

Elizabeth A. Watson. Going Fishing: Serendipity in Library and Information Science. A Master's paper for the M.S. in L.S. degree. April, 2008. 76 pages. Advisor: Gary Marchionini

This research examined the concept of serendipity within the context of library and information science. Serendipity was defined as a happy accident in which an information seeker unexpectedly stumbled across relevant information. This research addressed the following questions: What information seeking strategies do experienced searchers employ in order to provide opportunities for the serendipitous discovery of information? The purpose of this research was to study the experiences and ideas of experienced information seekers in order to better understand and provide opportunities for serendipitous discoveries. To address this research question and purpose, I conducted qualitative interviews with five faculty members of the School of Information and Library Science at the University of North Carolina - Chapel Hill and six public librarians. The interviews were audiotaped, transcribed, and analyzed. The major findings of this study were that experienced searchers defined serendipity as an instance that is both unplanned and useful, and that the participants overwhelmingly did not attach a stigma to serendipity. The participants identified many sources of serendipity, including shelf-browsing and co-workers, made suggestions for improving serendipity in the physical library, particularly increasing displays and facing books out, and they also made suggestions for improving serendipity in information retrieval systems, particularly attaching some type of recommender system to the library catalog.

#### Headings:

Serendipity -- Experienced searchers  
Serendipity -- Public libraries  
Serendipity -- Library school faculty  
Information retrieval systems - Serendipity  
Interviews -- Serendipity

GOING FISHING: SERENDIPITY IN  
LIBRARY AND INFORMATION SCIENCE

by  
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A Master's paper submitted to the faculty  
of the School of Information and Library Science  
of the University of North Carolina at Chapel Hill  
in partial fulfillment of the requirements  
for the degree of Master of Science in  
Library Science.

Chapel Hill, North Carolina

April 2008

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## Table of Contents

Introduction .....	2
Definition of Serendipity	
Problem	
Research Question and Purpose of this Research	
Literature Review.....	5
Introduction	
Two Main Obstacles to Serendipity	
Approaches to Serendipity	
Browsing	
The Media, Personal Networks, and Serendipity	
Conclusion of Literature Review	
Methods.....	17
Justification of Methods	
Sample, Population, and Sampling Technique	
Recruitment of Subjects	
Inducement for Participation and any Costs Borne by Subjects	
Description of the Data Collection Instruments and Materials	
Study Procedures	
Ethical Issues	
Data Analysis	
Advantages and Disadvantages of this Method	
Results.....	26
Interviewees' Definitions of Serendipity	
The Stigma Attached to Serendipity	
Sources of Serendipity	
Suggestions for Nurturing Serendipity in the Physical Library	
Suggestions for Improving Serendipity in Information Retrieval Systems Such as Databases, OPACs (Online Public Access Catalogs), and Internet Search Engines	
Importance of Study.....	60
General Research Area and Situation of the Topic of this Research Within that Area	
Importance, Implications of This Research and Who Would be Interested	
Summary and Conclusion.....	64
References .....	67
Appendix A: Recruitment E-mail.....	70
Appendix B: Informed Consent Form .....	71
Appendix C: Serendipity Interview Questions...	73

## Introduction

Besides rolling pleasantly off the tongue, serendipity is a word with a rich meaning and history. As an anonymous speaker so humorously put it, "Serendipity is looking in a haystack for a needle and finding the farmer's daughter" (qtd in Cooksey 24); serendipity means a happy accident of some sort. As for the entomological history of the word, Horace Walpole is given credit for coining the phrase and introducing the word "serendipity" into the English language. He first uses the word serendipity when writing to Sir Horace Mann in 1754 about a children's story called "The Three Princes of Serendip." Walpole writes "as their highnesses traveled, they were always making discoveries, by accidents and sagacity of things which they were not in quest of" (Remer 20). Walpole also provides an example from the fairy tale to illustrate the concept for Mann: "For instance, one of them (speaking of the princes) discovered a mule, blind of the right eye, had traveled the same road lately, because the grass was eaten only on the left side, where it was worse than on the right - now do you understand 'serendipity'?" (qtd in Remer 19).

### *Definition of Serendipity*

*The Oxford English Dictionary* defines serendipity as "the faculty of making happy and unexpected discoveries by accident" (qtd in Foster and Ford 321). In this study, I define serendipity as a happy accident. The word serendipity carries positive connotations and conveys the ideas of chance, luck, chaos, uncertainty, and surprise. In the context of library and information science, serendipity means unexpectedly stumbling across useful and valuable information. Such information may meet an information need or capture the user's interest and imagination. To use a fishing

metaphor, serendipitously encountering information is like a fisherman catching a fish and finding a diamond inside the fish's stomach when he guts it.

### *Problem*

The problem that this research addressed was that serendipity is a phenomenon that is not well understood and by definition is unpredictable. Sandra Erdelez explains, "Because information encountering is unexpected, it may be difficult to study it under time and space constraints of an experimental environment" (Erdelez 25). This statement implies that serendipity is not completely understood, and Erdelez highlights one of the difficulties in understanding serendipity. Nevertheless, serendipitous information encounters are extremely useful when they occur. In her article "Discovered by Chance: The Role of Incidental Information Acquisition in an Ecological Model of Information Use," Kristy Williamson provides examples of how the elderly Australians she studied benefited from serendipitous information encounters. As an example, one subject called a friend to inquire about the damage done by a recent storm and make plans to meet for lunch. In the same conversation, she ended up learning from her friend about an effective treatment for migraine headaches (Williamson 29). This example involves the use of a personal network. The literature establishes that personal networks play a role in serendipitous discoveries, but the relationship between the two has not yet been fully explored. This means serendipity is not completely understood. This problem of understanding serendipity was addressed by asking experienced information seekers to provide their own definitions of serendipity. I also asked them to share instances in which they benefited from serendipitous discoveries.

The literature suggests that, even though serendipity cannot be predicted, information professionals and information seekers can create opportunities for serendipitous discoveries to occur. For example, in *Accessing and Browsing Information and Communication*, Ronald E. Rice, Maureen McCreddie, and Shan-Ju L Chang offer “monitoring browsing” as a strategy for creating opportunities for serendipitous discoveries to occur. When “monitoring browsing,” an information seeker will regularly monitor an information source such as a professional journal, RSS feed, or e-mail ListServ in hopes of serendipitously encountering useful information. The problem is identifying such strategies for nurturing serendipity. This problem was addressed by asking the experienced searchers to suggest strategies for creating opportunities for serendipitous discoveries in the physical library and in information retrieval systems.

#### *Research Question and Purpose of this Research*

My research question was: What information seeking strategies do experienced searchers employ in order to provide opportunities for the serendipitous discovery of information? The purpose of this research was to study the experiences and ideas of experienced information seekers in order to better understand and provide opportunities for serendipitous discoveries. More specifically, I wanted to gain insight into: 1) What experienced searchers thought serendipity was and how they actively engaged in it; 2) How experienced searchers received or took advantage of serendipity; and 3) Suggestions experienced searchers might have for improving serendipity in libraries and other places. This purpose led me to conduct qualitative interviews with eleven experienced searchers. I interviewed five faculty members

from the School of Information and Library Science at the University of North Carolina -Chapel Hill, two librarians from the Chapel Hill Public Library, and four librarians from the Durham County Public Library.

## **Literature Review**

### *Introduction*

The body of literature that relates to the concept of serendipity touched on many areas of interest within the field of library and information science. I examined a number of related topics in order to explore serendipity and answer the question: What information seeking strategies did experienced searchers employ in order to provide opportunities for the serendipitous discovery of information? Some of these related topics included the two main obstacles to serendipity - finding an overwhelming amount of relevant information and filtering out useless information. Other related topics included different approaches to serendipity, browsing, the media, and personal networks.

### *Two Main Obstacles to Serendipity*

A key piece of literature on serendipity was Allen Foster and Nigel Ford's article, "Serendipity and Information Seeking: An Empirical Study," which is important because it raises some good questions about serendipity and also provides a unique framework for thinking about serendipity. The research questions this study focuses on are 1) To what extent do inter-disciplinary academic researchers experience serendipity in their information seeking?; 2) Are there different types and levels of serendipity?; 3. To what extent is serendipity perceived as a phenomenon that can in any way be consciously influenced or controlled?; and 4) If so, then using

what type of strategy? Foster and Ford bring up the idea of the "prepared mind" that reverberates throughout much of the body of literature on the topic of serendipity (Foster and Ford 322), and describe their study and interviews with "41 researchers from a range of academic backgrounds, all of whom were working on interdisciplinary research topics" (Foster and Ford 329). In this article, the authors also provide their own framework for categorizing instances of serendipity. In terms of the impact of serendipity, Foster and Ford conclude that they can divide instances of serendipity into information encounters that have the effect of "reinforcing or strengthening the researcher's existing problem, conception, or solution" and cases in which information encounters have the effect of "taking the researcher in a new direction, in which the problem or solution is re-configured in some way" (Foster and Ford 320).

As for the nature of these encounters, Foster and Ford divide them into instances in which "the unexpected finding of information the *existence* and/or *location* of which was unexpected, rather than the value" and instances in which "the unexpected finding of information that also proved to be of unexpected value" (Foster and Ford 320). These divisions are the framework that Foster and Ford use to define and analyze instances of serendipity, which informs this research by helping me to define and analyze the concept of serendipity. In regard to their research questions, these authors conclude that inter-disciplinary researchers experience serendipity to a significant extent; there are different types and levels of serendipity as described in the framework above; and serendipity is not perceived as a phenomenon that can be directly controlled, but it is believed that "certain attitudes and strategic decisions

may affect if not the occurrence, then at least the exploitation of serendipitous information encounters" (Foster and Ford 336). Also, Foster and Ford's decision to study inter-disciplinary researchers is significant because, by the very nature of their research, these researchers think, search, and browse broadly, which means they are likely to experience serendipity. However, it also means that they are likely to encounter too much relevant material. To use the previous metaphor, they will catch more fish than they can eat.

