in the survey were some whose E-Mail addresses were already known.

Using the Internet to conduct the survey was not only logical but also cost-effective and a time saver because it did not require transcribing the data. Its interactive features proved to be extremely useful to add a personal note to those already known and for respondents to ask for clarification. The capability for respondents to write as much or as little as they wanted because of the ease of electronically adapting the space for comments was useful. Some respondents actually wrote long comments under the category "other" when it applied to them.

The use of E-Mail in conducting the survey was far less intrusive than using either regular mail or an interview method. The electronically delivered survey could be easily ignored by the librarians, or they could fill the answers right away online and send it back with a few keystrokes, or download to mail later, if they preferred. When a questionnaire was undelivered, the system automatically sent an immediate notification so it was easy to keep an exact count of the questionnaires that got delivered. Creating a computer file of survey returns with minimum amount of data entry was a considerable saving

in time and effort.

One drawback of the online survey method was not being able to approach those business librarians who did not have an Internet address listed in the SLA directory. There could have been two reasons for this, either they were not on the Internet or they did not have an address at the time the directory was printed. In the first case nothing was lost but with the second scenario there may have been a few lost responses.

The information provided by the corporate librarians who responded to the survey is extremely valuable. Based on this input valid conclusions could be drawn as to what the corporate librarians are using the Internet for, right now in their daily work and how they see the future of their profession with the Internet as one of the integral resources available to them.

## CHAPTER 4

### DATA ANALYSIS

The survey was conducted in Spring of 1994 exclusively by electronic mail; four respondents returned the completed survey through regular mail, while all the rest used the Internet to send it back. Seventy seven questionnaires were delivered through E-Mail on the Internet to special librarians, twenty three responses were received, a 30% rate of return. Of the 23 respondents, 8 librarians granted permission to use their names and quote them directly, 11 agreed to be quoted directly as long as their names and libraries were not mentioned. All but one asked to see the final results of the survey.

#### Background Information

Type of Library		
	Number	Percent
Commercial for-profit	19	83%
Private non-profit	1	4%
Government	1	4%
Academic	1	4%
Public	0	0%
Other	1	4%
	<hr/> 23	<hr/> 100%

Table 1

Table 1 shows the type of organizations to which the 23 special librarians who participated in the study belonged. 83% of the participants came from commercial for-profit corporate libraries, which were the focus of the study. The remaining 17% came from other special libraries. Tillman and Ladner study had 65% respondents from academic setting, and only 9% from corporate libraries. This study indicated that more than 65% of corporate librarians have only been on the Internet since 1991, which is after Tillman and Ladner had completed their data collection.

<b>Years of Experience Using the Internet</b>		
	<b>Number</b>	<b>Percent</b>
1 year or less	6	26%
2 years	7	30%
3 years	2	9%
4 years	0	0%
5 years	6	26%
6 years	0	0%
7 years	0	0%
8 years	1	4%
9 years	0	0%
10 years	1	4%
	<hr/> 23	<hr/> 100%

Table 2

Table 2 documents the number of years of use of the Internet by these librarians. Not surprisingly, 56% of the librarians have been using the Internet for 2 years or less, since 1991 saw a huge rise in the number of businesses accessing the Internet. Twenty six percent are 5 year veterans and it is impressive to see that at least some have been on the Internet for 8 and 10 years. In Ladner and Tillman's study one of the most experienced participants was from Stanford and had been involved with ARPANET since 1969. This could be a reflection of the high percentage (65%) of academic librarians in their survey.

Usage Level of Navigational Tools						
	Number			Percent		
	None	Light	Heavy	None	Light	Heavy
E-Mail	0	7	16	0%	30%	70%
Telnet	3	10	10	13%	43%	43%
FTP	8	10	5	35%	43%	22%
Chat/Talk	22	1	0	96%	4%	0%
Listservs	3	10	10	13%	43%	43%
Archie	11	11	1	48%	48%	4%
Veronica	13	7	3	57%	30%	13%
Gopher	3	12	8	13%	52%	35%
WAIS	10	12	1	43%	52%	4%
WWW	12	8	3	52%	35%	13%
Hytelnet	17	5	1	74%	22%	4%
Mosaic	13	5	5	57%	22%	22%