In their conference paper, "Anti-Serendipity: Finding Useless Documents and Similar Documents," James W. Cooper and John M. Prager, explore the other obstacle encountered when browsing or searching broadly - the retrieval of useless or irrelevant documents - it is like catching an old boot or other piece of debris while fishing. Cooper and Prager address the problem of increasing the precision of searches and filtering out useless documents in this piece. The authors describe how their "work in the area of term-recognition and sentence-based summarization can be used to filter document lists that we return from searches. We can thus remove or downgrade the ranking of some documents that have limited utility even though they may match many of the search terms fairly accurately" (Cooper and Prager 1). They studied the software suite of text analysis tools called "The Talent Toolkit" to see how well it could filter useless documents out of search results. The conclusion that Cooper and Prager draw is that they can identify five criteria that will allow them to predict which documents are useless and filter them out. These five predictors are "document length, number of high IQ terms found, sum of salience of identified summary sentences, count of high *tf\*idf* terms, and number of terms participating in

named or unnamed relations" (Cooper and Prager 8). Cooper and Prager also successfully use this software to identify documents similar to a document previously deemed relevant. This conference paper informs my research because it presents an excellent contrast and juxtaposition to the model of information seeking that I present- it helped to define serendipity by showing what serendipity is not. The type of precision searching that Cooper and Prager envision is the opposite of the broad, browsing, serendipitous, somewhat chaotic searching that I explored. Neither type of search is superior to the other because both types will allow users to access relevant documents they would not otherwise have found.

#### *Approaches to Serendipity*

Daniel Liestman's article, "Chance in the Midst of Deign: Approaches to Library Research Serendipity," proposes six different approaches to serendipity. Liestman does not attempt to solve a problem, but rather to better understand the phenomenon that is serendipity. The first approach is coincidence; coincidence "presupposes that the overarching factor in serendipitous discovery is random luck - plain and simple" (Liestman 526). Liestman refers to the second approach as "prevenient grace," which means that, "in the library, users are often unaware that they benefit from efforts performed on their behalf by those who are unseen or unknown" (Liestman 526). Liestman goes on to say, "The prevenient grace approach assumes that researchers, wittingly or unwittingly, are led to serendipitous discovery through the cataloging, classification, and organization of information" (Liestman 526). The third approach Liestman takes is synchronicity which means "simultaneous occurrence of two meaningfully but not casually connected events"

(qtd in Liestman 527). In other words, synchronicity involves being in the right place at the right time. Perseverance is the fourth approach: "clearly, there is a positive correlation between the chance of success of finding an item in a given location and the degree of time and effort expended in searching a given area" (Liestman 528). This approach indicates that the more motivated an information seeker is, the more likely he or she will experience a serendipitous discovery. Liestman refers to the fifth approach as *altamirage*, which means that some information seekers are more likely to experience serendipitous discoveries than others because of certain characteristics these searchers possess. He writes, "This model is predicated on the facility of the researcher for encountering serendipity as the result of distinctively personal habits, character, knowledge, or other individualized characteristics" (Liestman 529). The final approach is *sagacity*, which "requires intuition and skill on the part of the researcher, but not the numbing thoroughness of perseverance or *altamirage's* specialization" (Liestman 530). In other words, the more one fishes, the better chance of catching a fish and the better chance of catching a big one! This article informs my research by demonstrating that serendipity is a worthwhile topic of study and helps to define the concept by delineating the various types of serendipity and illustrating the full spectrum of serendipitous experiences.

"Socratic Inquiry and the Pedagogy of Reference: Serendipity in Information Seeking," is a conference paper in which Jessica George uses the work of the Greek philosopher, Socrates, as another approach to the topic of serendipity. The problem that George, as a reference librarian at an academic library, addresses is how to best nurture serendipitous discoveries among the population of undergraduates that she

serves and how to approach "serendipity as a viable and deliberate strategy for the facilitation of information retrieval." The conclusions that George draws regarding this problem are: 1) Academic reference librarians sometimes have a tendency to push the undergraduate students that they work with into narrowing their topics too soon, leading to "false focus"; and 2) Reference librarians need to become "Socratic educators" by asking their undergraduate students broad, open questions and having dialogs with the students which are aimed at discovering truth in whatever form it may take, thereby leading to serendipitous discoveries (George 383-384). George's article informs my research by reaffirming the value of serendipity and by putting a name - Socratic inquiry - to the type of mindset that encourages serendipity.

Experienced searchers might also use Socratic inquiry to create opportunities for serendipitous discoveries.

David Bawden offers another framework for analyzing happy accidents in his article "Information Systems and the Stimulation of Creativity." The problem that Bawden focuses on is the nature of creativity and stimulating creativity in the context of information systems. Bawden concludes that chance plays a role in creativity.

Bawden offers a list of the four types of chance information seeking:

Chance 1: 'Blind luck,' unattributable to any actions or qualities of the recipient

Chance 2: 'Happy accidents,' when unconnected events impinge upon the matter in hand. Favored by exposure to seemingly unconnected facts and experiences.

Chance 3: 'Prepared mind,' 'Pasteur principle,' New relationships are perceived because of exposure to many facts related to the problem at hand.

Chance 4: Chance favoring the particular individual because of distinctive knowledge, interests, or lifestyle, seemingly far removed from the problem at hand (Bawden 205).

This list and Bawden's thoughts about chance inform my research because it provides a framework for thinking about chance. Chance is part of the very nature and definition of serendipity. Bawden's article also informs my research because the experiences of many experienced searchers fit into the categories Bawden delineated.

### *Browsing*

Browsing is one method of inducing serendipity and is a theme that reverberates throughout the literature relating to serendipity. As an example, Rice, McCreadie, and Chang address the problem of identifying different types of browsing. They conclude that there are many types of browsing - situational browsing, systematic browsing, and monitoring browsing are among those identified by these researchers. Situational browsing is "characterized by examining other unknown items during the process of locating a specific item, once the general area containing the item is identified" (Rice et al 266). Systematic browsing involves methodically going through "citations under various descriptors or subject headings" (Rice et al 272). Monitoring browsing occurs when the information seeker regularly scans or monitors a particular information source to keep himself or herself up to date on the most current information (Rice et al 278). Glancing through the newspaper each day can be an example of monitoring browsing. This research informs my research because all these types of browsing are conducive to serendipitous information encountering, and I suspected that experienced searchers use browsing to create opportunities for serendipitous discoveries.

Thomas Mann's *The Oxford Guide to Library Research* also contains a section on serendipity and browsing. The problem that Mann focuses on in this chapter is how best to physically arrange materials in the library to facilitate browsing and serendipity. Mann concludes that libraries could potentially cut the expenditures in terms of the time, effort, and money spent on cataloging if books were arranged on shelves according to date of acquisition or height of their spine, yet libraries continue to invest in arranging the books by classifying them according to content using the Library of Congress Classification system or the Dewey Decimal System and co-locating materials on the same subject (Mann 47). According to Mann, libraries continue to use this system because it allows for browsing of the collection and "a classified arrangement of materials... enables you to simply *recognize* relevant works you could not specify in advance. It allows for - indeed positively encourages - *discovery by serendipity*" (Mann 48). This chapter informs my research because it made me think about how the physical arrangement of the library could nurture serendipity. This curiosity stemmed from considering some of the possible methods of arranging materials in the library which Mann claims would not be effective. For example, he claims that shelving books according to date of acquisition or height of their spine would not encourage serendipity.

In "An Essay on Browsing," Marilyn M. Levine sees browsing as involving the senses - looking at the book covers, touching the books, and smelling the ink - and calls it "a sensory intake of information." The problem that Levine focuses on is describing the nature of browsing. She concludes that there are three levels of browsing: "1) Random browsing through an unknown collection; 2) Quasi-random

browsing through an area of a building or collection; and 3) Semi-deterministically browsing in a limited physical area or bounded intellectual area" (Levine 35).

Levine's article informs my research because browsing is conducive to serendipitous information encountering. I was curious to see if any of the experiences of the experienced searchers that I interviewed fit into any of the three levels Levine describes, and they did. Her focus on the senses and the physical building or collection informed my research because my research into serendipity does have implications for the layout of the physical library collection.

#### *The Media, Personal Networks, and Serendipity*

Several studies explore the concept of serendipity and chance in the context of information seeking and retrieval and conclude that exposure to the media and personal networks can spur serendipitous discovery. One such study was performed by Kristy Williamson and is detailed in her article "Discovered by Chance: The Role of Incidental Information Acquisition in an Ecological Model of Information Use." The main problem and theme that Williamson addresses is the information seeking behaviors of older adults living in Australia and the role that "incidental information acquisition" plays in their lives. Her main conclusions are that her subjects routinely exposed themselves to the media and to their own personal networks with the hopes of serendipitously encountering information. Williams discovered that "with intimate personal networks (family and friends), wider personal networks (clubs, churches, and voluntary organizations), and the mass media (newspapers, television, radio, and magazines) both purposeful information seeking and incidental information acquisition took place" (Williamson 35). However, it must be noted that her decision

to study elderly Australians does somewhat limit the generalizability of her study.

Williamson's article informs my research because the information seeking experts serving as subjects for my study also regularly exposed themselves to the media and to their personal networks in hopes of serendipitously encountering information.

Williamson's study impacts my research because it aroused my curiosity about how subscriptions to media sources such as professional journals, RSS feeds, and e-mail listservs provided opportunities for serendipitous discoveries.