Table 3

Table 3 displays the rate of use for various Internet capabilities and navigational tools. At the two ends of the spectrum are E-Mail (used by all) and real time talk (used only by one). Some participants felt that they may not be aware that tools like Archie and Veronica are being used because sophisticated systems hide what is going on underneath and make them transparent, so their response may not reflect the tools they are using. The 1991 study reported that E-Mail was the most widely used function (93%) followed closely by listservs (61%), with 39% of the population using Telnet and 37% using FTP. In the 1994 study, combining light and heavy users together, Telnet was used by 86%, FTP by 65%, Gopher by 86% and Mosaic by 44%. Roughly comparing the Telnet and FTP statistics would appear to indicate an increased use of the Internet to log onto remote systems (Telnet) and to retrieve files (FTP), such observations, of course, have no statistical significance. Also the high rate of use, in less than one year, for Mosaic (a graphical multimedia user interface client software called a browser) is phenomenal. It was developed in 1993 by the National Center for Supercomputing Applications at the University of Illinois, Urbana-Champaign, for World Wide Web. It is the first true user interface to the Internet that makes navigation and information search and retrieval transparent and simple.



### Application of Internet Navigational Tools

	Number	Percent
Communication with Colleagues	21	91%
Communication with Others	14	61%
Communication with Outsiders	22	96%
Reference	19	83%
Inter-Library Loans	7	30%
Other Applications	6	26%

Table 4

Table 4 shows what these tools are being used for. The biggest use seems to be communication, 91% communicate with colleagues and 96% use the Internet to communicate with outsiders. Next largest use at 83% is for reference work, and following that, 30% use it to do inter-library loans. The Internet is used by 26% for bibliographic verification, filling requests via Telnet and E-Mail, document delivery from others, personal learning and information needs (an example was to learn how to mount an in-house Gopher server). Ladner and Tillman reported 93% use for communication, but they did not establish which work related functions were being supported by these tools.

### Methods of Learning How to Use the Internet

	Number
Self Taught	22
Informal Training by Co-Worker	17
Formal Classroom Training	14
Library School	2
Other Means	5

Table 5

Table 5 documents how these librarians learned to use the Internet. According to this study 96% of the recipients taught themselves. Many had a fellow worker teach them informally. Some said that they attended a class or a workshop, about 9% had library school or other academic training and still others pointed out that they also learned by other means such as books, journal articles, professional SLA conferences and meetings, seminars, workshops, demonstrations and classes offered by the Internet providers and vendors. According to the Tillman and Ladner study 65% were self taught (compared to 96% in the 1994 study) and no one had any formal training (compared to 9% in the 1994 study). This increased percentage reporting formal academic training on the Internet may reflect a higher percentage of recent library school graduates and the incorporation of such training into curricula.

<b>Who Pays for the Service</b>	
	<b>Number</b>
Library	5
Parent Organisation	17
Do Not Know	2
Other	2

Table 6

Table 6 shows mode of payment. In most cases the parent organization foots the bill. Some libraries paid for the Internet access out of their own budgets. In one case the department paid a monthly "service charge" to forward the Internet mail to internal mail network accounts. Nine percent of the respondents did not know who paid for the service. One person had her own business account paid by the business as well as a free university account. In 1991 most special librarians said that the parent organization paid for the Internet use with a 5 to 6% charge back to Department/Library.

<b>Who Should Provide Training?</b>	
	<b>Number</b>
Professional Associations	19
Library Schools	18
Parent Organisations	19
Other	5

Table 7

When asked who should provide the Internet training, most librarians believed it should be the job of professional associations, library schools, and the parent organizations. Sixty five percent were involved in training others in their libraries and parent organizations. Many thought that all colleges and universities should train their students and faculty in the use of the Internet. Some found that a lot could be learned by reading the Internet books and journal articles. Ladner and Tillman study respondents also believed that parent organizations, computer centers, libraries, library school and professional associations each have a role in providing the Internet training. Several respondents, however, being self taught themselves, questioned the need for any formal instruction.

#### Advantages in using the Internet

According to the respondents, there are numerous advantages and opportunities available to Special Librarians in using the Internet.