In "People, Places, and Questions: An Investigation of the Everyday Life Information-Seeking Behaviors of Urban Young Adults," Denise E. Agosto and Sandra Hughes-Hassell study twenty-seven teenagers who are involved in the Free Library of Philadelphia's Teen Leadership Program or the Boys and Girls Clubs of Philadelphia. The researchers asked the teens to keep activity logs and conducted group interviews with these young men and women. The research questions they are trying to answer are: 1) What types of information do urban teens seek in their everyday lives?; 2) What information media do urban youth favor?; and 3) What sources of information do urban young adults favor when seeking everyday life information? According to the data that Agosto and Hughes-Hassell were able to gather, "Television, school, telephone, Internet/Web, and newspapers appear as the most frequent sources for participant information gathering" (Agosto and Hughes-Hassell 146). As far as people who the teens in this study turn to when they needed information "friends, teachers/school employees, parents, and siblings were by far the most frequently consulted" (Agosto and Hughes-Hassell 147). Agosto and Hughes-Hassell also report on the questions the teens sought answers to: "The types of

questions varied more widely, with school (homework related), the day/time of an event, meal selection, and shopping/product information topping the list" (Agosto and Hughes-Hassell 147-148). Similarly to the elderly subjects in Australia that Williamson studied, the urban teens in Philadelphia also turn to the mass media (television, newspapers, radio, and magazines) and personal networks to meet their information needs (Agosto and Hughes-Hassell 147). The teens in this study also regularly expose themselves to the media in the hopes of serendipitously encountering information. The people that the teens turn to when they need information - especially friends and teachers - are part of their personal networks. Agosto and Hughes-Hassell's work informed mine because it reinforced the idea that information seekers use the media and personal networks as potential sources of serendipitous information encountering.

Another study that deals with this topic is written by Catherine Sheldrick Ross and is entitled "Finding Without Seeking: The Information Encounter in the Context of Reading for Pleasure." The main problems and themes that Ross addresses are: "1) How readers choose books to read for pleasure; and 2) Books that have made a significant difference in readers' lives" (Ross 783). Ross' major findings related to this problem and theme are that, similarly to Williamson's subjects, Ross' subjects are also influenced by the media, so stumbling across a book review or discussion in the media can sometimes lead to a serendipitous discovery. Ross' subjects, like Williamson's, also have personal networks of family, friends, and acquaintances who represent sources of information and serendipitously recommend books. Ross' research informs my question because it seems that her subjects sometimes feel

overwhelmed with possibilities of books to read for pleasure, so they turn to the media, their personal networks, and even to the "just returned" pile of books to help them sort through the huge range of possibilities and select a good read. Personal networks play a large role in serendipitously encountering pleasure reading materials. Therefore, I suspected that experienced searchers would use personal networks as a way to provide opportunities for the serendipitous discovery of information, and I wanted to explore how experienced searchers use personal networks as sources of serendipitous information discovery as well as the role personal networks play in either curbing information overload or adding to it.

#### *Conclusion of Literature Review*

The main things that I found in the literature are lots of stories of serendipitous discoveries, some of the contexts in which serendipity can play a role, some of the obstacles that hinder serendipitous discovery, and a connection between serendipity and browsing - browsing is one of the best ways to induce serendipity. Some contexts in which serendipity can be valuable included selecting pleasure reading material, answering undergraduate students' reference questions, and considering the physical layout of the library. The main ways in which the literature informs my research are by helping to define serendipity, identifying the types of serendipity and browsing, reinforcing the importance of studying serendipity, identifying personal networks and browsing as areas relating to the topic of serendipity, and providing frameworks for thinking about serendipity. The two main obstacles to serendipitous discovery revealed by the literature - finding an

overwhelming amount of relevant information and filtering out useless information - are the gaps that have lead to my research problem.

## **Methods**

I selected qualitative interviews as my research method. I audiotaped the interviews, transcribed them, coded the transcripts, and analyzed them. Earl Babbie provides a solid definition of qualitative interviewing: "contrasted with survey interviewing, the qualitative interview is based on a set of topics to be discussed in depth rather than based on the use of standardized questions" (Babbie 300). Steinar Kvale also defines qualitative interviewing in his book, Interviews: An Introduction to Qualitative Research Interviewing. Kvale claims that a qualitative interview "aims at obtaining nuanced descriptions of the interviewee's life world" (Kvale 32). My own definition of qualitative interviews was that qualitative interviews are planned, structured conversations that seek to obtain data regarding the subjective views and experiences of the interviewees. I had a list of topics and questions to ask my subjects. However, I was not adamant that the questions be asked with the exact wording and in the exact order specified in Appendix C.

### *Justification of Methods*

The best way to discover what information seeking strategies experienced searchers employ in order to provide opportunities for the serendipitous discovery of information was to ask the experienced searchers directly. I wanted to describe and understand the world and experiences of experienced searchers, so qualitative interviews were appropriate. Qualitative interviews provided me with more in-depth information about my subjects than a survey would. Also, qualitative interviews were

more flexible than most surveys. In this study, depth and flexibility were more important to me than standardization. Therefore, I elected to conduct qualitative interviews.

### *Sample, Population, and Sampling Technique*

The population that I was interested in was all experienced searchers. In this study, I defined experienced searchers in the same way that B.K. Oldroyd does in "Study of Strategies Used in Online Searching 5: Differences Between the Experienced and Inexperienced Searcher," experienced searchers are people "who are fully trained and who have specialist competence. Their skills are judged to produce comprehensive answers for the end-user in the most economical way" (Oldroyd 233). I narrowed that population down to faculty members who teach in library schools and librarians employed in public libraries. I narrowed that population down even further to faculty members currently teaching at the School of Information and Library Science at the University of North Carolina - Chapel Hill and librarians currently employed by the Chapel Hill Public Library and the Durham County Public Library. I interviewed five faculty members and six public librarians. I selected these eleven subjects based on my previous acquaintance with them. This was a non-probability sampling technique. This was also convenience sampling because I selected subjects who were readily available to me. This was also purposeful sampling because I purposefully selected subjects who I felt confident would be able to be articulate on the subject of serendipity.

### *Recruitment of Subjects*

I personally recruited study participants via sending e-mails directly to UNC faculty members and public librarians I already knew. I obtained the e-mail addresses of potential participants from the SILS website, previous e-mails unrelated to the study, and from Ms. Lisa Dendy, adult services coordinator for the Durham County Public Library. The recruitment e-mail (see Appendix A) described the study and asked if the recipient would be willing to be interviewed as part of the study. E-mails continued to be sent out until five SILS faculty members and six Public Library Librarians were recruited.

*Inducement for Participation and any Costs Borne by Subjects*

Each subject was thanked and given a bar of chocolate upon completion of the interview. However, the subjects' true inducements were supporting a promising library science student and future librarian, allowing others to benefit from their search experiences, as well as having the opportunity to reflect on their experiences and learn more about serendipity, which could benefit participants in their future searches of library collections and databases. There were no costs borne by the subjects other than their time.

*Description of the Data Collection Instruments and Materials*

The data collection instrument was the interview schedule. Prior to conducting the interviews, I constructed an interview schedule (see Appendix D). The interview schedule was strictly followed. The interview schedule consisted of three modules. The first module was entitled "Part 1: What you think serendipity is and how you actively engage in it." The second module was entitled: "Part 2: How you remain open to receiving and taking advantage of serendipity." The third module

was entitled " Part 3: Suggestions for improving serendipity in libraries and other places."

### *Study Procedures*

The interviews of SILS faculty members took place in the individual faculty member's office during that person's office hours or during another appointed time. The interviews with Chapel Hill Public Librarians took place in their offices at the Chapel Hill Public Library. The interviews with Durham County Librarians took place in their offices at the Main Branch or the Parkwood Branch of the Durham County Library. If the subject did not have an office available, another place was arranged in which the interview could be conducted with reasonable expectation of privacy.

On the day of the interview, the subject was briefed about the nature of the study and asked to sign the consent forms (see Appendix C) and given a chocolate bar. I explained the three modules of the interview schedule to the interviewee, and engaged in the conversation with the subject, loosely following the interview schedule. I audiotaped each interview using a digital voice recorder. I took minimal notes during the interviews. Completing each interview took approximately a half hour. Upon completion of the interview, the subject received an offer to view the final version of this paper upon its completion. The interview itself was the only in-person contact with the subjects required for this study

### *Ethical Issues*

The major ethical issue in this study was protecting the confidentiality and privacy of the participants. This was especially important as I did not want anything

the participants said to jeopardize their jobs. In order to protect confidentiality and privacy, the subjects were identified by identification numbers and group indicators only – i.e. Faculty Interviewee 1, Public Library Interviewee 2, etc. The document correlating the names and identification numbers and group indicators was kept on a password-protected, encrypted computer, and never displayed to any person other than me. The consent forms were stored separately from the data and will not list the ID number associated with the data. E-mails from interested participants were only housed on the UNC Webmail server; no local copies existed on any computers. If a phone call was required to arrange a meeting time for the interview, the conversation was not recorded. The phone number was erased from my cell phone call history immediately after the interview had been completed for that subject.

Another possible ethical issue in this study was that the majority of potential subjects and actual participants already knew me. Because of their prior relationship with me, they may have felt coerced into participating or into giving me the answers that they thought I wanted to hear rather than being honest. I dealt with this issue by assuring potential subjects that I would not be hurt or prevented from carrying out this study if they chose not to participate and by asking those who chose to participate to be honest. This ensured that my data was as reliable as possible.