**a) The ease of communication with other colleagues, patrons, vendors and others.** Many businesses have had company wide electronic mail available to their employees for a long time. The beauty of the Internet is that TCP/IP protocol makes it possible for all kinds of computers world

wide to communicate. Communicating with other companies, groups and individuals is as easy as company wide E-Mail used to be. Comments like, "I think the primary advantage is the e-mail. This provides a means by which my machine can virtually talk to anybody in the world, no matter what machine or protocol, and instantaneously as well," by a respondent from Southern California, appear over and over. Another librarian says, "Since we are a multinational company, and deal with users world wide, E-Mail has been a godsend. Dealing with vendors, especially on the West Coast is much better....we all hate voice mail; sending E-Mail is much less frustrating. We often have an answer the next morning instead of playing voice mail tag for days."

"Before the Internet, to be able to engage in discussions, ask questions, share ideas and exchange opinions with other professionals in the field was only possible at conferences and meetings." "Today a subscription to an appropriate listserv opens up an enormous opportunity for dialogue and communication through E-Mail without leaving your office." On the importance of discussion groups and listservs an astrophysics librarian writes: "Special Libraries Association has a division called physics/astronomy/mathematics; this division has an email group called Pamnet. Bulletins from Pamnet contain the latest important information crucial to smooth running

of my library. I could not imagine being without it." Discussion groups also cut down on professional isolation as many corporate librarians are not able to attend association conferences and meetings due to money and time constraints.

E-Mail makes it possible for many users to gain visibility in the organization and to perform their job effectively. An example is the librarian who likes "E-Mail for networking, delivering search results to colleagues, answering reference questions, connecting users directly to [information] sources [and] therefore improving the position of the library and increasing my value to the organization in the eyes of management."

**b) Being able to access a large bank of databases and catalogs worldwide.** According to the survey data, besides E-Mail, Telnet and Gopher are the most widely used capabilities of the Internet. In both cases the user can access, search and retrieve documents from host computers to their own accounts and terminals. Compared to Ladner and Tillman's finding of 37% this study finds that more than half the librarians also used FTP, a facility to download quite large documents including books like "Zen and the Art of Internet" and "The Big Dummy's Guide to the Internet". A librarian from El Segundo, California says: "I find the enhanced ability to communicate, ability to

find information, retrieve, download and deliver information via the Internet, as needed and when needed and in a usable format that is appreciated by clients, a great benefit." In the words of another librarian: "It's a great resource. We've been able to locate materials and verify references by logging into catalogs worldwide. Contact with many reference sources is now much more reliable (vs. phone lines)--ie DIALOG, ORBIT, OCLC, First Search. It's also allowed us to bring reference sources to our user's desktop, .... taking some of the burden off of our librarians .... we're really short staffed for the amount of services we're expected to supply."

**c) Providing cost effective services to their parent companies because the speed of transactions on the Internet translate directly into savings of time and money.** To quote some of the librarians: "Speed of transactions saved time and saved money, when one can search databases that are for pay elsewhere and the ability to retrieve data without assistance and at any time of the day."

"Dialog sources available on the Internet could save dollars in the library budgets. Statistical abstracts of many countries are available. With information like this companies can save money on buying hard copy (just one example)."

d) Being able to network and serve patrons without the restraint of time and geographical boundaries is a great bonus to the librarians. This is especially true for corporations with more than one location with a centralized library serving the needs of patrons globally. One librarian says: "Now one can assist remote-site clientele as easily as the folks downstairs in the same building."

e) Be able to emphasize and enhance the role of the library and the value of the professional librarian's services in the parent organization. The Internet is providing librarians an opportunity to dramatically display how they can help the parent organization by navigating the ocean of information to find the very best and latest. A respondent from the San Francisco Bay Area says:

Information Specialists have the skills needed to deal with the confusion and disorganization of the sources on the Internet better than practitioners of some other disciplines. Many special libraries (at least in Silicon Valley) are very computer literate. They really do understand how to navigate and access information on the Internet. If they are experienced online searchers, they at least have a conceptual framework for dealing with remote information access using multiple online systems and command languages. That helps a lot!

The words of one librarian echo the sentiments of many: "The Internet provides access to information that has been inaccessible to some librarians. It provides the opportunity for librarians to learn new things and become the leaders in the race to provide quality, value-added



information to our customers."

### Disadvantages in Using the Internet

The main drawbacks, listed by the special librarians in using the Internet are: a) lack of organization; b) extremely time consuming; c) unreliability of sources; d) lack of training and, e) concerns about security.