### *Data Analysis*

The data that I collected was the transcripts of the interviews themselves. The eleven people I interviewed were the unit of analysis in this study, and the unit of observation can be considered verbal utterances of any length. To analyze these transcripts, I used Glaser and Strauss' 'grounded theory,' which Philip Burnard

provides an example of in his article, "A Method of Analyzing Interview Transcripts in Qualitative Research." Using 'grounded theory,' meant that I did not begin data analysis with a preconceived category system or code book, but rather allowed the categories to emerge from the data itself. I coded the themes I saw in the transcripts as I read through the transcripts and identified the themes and subthemes. Because my category system was not predetermined, this was considered open coding. In this case, the categories were the themes into which the verbal statements could be organized. This was an inductive method because the themes were suggested by my examination of the transcripts. I expected the main themes would fall along the lines of the three modules of my interview schedule: what participants think serendipity is and how they actively engage in it, how participants prepare themselves to receive or take advantage of serendipity, and suggestions participants have for improving serendipity in libraries and other places. However, I also found that subthemes emerged within these three main categories. The transcripts were typed in Microsoft Word, so I was able to highlight verbal statements according to the various themes and subthemes in different colors. Microsoft Word also includes an insert comment feature that I used for memoing – writing notes to myself about why I assigned a particular statement to a particular category. These memos helped to describe the themes that I saw emerging from the interview transcripts. Not all verbal statements needed to be classified because some of them were unrelated to the objectives of my study. However, this process was iterative – when I identified a new theme or subtheme, I reviewed previously coded material to see if any statements needed to be reclassified in light of the newly identified theme or subtheme. I continued this

process until saturation. Saturation was reached when all relevant statements were categorized according to theme or subtheme. This process allowed me to identify the quotations that I included and discussed in the results section.

‘Grounded theory’ required that a theory be delimited from the data; based on the transcripts and my analysis of the transcripts, I had hoped to be able to discern and write a theory regarding what information seeking strategies experienced searchers employ in order to provide opportunities for the serendipitous discovery of information. Although it cannot be considered a theory, I was able to identify many strategies that experienced searchers use to encourage serendipity. Also, the themes that I identified were grounded in the actual data – in the comments of the interviewees.

#### *Advantages and Disadvantages of this Method*

The biggest disadvantage and limitation to my study was the sample I selected. I admit my sample selection was a threat to the validity of my study. I cannot guarantee that the eleven subjects that I interviewed were representative of all experienced searchers because I did not use any type of probability sampling technique. However, I felt justified in using such a small, purposeful sample because this was qualitative rather than quantitative research and because of time and budget constraints.

Another disadvantage and threat to the validity of my study was that I was the only person analyzing the interview transcripts. As Philip Burnard suggests, "Two methods of checking for validity can be recommended here. First, the researcher asks a colleague who is not involved in any other aspect of the study, but who is familiar

with the process of category generation in the style of Glaser and Strauss to read though...transcripts and to identify a category system" (Burnard 465). I was the only person who identified a category system and coded the transcripts according to the emergent category system. I realized that the reliability of my study would be increased if I asked a colleague to provide a second analysis of the transcripts. However, time constraints prevented me from recruiting a second analyst. Also, I felt this threat to the reliability of my study was offset by the fact that I structured my interview schedule in such a way that the construction of a category system would be straightforward and there was little ambiguity in the coding of the interview transcripts.

Aside from these disadvantages and threats to the validity of my study, I allowed the interviewees to approve the data analysis, which increased the validity of my study. According to Philip Burnard, "the second check for validity is that of returning to...the people interviewed and asking them to read through the transcripts of their interviews and asking them to jot down what they see as the main points that emerged from the interview" (Burnard 466). While I did not feel it was necessary to have my interviewees identify the main points in the interviews, I e-mailed the interviewees copies of the paper or at least offered to e-mail them, so that they could ensure I have accurately represented and categorized the thoughts and ideas they expressed during the interviews. Allowing the interviewees to check my data analysis was one advantage of my study.

Interviewers sometimes ask leading questions in qualitative interviews, which can compromise the validity of the results of the study by introducing interviewer

bias (Kvale 286). If leading questions are used, subjects may say what they believe the interviewer wants to hear rather than being completely honest. I attempted to minimize this threat to the validity of the results of my study by selecting broad, open questions to ask my subjects. I do not believe that any of the questions that I asked my subjects were leading, and that was one of the strengths of my study.

Qualitative interviews in general, and mine in particular, can be criticized for a lack of reliability. I defined reliability as "that quality of measurement that suggests the same data would have been collected each time in observation of the same phenomenon" (Babbie141). Interviewees are likely to offer different responses to different interviewers. Even if the interview were to be repeated with the same interviewer, the interviewees would also likely offer different responses at different times because of changes in their moods, opinions, and thought processes. This lack of reliability and reproducibility of results was one of the limitations of this study.

Despite some of the pitfalls and validity and reliability issues, qualitative interviews have some advantages as well, including their flexibility. Interviews are more flexible than written surveys or questionnaires in that an interviewer can immediately clear up any ambiguities that may arise when collecting data from the subjects. Interviewers can clarify questions for the participants and can ask the participants to clarify or expand upon their responses as appropriate. In my study, the qualitative interview method helped me to ensure that my subjects interpreted the questions as I intended them to, and that I interpreted their responses correctly. Another advantage to using qualitative interviews is the fact that, in qualitative interviews, the interview questions need not be asked with the exact wording and in

the exact order specified by the interview schedule, which added to the flexibility of this methodology. I was able to deal with and collect unanticipated responses from the subjects much more easily in an interview situation than if I used a survey or another quantitative method.

In addition to its flexibility, the other major advantage to qualitative interviews was the depth of the data collected. One of the advantages to my study was that I was able to collect detailed, nuanced descriptions of the interviewees' thoughts, experiences, opinions, and suggestions regarding serendipity. As Steinar Kvale explains, in qualitative interviews, "the focus is on nuanced descriptions that depict qualitative diversity, the many differences and varieties of a phenomenon, rather than ending up with fixed categories" (Kvale 32). This nuance and diversity that Kvale mentions added to the depth of the data collected. I collected such detailed and varied responses and descriptions from my subjects, which would not have been possible using more standardized methods. I also added depth to the information and descriptions I collected from these participants by probing them and asking them to expound on their initial answers. This option is another advantage to using qualitative interviews.

## **Results**

The major findings of my study were the definitions of serendipity that my interviewees provided for me, the reasons why they do or do not attach a stigma to serendipity, sources of serendipity they identified, suggestions they offered for improving serendipity in the physical library, and the suggestions they offered for improving serendipity in information retrieval systems. The reasons for not attaching

a stigma to serendipity included the utility of serendipity, the natural pervasion of serendipity, the belief that, because of their experiences and training, librarians and researchers are more prone than the average library user to encounter serendipity, and the sheer volume of information currently available. The reason given for attaching a stigma to serendipity is that information professionals are expected to conduct precision searches. The sources of serendipity mentioned by my interviewees fell into the following categories: shelf browsing, listservs, newspapers, radio, family, friends, newsletters, professional journals, the new bookshelf, citation analysis, blogs, social networking websites, churches, students, library patrons, and generally being out in the world. Interviewees suggested the following to increase serendipity in the physical library: facing books out, improved signage, more displays, staff recommendations, the use of RFID technology, and a focus on mapping and structure. The discussions of how to improve serendipity in information retrieval systems centered around recommender systems, subject headings, keywords, the Google "I'm Feeling Lucky" button, the optimal number of records for a search to retrieve, making the OPAC more participatory, and using the Aqua-Browser system.

#### *Interviewees' Definitions of Serendipity*

"Finding something utterly unexpected that comes out of the blue, hits you right smack between the eyes, and says 'you need me,'" is how one interviewee defined serendipity, and this was one of the most vivid definitions I received. The eleven participants seem to have identified two criteria that an incidence must meet in order to be considered serendipity - it must be unexpected or unplanned and it must be useful or valuable. This comment is fairly typical of the ones that I received:

"Something you didn't expect to find that is useful...usually, you're finding it when you're looking for something else." Three of the public librarians that I interviewed identified the unexpected dimension of serendipity, but did not mention the useful aspect of it. One interviewee explained why serendipity is so useful and valuable: "I always define it as a happy accident - the thing that happens that you don't expect that actually moves you forward into something that's useful or valuable. So it's an encounter with something that answers a question that you may not even have articulated." The idea that a serendipitous encounter propels the information seeker forward seemed to be a common theme as another subject also included it in his definition of serendipity: "Well, I think it would be the unintentional discovery of information that can either contribute to your learning, spark new ideas, or sort of inform you of more than you had anticipated. I would say, as part of you going through the normal course work, research, life, that you come across information that was not anticipated."

Three participants all identified luck or chance as part of the definition of serendipity, which was another theme that emerged from the interviews. "What comes to mind is fortuitous discovery... A little bit of luck. Coming across things you hadn't expected. Bordering on fate. Something kinda New Agey that was meant to happen. It was meant to be discovered that way," explained one interviewee. A second subject commented, "I would say serendipity is the chance encounter with useful information. That's about as precise as I can get. It really relies on luck to a certain extent, but then making yourself available to luck." Yet another participant explained, "I guess the short answer is just a lucky happening...This worked out.

How nice!... we talked about synchronicity, which is where things happen in some unusual way, that is exactly how you needed things to happen and as far as you can tell, you had nothing to do with it happening that way. I guess, for serendipity, I would see that as my finding the answer to patron needs not only by my own efforts, but chancing into something helpful..." The interviewee seemed to agree that utility and surprise are two defining characteristics of a serendipitous information encounter, but did not agree on the relationship between marketing and serendipity.

During the course of the interviews, questions arose over whether or not an encounter with information must be unplanned by all parties involved in order to be defined as serendipity. If a book, article, or other item is intentionally pushed toward you by someone, marketed to you by someone, or purposefully sent to you individually by someone, can it still be considered serendipity? The question remains unanswered. One subject explained, "If you only take the user's perspective on it, then just running into it by chance no matter whether it was pushed at you until you ran into it or whether you just bumped into it, either one kinda feels the same - you still found something you didn't expect to find." When we spoke about colleagues sending each other articles, another participant commented, "I'm not sure though, that that's serendipity, though. I'm not sure I would define it in that way... I would think of serendipity as things that by chance might happen. In this particular case, I think that it is a case of someone making a conscious effort to direct something at you." Personally, I am convinced that it can still be serendipity if an information source is marketed or recommended to a user because, to the user, the information encounter is still both unplanned and useful. I agreed with the interviewee who said that whether

or not such an instance can be considered serendipitous depends on the point of view you take, and I took the user's perspective.

### *The Stigma Attached to Serendipity*

Out of the eleven interviewees, only one said that he attached any stigma to serendipity. "I think in our field, there's more likely to be a stigma associated with it because in our field, the assumption is that we know how to search, right? I mean more so than any other field, likely. We should know how to conduct a literature search, and a database search, and so on. So, yeah, I think there's probably stigma associated with it. The assumption, the unspoken assumption, that you would know where to look and that if you stumble across something, somehow you didn't know about it. So yeah, I think there's probably a stigma attached to it," he explained.

More typical comments were similar to the one from another participant, "No, I don't attach any stigma to it. I think it's great. I'm actually really stoked when it happens."

One Public Librarian Interviewee even went so far as to say that she depends on serendipity. I think that, even though they may not recognize that they depend on serendipity, most information professionals count on and expect to encounter information that they did not previously know existed at all or existed in a particular format or location.

One of the most common reasons for not attaching a stigma to serendipity was that such happy accidents are useful. An interviewee commented that, "However you find what you need, you find what you need whether you came across it by blind luck or by actual searching. In terms of searching, the point is to get what the person needs in their hands, however that happens. It doesn't really matter." A second

interviewee concurred: "Generally, for our patrons, we need to find them the information they need, but it's going to be less complex than what would you find in an academic setting. If you, by chance, discover that hmm I'm looking this subject heading, but if I see something that refers me over there and I go wow that's where I needed to be, you know, that's great." In fact, such usefulness is part of the very definition of serendipity.

Another common reason for not attaching stigma to serendipity seemed to be that serendipity is a natural part of librarianship, research, and life in general. As one subject said, "You just have to assume that things happen. You go through life and things happen." "That kind of thing is just a basic part of reference ... and it's part of the reference interview as well," said one participant of serendipitous information encounters. A second participant shared a similar opinion: "Because I think chance, even though we love control, and love to feel that we're in control, most of our lives we're not in control of much of anything. It happens to us, and we have to react. So I think the sense of control that we feel we have is not actually true. I think we all need it in order to get by. But for me, serendipity is a huge part of what happens." A third participant provided an illustration of a time when she chose not to attach a stigma to serendipity because a serendipitous information encounter was useful to her: "In one of the studies I'm involved in now, I know the research that I need to look at, and I know the complex framework that I needed to work with, but I knew that was what I needed to be using. It turns out one of the articles I knew I needed to read actually had a lightweight framework that was more suitable for what we need because it was digested a little bit. So that made something that I had resigned myself to not being

able to find, has this unexpected benefit. It was only published last year, so I didn't need to feel bad about not finding it earlier. I'm quite happy, as I'm talking about this research, to say that I was so happy to find this because it saved a lot of work and I ended up with a better result... what the stigma would be is if you didn't admit that you needed it or that you could use it just because you hadn't known it was there. I think that you have to be opportunistic." Something, like serendipity, that happens to everyone, and is beneficial, is nothing to be embarrassed about.

The idea that there is no shame in stumbling across items or citations in the course of one's research or reference service because researchers and librarians have specialized training and thinking patterns that makes them more prone to serendipity than the average library user was another common thread that reappeared throughout the interviews. "Happy accidents happen only to people who are fully prepared to understand them. So in a way, because librarians work within structures, because scholars have asked a number of questions contextually related to their issues, they may be especially prepared to appreciate the value of the accident when it occurs. So I don't think that librarians and scholars should deny the fact that they find things they are not looking for. We all find things that we are not looking for, and it's because of their professional and scholarly training, librarians and scholars know how to use these accidents," claimed one of the interviewees. Indeed, librarians, scholars, and other experienced searchers do seem to experience a high degree of serendipity because they approach their searches with a "prepared mind."

The fact that the sheer amount of information available on any given topic is so large as to make a completely perfect and exhaustive search impossible was

another reason that several interviewees gave for not attaching a stigma to serendipity. One participant said that she does not attach a stigma to serendipity "because it might be that you came upon it serendipitously because you were in an area that was the right area but you weren't expecting that exact thing existed or you might be within a book that you know a lot about that book, but you might not know that chapter or that page existed. We can't have our reference sources memorized cover to cover or anything like that. There's a lot that we do know, but there's even more that we don't know and have to just come across somehow." To paraphrase her, there is so much information available and so many information sources out there that librarians and researchers cannot be expected to be aware of all of them, therefore there is no shame in stumbling across items or citations. A second subject echoed her sentiment that the limitations of librarians and researchers provide a reason for not attaching any shame to serendipity: "I think the other thing is the myth of the all-knowing researcher. The myth that I know everything I need to read and I know everybody that I need to know. I think once you get over that, serendipity becomes a natural part of the process." Yet another participant explained, "because there is so much information out there, a lot of things are going to happen by accident. I don't see any shame in that. Even the best searchers are also going to make mistakes. It happens to everyone. It doesn't matter how good you are. At times, you're still going to make mistakes with the reference interview. And that's also part of how you're going to discover new things as well. There's nothing wrong with making mistakes. The people who are afraid of trying different ways of searching for things and going outside of what they're comfortable with are the people who aren't going to wind up finding as many

solutions to their problems.” In a similar vein, another interviewee commented that, “one of the things that makes good researchers is a very strong opportunistic streak.” Having such an opportunistic streak means being willing to take advantage of serendipity when it occurs and not feeling ashamed of doing so.

### *Sources of Serendipity*

Shelf-browsing as a source of serendipity was a common theme that reverberated throughout many of the interviews I conducted. As one of my interviewees put it, “When I’m searching for something related to linguistics, I always try to allow myself browsing time once I get up there to that back corner.” A second participant had the same habit: “You go for a known item that you found on the catalog or whatever. I never go pull off the item and disappear. I always browse the nearby shelves to see if something else strikes, and open up a couple of books just to see what’s there.” However, a third subject also made an interesting point that some discoveries made while browsing the library shelves are more serendipitous than others: “The real serendipity happens when you have one book or one information moment, and then the thing that you encounter is really different and gives you an utterly new perspective. And so, in a way, the serendipitous moment when you go into a public library and pull this book off the shelf, and you see the next book on the shelf and pull that one off too, that’s a fairly small serendipity, right? Real serendipity is where you pull that one off and walk down the aisle, and end up in a totally different set, and you notice the blue book that attracts your attention and you pull that.” Differing levels and degrees of serendipity do seem to exist.

In addition to these comments, I also collected several stories of books found by shelf browsing. An interviewee shared: "A gentleman came up and he said he wanted a single volume source on world history...and of course all the really neat new ones were out, but I just took him over to 901s, and I pulled them off the shelf. And he looked at them, and I looked at them, both. There were things that weren't necessarily even about world history or the history of the world. It was about accidents or catastrophes that changed the world." Another participant had a similar experience of serendipity by shelf browsing: "The example that I am thinking of is this book called *The Religion* by Tim Willocks, which is probably the best book I read this year. I read a review of it and marked it on my to-read list. And then just hadn't thought of it again until I walked past it on the new bookshelf and thought - 'Oh! I should read that. I remember the review'...It was the best book I read this year." A third interviewee serendipitously rediscovered a book that was a childhood favorite by shelf browsing: "There was my favorite book when I was a child that I used to always check out from my public library... It is the book about recipes for sand pies...It really has it like in recipe format. That you have, you know, this much of the mud, this much of twigs, and this much of leaves, but it's all like a party book to write these recipes. And I would ... as far as I know, there was only one copy of it, and I would check it out over and over and over again. I must have taken good care of it because, when I was an adult, I went back to the library and was looking at other things, and I came across ... that book was still there, the one that I used to check out." Another subject also shared a shelf browsing experience: "I'm walking along the shelves and here I find an *Encyclopedia of the Essay* - exactly the kind of

encyclopedia that I wanted to find. That's very useful. And then I found another encyclopedia in a similar way called *The Encyclopedia of Life Writing*, which is about memoir, autobiography, and diary - another form that I am strongly interested in. I didn't know these encyclopedias existed. I always thought I would have to put together materials sort of artificially in order to understand these things. But here are two tools that I didn't know existed, and I encountered them accidentally. From the second one, *The Encyclopedia of Life Writing*, I discovered that there is a *Journal of Life Writing*, so it's an ongoing scholarly issue." These stories and comments indicated that librarians and library patrons should take the time to wander the stacks and browse the shelves.

Several interviewees found listservs to be sources of serendipitous information encounters. One interviewee explained that the library system she works for "is a cooperating collection with the state data center, which is cooperating with the Census Bureau, so I get the Census Bureau e-mails. One of the funniest, was before the Fourth of July, they sent out a bunch of stuff like how many hot dogs are consumed and how people celebrate and all that. And I think most of them are aimed at school teachers, but they are funny to mention." Similarly, another interviewee subscribed to a listserv that e-mails her the table of contents of various journals, which she found to be a source of serendipity. "I'm on a listserv. A lot of information comes through that. For REFORMA, services to Spanish speaking populations. So lots of interesting stuff," said a third subject. This means that listservs can be an effective form of monitoring browsing.