**a) Lack of organization:** There are attempts being made to organize the information on the Internet for easier access but so far the organizational and access tools are inadequate. According to a respondent:

Most Information Specialists are used to more organized information systems. The lack of precision in accessing information on the Internet can be frustrating. Tools like Mosaic and turbogopher have helped to ameliorate this problem. The instability of the information sources (one day the server is up, the next day it isn't) can be frustrating too!

**b) Time consuming:** Sheer volume of information and the lack of organization requires a great deal of time and patience to find the right information on the Internet.

One librarian says:

Right now the Internet almost requires great patience and perseverance in finding the right information at the right time. As indexes and finding tools are increased and enhanced, I think this will make it more accessible and easier to navigate for most users. I would like to look at it more often, but time doesn't usually permit.

Another librarian laments, "Most special librarians do not have time to hack around from Gopher to Gopher when a

client needs information immediately."

**c) Unreliability of sources:** This may be a problem because librarians need to provide accurate and reliable information so that their clients may make informed decisions. Since nobody is really responsible for the quality of documents available on the Internet, the librarian has a hard job deciding the calibre of information. Listservs, FTP and Gopher sites tend to disappear without notice. One respondent paints a graphic picture of the situation, "Fugitive info (or maybe it's ephemeral)--listservs being announced with much fanfare, for example, and then are disbanded (sometimes without you knowing it) a couple of months later; or resources that used to be in one place are moved and you can't find them (on Gopher). Here today, gone tomorrow is a little bit the way of the Internet."

**d) Lack of training:** Most librarians felt limited by the lack of training. If they were motivated and had the time to explore, they became the resident "expert" and took it upon themselves to train others. In certain cases, if they were lucky, they found a sympathetic and knowledgeable systems information person to show them a few things. Others got further training through seminars, workshops and classes but most of the training has been limited. "The major difficulty is lack of training in computer systems,

software, and networking. Many people cannot get past the technical aspects of how to use their (computer) systems and software in order to use Internet resources and e-mail effectively." Another librarian also believes that the main obstacle to using the Internet is "Probably lack of training. There seem to be plenty of talks and seminars on the subject, but no real training." One librarian finds her problem to be, "Our internal software to access [the] INTERNET and [the] lack of training."

**e) Concerns about security:** In the corporate world this has been a major issue. As one librarian illustrates:

Security is a big problem. It is difficult to protect sensitive information. It is sometimes VERY frustrating and confusing trying to figure out the unique logon path for individual library sites. Corporations have to build in a "fire wall" to protect the corporation from hackers breaking into the company's internal databases via the Internet. So, there are unique logon paths for each corporate library site. The instructors teaching Internet skills outside the corporation aren't able to provide that type of logon instruction because it's set up differently for each corporation. I'm frustrated because I don't have enough time to browse through the Internet to find out new sources of information. Internet is growing so fast, that it's difficult to keep up with all the new Internet resources. I need to stop the world until I learn all the in's and out's of the Internet!!!

**Suggestions or Comments about the Future of the Internet  
in Special Libraries**

In spite of any frustrations, these librarians acknowledge that the Internet might be the most important

phenomenon of the information age. If they want to maintain an edge as information providers, they must become expert navigators. The importance of maintaining a leadership role in the 21st century is apparent in comments like: "I think it's critical that we communicate to other members who aren't using it, how important it is that they push to get access from their company and that they need to be the pioneers and leaders of this great information resource in their organizations or they will become less relevant to information delivery." And, in the words of another respondent: "I hope Information Specialists will aggressively move forward to educate themselves about the Internet. They need to learn to use it first. After they understand it, they need to work to influence social and government policy regarding the development of NII and other projects."

It would be useful to list a few other quotes from these professionals to show how deeply they feel the need to learn, teach and use this great resource:

Internet gives librarians the opportunity to expand their role in training/coaching, and their expertise is needed to help organize the resources available on the Internet. Librarians are starting to use Mosaic to create home pages for their clientele. Librarians have the skills and talent to organize the information on the Internet to make it understandable to our clientele. The impact of Internet on special libraries is going to be as significant as automation was to special libraries back in the early 1960's. It's a paradigm shift!!!"

I see the Internet as a challenge and an opportunity to broaden the horizon...not just a threat to my existence. I see it as a means to the end that is my primary goal - providing my users/clients with the best, most accurate information, when they need it.