Although I did not mention newspapers or radio in the question about media sources that interviewees regularly expose themselves to - I mentioned RSS feeds, listservs, or professional journals - several interviewees identified newspapers and radio as sources of serendipitous information encountering. "I still look at daily newspaper. I find that good for getting a sense of what's going on that you might need to know about... I also listen to NPR, although if they don't quit talking about the primaries, I'm not going to be listening to NPR. That also is sort of a general what's-going-on source of information for me. I also do a little bit of *New York Times* and CNN just to make sure the word's still out there. I think that to function in a public library reference setting, you need to know what's going on around you. In the newspaper, I turn to the book reviews," comments one of the participants. Similarly another participant said, "What's going on the world, I get several newspapers. I just glance through them pretty much everyday to keep myself abreast. I don't want to know the details with news. I just want to know, is there anything major that I need to know about? And if there is, then I read more, but it's mostly just reading headlines there." The newspaper and radio were also a source of serendipity for another interviewee: "Public radio is a great source for me. And that has the advantage that, if I miss it, and it goes by, I can go back. The weekend program is one of my favorites. I've gotten lots of good book suggestions...when they drop the name of the researcher that they're talking about, that's often a good lead. I keep a pen and paper on the dining table for reading the morning paper and stuff." One subject provided an example of how radio is a source of serendipity for library patrons: "We were just talking about how just like how *Hooked on Phonics* used to be marketed and people

would come into the library all the time because they would hear about it on the radio, that's what they're doing now with the language program, *Rosetta Stone*. You now hear all these radio advertisement to purchase *Rosetta Stone* and that makes a demand because people hear it over and over again and they're thinking, when I go to the library, I ought to see if they have *Rosetta Stone*." This means that, like listservs, newspapers and radio broadcasts can be an effective form of monitoring browsing.

Family members were also identified as a source of serendipity. For example, one participant shared an instance in which her husband was a source of serendipity for her: "In my head, I'd been putting all these titles together, and one of the ones that I wanted to put on, I feel like I've read a review kinda recently of a title that was compared to the adult title *Never Let Me Go*. I'd never read *Never Let Me Go*, but it had been recommended to me a bunch of times. When I saw the review saying, "It's like a teen version of *Never Let Me Go*," I went 'ohh I should read that too.' So when I was putting the list together, I thought, 'I should include that one title,' but I didn't remember what the name of the book was because I hadn't read it. So I went through like four months of review journals trying to see that line again. I was doing searching to try and find that line, 'like a teen version of *Never Let Me Go*.' I couldn't find it, and couldn't find it. So finally last weekend I go up to ALA. I was listening to *Never Let Me Go* because the CD came in, so I'm listening to it on the way to Philadelphia. I talk to my husband - he reads teen books with me - so I talk to my husband half way up the trip. I say, 'oh the book I'm listening to is great.' It's an adult audiobook. I tell him what it's about and he goes, 'oh I read a teen one just like that.' He'd just read the teen book I hadn't been able to track down, searching and

searching." Another subject made a similar comment: "I guess my husband would be a source of exchange in terms of what's going on in the online world. And to some extent, my kids." For one interviewee, it was his mother-in-law who is the family member who is a source of serendipitous information: "Well, my wife's mother, who is the worrywart of her family, will, if anything major goes on, we'll get a phone call: 'Did you know about this?' So that's serendipitous. I usually know about it because I've read the newspaper, but it's a source of serendipitous things." These comments indicated that information seekers should interact with others, including their families, because such interactions can lead to serendipitous information encounters.

In addition to family, friends also serendipitously provided information to these interviewees. An interviewee told a story about how her friend sends out a Christmas letter each year that included her top books for the year, and this particular interviewee found her friend's letter to be a serendipitous source of pleasure reading recommendations. My interviewee and her husband waited for the Christmas letter to arrive so that her husband would know which books to buy her for Christmas: "She puts in three or four books and he'll look at those books and find out which ones I've already had and go get me whatever's left." Another participant had friends who were serendipitous sources of website and article recommendations rather than pleasure reading recommendations: "This past weekend, I had an ex-colleague visit. He's a friend. I used to be an archivist, and he still works in the New York State Archives. So he was sitting with this laptop, and I was sitting with my desktop and we were kind of trading ideas for websites that we really liked ... we were just showing each other websites ... I have a friend who regularly e-mails me articles that he likes."

Another interviewee commented that he too had a former co-worker and current friend who is a source of serendipitous information encounters, "I have a friend, a woman I've worked with, who happens to be the lead educator at a museum that doesn't exist, the memorial for September 11th, in New York. So I can talk to her about issues related to our common interest." This finding indicated that having a personal network, including friends, does indeed promote serendipitous information encountering.

Several interviewees commented that they found newsletters to be a source of serendipitous information encounters. One participant told me, "I just signed up for a newsletter from The Library of Congress, so I can keep track of what's going on there... Also, I get a newsletter called *Culture and Community*, and it simplifies a large number of things and leads me in a useful direction. So if there's a new report out or a news article that talks about the relationship between culture and community economic life, I can pick it up that way. Also, I've just started to get a brand new version of *The Chronicle of Higher Education*, and that comes to me electronically and serves as a daily index to new articles, so if I have to look at something in *The Chronicle*, I can do that. Or if it leads me to a news item or some other digested piece ..." A second interviewee discussed *The Bullshead Newsletter*, which is created by a local bookstore, as a source of serendipity: "I actually was just at the bookstore and bought two books off of that." Another newsletter called *Book Women* is an additional source of serendipitous pleasure reading recommendations for this same interviewee. A different subject discussed how "*Library Journal Express* is short reviews of books" and is a newsletter that serves as a source of serendipity for her.

*Season's Readings*, which is a newsletter put out by the Durham County Public Library each December, was another source of serendipitous information encounters: "One of the things that Durham Public Library does every year...it's a booklet of one paragraph reviews from all of the library staff...I enjoy it so much ...but there again, it gets me outside of my usual sphere. And sometimes I say, 'who could possibly enjoy a book that sounds this dreary?' But that's interesting too. Goodness knows, collections developers have a lot on their plate, but that would be interesting to get their picks in their particular areas. I think that would be especially interesting. I think one of the nice things about *Season's Readings* is that it comes just once a year, so it's not likely to cause that feed that I feel is overwhelming." Based on these comments, newsletters appeared to be another worthwhile and effective form of monitoring browsing.

Professional journals, especially *Library Journal*, were also a source of serendipity for the SILS faculty members and public librarians who participated in this study, but several of them commented that they were pressed for time to read these journals, which limited their use as a source of serendipity. One interviewee who did serendipitously encounter information in *Library Journal* shared her experience: "I was going to tell you about how neat I found the website *FareCompare*, the travel website, comparing airline reservations for airline travel and you can do it by airline. I found it in *Library Journal*. I was reading through *Library Journal*, and it was one of their websites of the year so I was just playing around with it. I like it better than *Expedia*." Another interviewee mentioned a journal other than *Library Journal*, which she found to be a source of serendipity: "*The Reference* ... the

reference journal from ALA is a very useful journal...I particularly like their articles on all the books you need on collecting coins or all the books you need on a particular research area." However, as several subjects pointed out, it can be hard to find time and energy to keep up with the professional journals: "But there's a lot. I mean I have *Library Journal* right here, and I haven't even opened it yet. I get a lot of publications." Professional journals can be a good source of serendipity and encourage monitoring browsing, but it seemed that many of the interviewees were unable to take full advantage of this source.

Several interviewees identified the new bookshelf as a source of serendipity. "All you need to do is pull maybe ten items a week out and say 'these are some new items that we bought.' Letting you know that this is a living collection, that there's scholarship being created right now that we collect," claimed one interviewee. When discussing the new bookshelf which she browsed regularly, a different interviewee commented, "There are people who regularly show up there every Thursday, and I've gotten to know a couple of folks that I encounter there periodically." This meant that libraries should continue to prominently display recent acquisitions.

Citation analysis as a source of serendipity seemed to be another theme common to several of the interviews. An interviewee commented: "Typically, what I look for, what I want to do, is find reference tools that allow me to look at an array of possibilities and then ideally these tools will be generative in that they will have bibliographic citations - references to other materials that I can move towards." Another participant commented, "I look for things that are on topic. Check bibliographies and do citation growing... I don't do a lot of citation studies. I don't go

into the citation indices and try and find who cited the article I just read. That would be a useful technique, but I don't do it. I usually just use the bibliography or I go and take that article and use keywords that I find from the article and put them back into the search engine and go from there." A third interviewee made a similar comment: "If I just search a general term, an article ...I look at the list I get and go hmm that might be close to what I want. Then I'll go to the citations there and I know where to go to get where I actually needed to be but didn't know it when I started out." This meant that librarians and information professionals need to take advantage of citation analysis and encourage their users to do so as well.

Blogs were another common source of serendipitous information encounters for my interviewees. One subject discussed several blogs she follows: "I like *The Shifted Librarian* in general for internet sources. For teen services, I like using one called *Y-Pulse*, which is not aimed at librarians. It's actually aimed at people who are advertising and marketing to teenagers, but it's tremendously useful. I highly recommend that one. In fact, that's how I wound up doing a lot of my teen programs by looking at what was being marketed to teenagers and what was popular and forming it into a program." Another public librarian interviewee followed different blogs: " *PubLib*, I find to be interesting, but not entirely relevant to me, always. Since they're discussing anything relating to public libraries, so when they're discussing the circulating of magazines, which we're gonna do, I'm not the person responsible for that, so it's interesting, but not personally relevant. *Fictionale*, I love. I have used it myself to get books for bibliographies. I love reading, and I love reading what people's suggestions for books are, so I love *Fictionale*." Another public librarian

interviewee also subscribed to *PubLib*, but she is unconvinced that information discovered on blogs can truly be considered serendipitous: "I go to blogs that provide news about current events. And there are people that I respect, and they will link me to articles on topics that I'm interested in...Blogs aren't serendipitous because you choose a blog, but once you get on one, you don't have to read the whole *New York Times* website to find out that there's a really interesting article in *The New York Times* about the primaries or whatever." These comments indicated that perhaps librarians, information professionals, and other information seekers should consider following or writing blogs.

Social networking websites were another media source which several interviewees found to be a source of serendipitous discovery of information. One interviewee discovered information on a social networking site that furthered one of her hobbies: "I'm thinking about *Ravelry*, which is a social networking site for knitters" In contrast, another interviewee used a social networking site to gather information for professional purposes: "One of the things that I just joined about three days ago is *Good Reads*...it's a website. It's a social networking site like *Facebook* that's all geared around what you're reading. You can friend people and see what your friends are reading and its all updated. It's a social thing more than anything else, but it's a way for me to happen upon the next children's book that I want to read because my friends have recommended it." Thus, the concept of a personal network can be expanded to include online social networking, which information seekers should consider taking advantage of.

Churches and church related groups also functioned as a source of serendipitous information encountering for the participants in this study. One interviewee commented on how a church related group served as a source of serendipitous book recommendations for her: "Well, a book group at church. I don't usually go to the book group, but often times I'll read the book that they select because they select really good books. That's how I read *Nickled and Dimed* a couple of years ago." Another interviewee found her church to be a source of serendipitous information about the community she serves rather than a source of book recommendations: "I'm a Quaker, so through the Friends' Meetings, I find out about different things that are going on in the community or I'll get e-mails from them." Therefore, like online social networks, churches can also be part of one's personal network and provide serendipitous information.

Two sources of serendipitous information encountering identified by interviewees that I found surprising were students and library patrons. A participant explained how her students have led her to serendipitous information encounters: "Certainly students. The thing about students is that they have a different world than I do, an intersecting world, obviously, but a different mindset and some different ideas there. Some of the things they have suggested I read have been wildly outside anything that I would have found. But it has a great of value, and I enjoy it a great deal...it was two years ago ... it was a graduate student whose undergraduate was in anthropology. He had read something. He was in my Systems Analysis class. And there was something about information processing ... I did indeed read it, and it was enjoyable. I'm glad I read it, but it didn't stick with me. Something we talked about

in class reminded him or something he'd had to read for his other Master's degree. And he thought that I would enjoy it because it deals with the same sort of questions that I do, but they use different methodology there. I don't remember what the book was, but it was something about trust - about information and trust." A different interviewee surprised me by describing how library patrons can sometimes answer each other's reference questions: "And there have been times when I've been helping a customer, and I don't really know much about what the topic is and someone will walk up, overhearing, and say, 'I'm in an organization that we do that' or 'I know about that' or 'You should try this or this.' It's so remarkable that a customer will walk right up and offer information. So we've got that along with any other information that you might find. And you don't say, 'No, no, no be quiet.' Because they've got such good personal information that they can lead them to a contact in the community. It's hard to find those individuals with certain subject interests, but when they just show up, then you've got the best information." These anecdotes illustrated how important interactions with others can be in promoting serendipitous information encounters.

According to the interviewees, sometimes just being out in the world and interacting with other people can lead to serendipitous information encounters. "I think anyone you get in touch with is a possible serendipity moment waiting to happen because you never know what they are going to say. I mean anytime my wife goes out with a playgroup with my son and the other little infants, there's always the possibility there for serendipity. Anytime I sit down and chat with my wife, there's a serendipitous moment. So I think we're sort of surrounded by serendipity, most of

which we don't control. Things just sort of happen," explained one subject. Another subject tells the story of two patrons who experienced a moment of serendipity because they happened to be in the library at a certain moment: "Last night some guy was reading a book on creativity in organizations. I suggested he read *The Starfish and the Spider*, which is on leaderless organizations because it's related. A leaderless organization has much more capability to ... maybe not being creative, but acting on creativity than an organization that has to go through 10 layers of management to get anything approved. And the guy standing behind him wanted it too, so we put it on hold for him too." Therefore, information seekers cannot be hermits who function in isolation, and the importance of the library as a place where people can meet and exchange information was underscored. Overall, several factors that contribute to serendipitous information discoveries emerged from these interviews. One factor seemed to be a willingness to interact with others, including family, friends, co-workers, church members, and others. Another factor seemed to be a willingness to engage in monitoring browsing through blogs, listservs, professional journals, newspapers, radio, and other media sources.

#### *Suggestions for Nurturing Serendipity in the Physical Library*

The most common suggestions that I received for improving serendipity in the physical library was that books should be faced out and that the signs we use in libraries should be improved. "I think that merchandising and showing a lot more face forward is helpful because there's a lot more that can catch your eye" was a typical example of such a suggestion. Another interviewee made a similar comment: "I think that neatness and those things that the bookstores do when they face them out,

are conducive to serendipity, and we don't do those enough. So the organization should be kept, and better signage." A third interviewee offered a concrete suggestion for improving signage in the physical library: "We used only the crudest, most rudimentary labels on shelving, we rarely put a tag on the shelf that says "if you're browsing here in anthropology, you may want to browse in dance, or in religion, or you may want to look for this or that." Since the new books displays seemed to be particularly conducive as a source of serendipity, one interviewee suggested that libraries also display or somehow mark books recently removed from the new book shelf or display: "There are things that were on the new bookshelf that I missed that are now upstairs and I can't find them. 'Past Greatest Hits' or something like that might be interesting. Especially for things outside my immediate researching and teaching interests." People do judge books by their covers, so librarians need to let them see the covers.

Creating more displays in libraries, especially public libraries, was another common suggestion my interviewees had to offer. One of the public librarians commented that her library is going to be adding onto the existing library building, which will enable her and her staff to create more displays, "that's something that may change as we get more space, as we get the extension...I think there will be many more displays...But that would be good, it would be good to have more displays." Another participant also mentioned that showing the cover of books and putting them on display can increase serendipity: "So the cover or the other materials around it or just it being in a new or different location, I think, can help you stumble upon it. You wouldn't have seen it before, and it's like, 'has that been sitting here all along?' At one

of locations here, we're doing zero circ weeding, so if it hasn't been checked out in five years or whatever, it's been there and no one has taken it. And people said, 'well, let's give it another chance,' so they put them on display. And all but one checked out, so most the cover will sell it. Some won't get picked up. But there was this one that the cover was so awful. It wasn't in bad shape or anything, but it wasn't an appealing cover. It was so awful that the cover wouldn't sell it and it was not going to circulate. But they gave it a try. It got another chance to go out with somebody." Creating displays to market the library's collection is a worthwhile endeavor because it leads to serendipitous information encounters.

Interestingly, two participants both suggested a display that involved current events. The faculty interviewee seemed to be thinking on a national level: "Every day, the front page of *The New York Times* has articles on it with a great deal of depth, a great deal of contextual depth associated with them. What if you put the front page of *The New York Times* up on an easel so that as people come into the library every day and ... and were to connect to each of the articles, using push pins and string, something really primitive, references or citations to books, to articles, to ideas, or an entry in an encyclopedia, or even a website, that helps the reader of the newspaper to understand the background." In contrast, the public librarian seemed to be thinking of local news and publicizing library programs and events: "And the kind of displays that they do in Wake County, hopefully, we'll start doing that too, where they combine, when you walk into the lobby, they are combining events that are happening in the community, and events that are happening in the library, and books on those topics. Sometimes, you can be really creative, and it's not concretely about

that topic." In other words, libraries should create situations in which a patron can engage in monitoring browsing simply by walking into the library.

Other interviewees seemed supportive of the idea of doing more displays as well: "Let's focus on marketing in the public library, and certain types of displays, the bookstore model, if you will, that's been discussed a good deal in the profession in recent years. I'm not certain ... I guess it depends on what we're describing as the purpose of serendipity. If the purpose of serendipity is to foster research, then it could possibly feed into it because there are certainly general interest publications that could be displayed in a public library that I might not see otherwise. I might not see the cover of a particular magazine for a particular month if it's not displayed to me." One participant pointed out that the location of displays can increase serendipity: "One thing that we're going to be doing soon is that we're getting some new basic English materials and we're putting them over by the tutoring carrels, and we're putting them face out. I think that's a good way." She felt that, by putting these materials near the area of the library that patrons who need such ELS materials tend to traffic, she could increase the chances that they would serendipitously encounter this information. In conjunction with displays, one interviewee suggested some improvements in library furniture that he felt would enhance serendipity, especially for children and adults of short stature: "I would say maybe face out displays, programs, the actual shelving units themselves. I mean, one of the problems for children is that they can't reach the upper shelves in a lot of these shelving units, so serendipity negated...get out the stool and climb. I think making things as accessible as possible, as interesting as possible, probably would help." Having shelves in the

library that are not so tall and displaying library materials more at the eye level of the intended user could potentially increase serendipity.

Keeping the traditional Dewey Decimal and Library of Congress classification systems seemed to be a fairly common suggestion for nurturing serendipity in the physical library - none of the interviewees definitively said that we should do away with these systems, although one said she would prefer Ranganathan's classification to Dewey's. One typical interviewee comment was: "I really believe that, while patrons find the Dewey Decimal System hard to understand, it usually puts them near what they need. So when they're looking for something, and they find one book with that call number, when they go to the shelf, they find a lot of them. Which, if it were organized more like a bookstore... in a bookstore, you often get things organized by author, which is not as helpful, or the subject ranges are broader. So it's just all, you know, European History together, and I think that is less conducive to serendipity." The participant who argued in favor of Ranganathan's system said, "I've often thought that the Dewey Decimal System is outdated. While it would be difficult, I think it would be better to have a system that was based on Ranganathan's system of cataloging. He's the guy ... he came up with a theory of cataloging that involves facets...It's sort of like ... I guess it's like a predecessor of tagging. But his was a system where you don't have one primary subject. You can have different subjects that are equally weighted. And it's used in India. But not here." Using the Library of Congress and Dewey Decimal classification systems does seem to promote serendipity, and libraries should continue to use them.

Staff recommendations was another strategy to nurture serendipity in the physical library suggested by both SILS faculty members and public librarians. "The Bullshead Bookstore does staff picks ...that might be a possibility for libraries as well... we talked about marking the books with staff picks somehow and facing books out on the shelf somehow right in line though with their call numbers," commented a SILS faculty member. Similarly, a public librarian interviewee said, "I like staff recommendations at bookstores because then you get a different set of books than the bestsellers. And the bestsellers are good recommendations, but it's good to have different recommendations." Staff recommendations are attractive because they are a low-cost, relatively easy way to promote serendipitous discoveries in the physical library.