I think we all need to get on it and become expert, or others in the organization will and we will have lost the initiative.

I would advise all special librarians to join the Internet if they have not done so. Take as many classes and hands on training opportunities as you can. You as a librarian are at a disadvantage if you are not "Net Literate" and the parade will pass you by.

There are voices of warning:

If librarians don't get themselves into the business of using Internet resources effectively, educating internal customers on how to use Internet resources, and providing access and tools for the effective use of information (including Internet resources), they will be letting a major piece of future business go to someone else.

Then there are others who are supremely optimistic and confident:

Special librarians will definitely have a role. We're going to take a useful resource and make it even more useful by guiding users through the maze. "Intelligent" front ends may evolve, but I feel you are still are going to need a human being who knows his/her users information needs as an interface/filter between the tons of "information" existing in cyberspace and the information that will really be useful to her users/clients.

Reading through the comments made by the respondents of the survey, one could not but feel the sense of urgency and enthusiasm when even the most cautious individuals agree that not to learn and incorporate the Internet in the daily routine of the information specialists would be short sighted at best and may prove to be professional suicide.

It is in the interest of the profession to convince corporate top management that in order to sift through the chaos that one encounters on the Internet, to find the nuggets of valuable information, they need the expert help and advice of professional cyber-librarians.

## Chapter 5

### SUMMARY AND CONCLUSIONS

This study began by using Ladner and Tillman's 1991 study, *"Internet and Special Librarians: Use, Training and the Future"*, as the foundation for further exploration into the ways that the Internet was being viewed and used by special librarians. While the population for the first study consisted largely of academic librarians, the focus of the present study are special librarians working in corporate settings.

Corporate librarians on their way to becoming "cyber-librarians" are now busy learning how to integrate the wealth of resources available on the Internet in their daily routines. They have to solve the problems of getting connected, learn all about the capabilities and the navigational tools available on the Internet, train their staff and clients in the use of these tools, and justify the added value to their parent organizations.

Ladner and Tillman reported that fully 62% of respondents had two or more years' Internet experience and they found that science-technology librarians were the most experienced among that group. Only 9% of that population were corporate librarians. The reason for such small

representation might have been that the Internet was generally the preserve of research labs, universities and government agencies until 1991. It is significant that more than half the special librarians who participated in the 1994 survey have been using the Internet for two years or less. This is a clear indication of growth in the number of corporate librarians accessing the Internet since it was opened to the business community in 1991. It would be interesting to observe the growth in the number of corporate librarians on the Internet as ventures like CommerceNet start wooing business customers.

Sharyn Ladner and Hope Tillman also reported that the Internet was used for searching remote databases, file transfer and electronic bulletin boards, etc., with E-Mail being the most widely used function closely followed by listservs and other electronic forums like bulletin boards and e-journals.

The results of this thesis survey prove that E-Mail is still the most widely used function. All the librarians surveyed use E-Mail, and for many it is the tool of choice for communicating with others in the library, in the company, and with colleagues, patrons and vendors worldwide. Listservs and discussion groups accessed through E-Mail are a wonderful platform for exchange of ideas and a very easy way to keep abreast with the latest



developments in the profession. Sometimes it is easy to join too many groups or a group with a lot of meaningless activity. Here a librarian has to use her/his judgement and organize material to save and use what is good and discard the rest. This process could be time consuming, but like all computer related activities, proficiency with technology increases efficiency and can ultimately prove to save both time and money.

Other widely used capabilities listed were Telnet and Gopher which allow these librarians to access a large bank of databases and library catalogs globally. The use of Mosaic, a World Wide Web (WWW) graphical browser, by 44% of respondents (with half of them claiming to be heavy users) is very exciting. This is especially so given the fact that Mosaic was only introduced for Macintosh and Microsoft Windows platforms in November 1993. Once one has mastered the technique and knows enough about the sites to access the right information, it is really a very fast way to access, format and deliver the document to a client's computer.

Many people considered the Internet a time sink. They must remember the time when searching the commercial databases was considered time consuming, and how with the right amount of formal training and support from the database providers, these librarians became expert

searchers and users. The same kind of expertise will emerge over time with adequate Internet training.

On the issues of education and training all but one librarian said that they taught themselves how to use the Internet. Ladner and Tillman's study also indicated that most librarians were self-taught or used a fellow worker's expertise to learn the navigational techniques. In the present study a large number of respondents said that they had a fellow worker or user show them how to navigate the Internet. Many had taken seminars or classes offered by professional providers of the Internet and professional associations (ALA and SLA). Books on the Internet, articles in professional journals and documents available on the Internet proved to be a fertile ground for information. Only a couple of people listed library schools as their source of training.

In the future this picture is going to change. When the early users of the Internet did not have any formal training available to them, they taught themselves by digging around and passed the knowledge on to their co-workers and patrons. Many of these early users are still busy training others within their organizations. On the other hand, now there is a new class of knowledgeable Internet trainers who run information based businesses that provide Internet training. There are also Online training

opportunities available to those with an E-Mail account. In the future, it is a safe prediction that there will be more formal classroom training available at library schools, seminars and workshops offered by professional associations and through professional trainers. Some of the 1991 study respondents, who did not see the need for formal training, might change their minds based on the incredible growth in the last three years of tools to find resources on the Internet.

In the prevailing climate of tight budgets and cost cutting, librarians have found a treasure trove on the Internet that is free and easy to manipulate if they only knew where to look. Many documents and software packages for which businesses pay top dollars, are available free on the Internet. Some material may be copyright and could not be used "for profit" but a librarian could easily find out that kind of information. According to one librarian: "The Internet provides access to information that has been inaccessible to some librarians. It provides the opportunity for librarians to learn new things and become the leaders in the race to provide quality, value-added information to our customers."

All around us corporations are being downsized, and cost cutting measures are affecting many corporate libraries. Corporate librarians always had to justify

their existence by providing value added services to the parent company. The value of the information center has to be made obvious to the highest echelons of the company, and corporate librarians have to become key players in the decision making loop. One Southern California librarian sees the Internet as a potential threat to the library services because of "management's mistaken impression that Internet alleviates the need for libraries and librarians." Another librarian is not so pessimistic and believes that "special librarians will definitely have a role. We are going to take a useful resource and make it even more useful by guiding users through the maze." It is the job of special librarians to prove to top management that their expertise is necessary to effectively harness the rich resources available on the Internet.

Some librarians found the Internet too disorganized, sites too unreliable, sifting through vast amounts of irrelevant information in order to access only a few good things too time consuming, and the security concerns of businesses too overwhelming. But each one agreed that despite drawbacks and frustrations they have to become network literate if they want to be effective in their role of information providers to their parent organizations. To quote a few: "I think we all need to get on it and become expert, or others in the organization will, and we will

have lost the initiative." "I would advise all special librarians to join the Internet if they have not done so. Take as many classes and hands on training opportunities as you can, You as a librarian are at a disadvantage if you are not 'Net Literate' and the parade will pass you by."

As the survey results are reviewed, there is every reason to believe that these Special Librarians are well aware of the unprecedented opportunity provided by the Internet to explore the new frontiers of "cyber-space" and emerge as expert "Cyber-Librarians". They are integrating the Internet resources in their reference and other routine library work while training their patrons and other information professionals. They also want to send a message to other librarians who are lagging behind to make time in their busy schedules to learn this tool and incorporate it in their work day. In the words of one corporate librarian: "Librarians should recognize that the Internet is an exciting new reference tool. Internet is here NOW, it's extremely popular, and it's here to stay. Librarians need to seize this opportunity and become Internet experts NOW!!!"

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APPENDIX

Survey Instrument

March 1994

Dear Special Librarians:

Thank you for volunteering to participate in this user survey to study the use of Internet by special librarians. I am a graduate student in the MLS program of SJSU at Cal State Fullerton CA. My Thesis Topic, Internet in the Business World: Changing Special Librarians into "Cyber-Librarians", aims at studying the use and impact of Internet in the corporate America and its information providers.

Complaints about the research may be presented to the department Chair Dr. Sutton at 408-924-2490. Questions or complaints about research, subject rights, or research related injury may be presented to Serena Stanford, Ph.D., Associate Academic Vice President for Graduate Studies and Research at 408-924-2480. If you are interested in getting a copy of the final results of the survey please indicate it on the returned survey and make sure that I have your e-mail address. Please return the completed survey to my e-mail address: xvsingh@fullerton.edu. or my mailing address: 676 Fairmont Dr, Claremont, CA 91711 by April 30, 1994. You may call me at (909) 624-1436 if there are any questions.

Thank you very much for your participation.

Sincerely,

Vinita R. Singh

=====

**SURVEY**

NAME:

TITLE:

E-MAIL ADDRESS:

TELEPHONE:

You may use my name and quote me directly. \_\_\_ Y. \_\_\_ N.  
You may quote me but may not identify me. \_\_\_ Y. \_\_\_ N.  
You may use the name of my organization. \_\_\_ Y. \_\_\_ N.  
Send me final result of the survey. \_\_\_ Y. \_\_\_ N.

**QUESTIONNAIRE**

- 1) PLACE AN "X" NEXT TO THE CATEGORY THAT BEST DESCRIBES YOUR ORGANIZATION.
- a. \_\_\_\_\_ Commercial for-profit
  - b. \_\_\_\_\_ Private non-profit
  - c. \_\_\_\_\_ Government
  - d. \_\_\_\_\_ Academic library
  - e. \_\_\_\_\_ Public library
  - f. Other (specify): \_\_\_\_\_
- 2) HOW LONG HAVE YOU BEEN USING THE INTERNET?  
\_\_\_\_\_ LESS THAN A YEAR      \_\_\_\_\_ NUMBER OF YEARS
- 3) RATE FROM 0 TO 2 YOUR USE OF EACH OF THE FOLLOWING INTERNET CAPABILITIES AND NAVIGATION TOOLS:  
(2 = HEAVY USE; 1 = LIGHT USE; AND 0 = NEVER USED)
- a. \_\_\_\_\_ E-MAIL
  - b. \_\_\_\_\_ Telnet (log in to remote site computers)
  - c. \_\_\_\_\_ FTP (file transfer protocol)
  - d. \_\_\_\_\_ CHAT/TALK (real-time interactive communication)
  - e. \_\_\_\_\_ LISTSERVS, DISCUSSION GROUPS (Computer fora)
  - f. \_\_\_\_\_ Archie
  - g. \_\_\_\_\_ Veronica
  - h. \_\_\_\_\_ Gopher
  - i. \_\_\_\_\_ WAIS
  - j. \_\_\_\_\_ WWW
  - k. \_\_\_\_\_ Hytelnet
  - l. \_\_\_\_\_ Mosaic

4) DO YOU USE THESE INTERNET CAPABILITIES AND NAVIGATION TOOLS AT YOUR WORK TO:

- a) Communicate with colleagues. \_\_\_Y. \_\_\_N.
- b) Communicate with others in the organization. \_\_\_Y. \_\_\_N.
- c) Communicate with outsiders. \_\_\_Y. \_\_\_N.
- d) Do reference work. \_\_\_Y. \_\_\_N.
- e) Do inter-library loans. \_\_\_Y. \_\_\_N.
- f) Other. (describe briefly)

5) INTERNET TRAINING: HOW DID YOU LEARN TO USE INTERNET (check all that apply)

- a. \_\_\_ I taught myself.
- b. \_\_\_ A fellow worker or user taught me informally.
- c. \_\_\_ I attended a class or participated in other formal training.
- d. \_\_\_ I learned in a library school or other academic setting.
- e. \_\_\_ Other. (describe briefly)

6) WHO PAYS FOR THE SERVICE IN YOUR ORGANIZATION?

- a. \_\_\_ library
- b. \_\_\_ parent Organization
- c. \_\_\_ don't know who pays for use
- d. \_\_\_ other (describe briefly)

7) Are you involved in training others in your library and/or parent organization in the use of Internet?  
\_\_\_Y. \_\_\_N.

8) Who, in your view, should provide the Internet training?

- a) professional associations. \_\_\_Y. \_\_\_N.
- b) library schools. \_\_\_Y. \_\_\_N.
- c) parent organizations. \_\_\_Y. \_\_\_N.
- d) other.

EVALUATION OF INTERNET INTERFACE:

9) Based on your experience, what do you perceive as major advantages or opportunities for special librarians in using Internet? (please describe)

10) Based on your experience, what do you perceive as major disadvantage or frustrations for special librarians in using Internet? (please describe)

11) Finally, Do you have suggestions or comments about the future of Internet for the special librarians?

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY!

(This survey is based on the survey instrument in "The Internet and Special Librarians: Use, Training and the Future" c.1993, by Sharyn J. Ladner and Hope N. Tillman)