One interviewee provided a highly unique suggestion that involved RFID technology. She discussed "the idea of using RFID (Radio-Frequency Identification Devices)... the idea that I could program my bracelet with the things that I'm interested in and the tags in the books will all have what they're about and as I walk by, they'll chirp and say, 'Look at me! Look at me!' It's an interesting idea of attention getting. I'm not sure how much I like that idea, but it's the idea of getting your attention to something you wouldn't otherwise find." This idea seems to be worth further investigation as it does have the potential to nurture serendipity.

Another unique suggestion was to focus on structure and mapping. This particular interviewee said, "There are things that are hidden, that are rich treasures, that will never be found unless we map people to them in different ways. There are a couple of ways to map. Once, for one of my reference courses, I actually drew a

physical map of the reference collection of the Alexander Library at Rutgers University. I annotated that map so that I wrote down in a little statement what tools one would find in various places. The librarians who saw it later on said it was a great idea. And we don't have that kind of map that says, 'Ok here you're going to find this encyclopedia, here you're going to find that encyclopedia. Look around here, and you're going to find all the tools on census materials, here are the economics and law materials', and things of that sort." He believes that creating and distributing such annotated maps would foster serendipitous information encounters in the physical library. Libraries should experiment with this low-cost method of inducing serendipity. In summation, the participants in this study identified five methods that can be used to increase serendipity - facing books out, displays, improved signage and mapping, keeping the current classifications systems, and making use of staff recommendations.

*Suggestions for Improving Serendipity in Information Retrieval Systems Such as Databases, OPACs (Online Public Access Catalogs), and Internet Search Engines*

Including recommender systems, similar to the one used by Amazon.com, in the OPAC was a common suggestion for nurturing serendipity. However, interviewees pointed out three major problems with implementing such a system: 1) Recommender systems are easily confounded; 2) Recommender systems entail a certain amount of privacy invasion, and 3) Recommender systems require a large amount of data. "The recommender systems, on Amazon, for example, are useful. Except where they get confounded, like when you buy something for someone else," was a typical interviewee comment. Another participant also pointed out the problem

of recommender systems getting confounded, "The Amazon, Barnes & Noble ones, I'm not so trusting of because 'somebody who bought this also bought this...' I ordered for my brother or my mother on Amazon and they would have totally different tastes." Two interviewees identified the need to protect patron privacy as an obstacle to implementing recommender systems. "But the only way to do that is to keep records of who read what. And that's against library policy. So as soon as the book is returned, we erase that record so that it isn't traceable. So I think there you would run into problems just from the logistics of it...I mean if you pair circ records with the person, then you could look at 'what has this person checked out?' And you would know, and you could use that in an algorithm to compare and contrast. I think public libraries are so innately averse to doing that, that I don't see that they would ever be willing to do it," explained one faculty interviewee. Another faculty interviewee concurred: "I think it also raises some privacy questions, however, because that means there is some tracking of circulation records." A third faculty interviewee pointed out the obstacle of a large amount of data needed to make a recommender system feasible: "I still think that would work, but you would need to aggregate data over multiple libraries ... circulation data...to get enough data to predict reasonably accurately...there's a long tail of data...that means there's a lot of books where only one person's ever checked them out. Think about how if you put all the books in a line and how many times each one has been checked out. There are going to be a few that have been checked out a lot, but then you get down pretty quickly to whole a lot of your books that have been checked out once, and there are

some that aren't even on the tail because they never get checked out." Recommender systems connected to library catalogs are worth considering despite the obstacles.

Several interviewees pointed out that drawing the user's attention to the subject headings used in information retrieval systems might lead the user to serendipitous information encounters. "It ought to be automatic that we draw attention to those subject tracings and we lead people to move their search from the known item into the classification system that contains other items of a similar kind. That does a number of things. When we talk about the tracings with the user, we are also helping ourselves to learn more about the nature of the inquiry. We are allowing the user to think in somewhat larger terms. He or she is more likely to be exploratory. The more exploratory, the more likely the discovery, the more likely serendipity. You notice, what that is? That's talking about a structure. That's teaching a structure. That's showing people how they can mine the structure for new terms. That doesn't happen when we use Google or some crude retrieval tool of that kind," commented one subject. When discussing the use of a recommender system off the OPAC, another interviewee also brought up the idea of subject headings and their potential for nurturing serendipity: "I think those suggestions of subject searches or 'Not the book you're looking for? Try this!' Some better explanation of where those subject headings come from because I don't think that people understand that. And this is all a catalog relating thing, which... I'm sure there's some cataloging reason why if a book is Military History -- World War II -- Germany there's a reason why it's not just military history. But it should be both in my mind. Because that way if you're just looking at military history, you can find that book." Her comments suggest that

attaching more subject headings to the OPAC records of items in the library's collection could increase serendipity. Additionally, another interviewee suggested that the use of keywords and subject headings could increase serendipity if they were used to create a recommender system that avoided some of the privacy concerns associated with Amazon's recommender system: "Not necessarily tracking searches, but identifying similar items. Of course that requires two things. It requires those who index the databases to identify the search terms and to identify similar items. 'This book is like this book...I think there's an advantage to that...Only that you're adding professional expertise to the process is value added. So that's an advantage.'" This same interviewee went on to discuss how he found keywords as well as subject terms to be valuable for enhancing searching and serendipity in information retrieval systems: "I think that keywords as a search option can be enhanced...That's what they're used to. And it's typically the first option...keywords tends to be one of the earlier identified options. I think that subject searching is more precise, but is not well understood. ...those who set up the database do indexing based on their determination of the subject heading or classification...so we tend to search for terms that work for us, assuming the indexers have made the same type ...So I think that there is something to be learned from those models." This interviewee's comments indirectly suggested that using keywords and subject headings to search multiple information retrieval systems at the same time would be useful and increase serendipity: "I think that for library catalogs...I think the more linking we have between one type of database, that is the OPAC, article databases ... there is an advantage from the user's standpoint because the user is not so concerned with where you're finding it. ...not

just in terms of availability, but in terms of the nature of the organization. So I think there are some advantages." This meant that information retrieval systems should continue to use keywords and subject headings and the creators and managers of information retrieval systems should continue to improve the usage of keywords and subject headings within these systems.

The Google "I'm Feeling Lucky" button was mentioned by several participants who felt that the idea of such a button could be used or modified by libraries as a way to improve serendipity in information retrieval systems. In correlation to the "I'm Feeling Lucky" button, interviewees discussed the idea that seeing results that were not at the top of a relevancy ranked list would increase serendipity. "In some ways I wish the Google 'I'm Feeling Lucky' button had some kind of a little random thing in there so it would create opportunities for serendipity. So that it would retrieve ... instead of just retrieving one thing, it would retrieve 20 things, show you all 20, but of those 20, it would have only ranked X number, maybe 15, in the top 20 and the other 5, which are distributed throughout, are from like farther down from the 5th page, and the 7th page, and the 9th page or something like that so you could see some of the unusual things," suggested one subject. When discussing information retrieval system, a second participant also mentioned the "I'm Feeling Lucky" button and relevancy ranking: "They need to be browse oriented, and most of them are. I don't know of any search engines that bring back just one item that you searched for. So I think that is built into at least most of these designs. They are going to force you to browse, and by browsing serendipity goes way up. OPACs are the same way. They'll always pull back at least a list of books that match your search criteria. So I think

that they built that in. How could you increase it? I think that Google's 'Get Lucky button' - I think it's Google that does that?...That kind of thing. The more random approach to searching...I think most people who search want to find information on what they're interested in. They don't want something sort of out of the blue just appearing on their screen. But it would certainly increase serendipity to chance upon something like that... If you put all the relevant ones up top, the serendipitous approach is going to go down. The level of serendipity is going to go down I think." Thus it seemed that librarians and information retrieval system designers can learn something from Google, and experiments with "I'm Feeling Lucky" type buttons should be conducted.

Another common theme that popped up in the interviews was the relationship between serendipity and the number of records returned by an information retrieval system. One faculty interviewee suggested that, "Increasing the search results size will certainly increase serendipity, although the research says that most people don't scroll through very many screens." Another faculty interviewee commented, "Fred Kilgore, when he was working here, did a lot of studies because he believes in the mini-cat. He believes that the results listed in the catalog should always be one page. He sees that as the ideal browsing space. Marcia Bates earlier talked about perfect 30 item search. You want to retrieve 30 items to browse through. That would be the ideal." This particular interviewee agreed that limiting the number of results retrieved by a system does limit serendipity, but she said of Kilgore and Bates, "I don't think they were oriented towards that [serendipity] so much. And I also think that now people expect to see more results because of their experiences with the web.

It used to be that it was either relevant or not relevant and so you wanted all 30 to be relevant and not like just sorta, maybe, possibly relevant. Whereas now, because of the ranking by relevance, you expect that the first 30 or so might be relevant, and then after that... People hardly ever browse even past 20. In web searching, they're choosing very small neighborhoods to browse in." Perhaps choosing large browsing areas within information retrieval systems would increase serendipity.

One interviewee suggested that the OPACs should be more participatory because she felt that would nurture serendipity: "For example, there are things along the lines of having reviews put in by patrons ... have some blog content that's generated by patrons. But also making it very, very easy for people to give input and being able to respond to that input. Or even in some library systems you start to see things where people do generate things for their website. For example, what it is? .. *SuperPatron*. It's the blog for someone in Ann Arbor, and he made a widget that you can use in Firefox, similar to the one that *LibraryThing* has. So if you see ... say you're looking at Amazon - anything where there's an ISBN for a book you like, you can click on the widget, and it'll look it up in your catalog." This means that libraries should take the time and effort to make their catalogs more participatory.

Another interviewee suggested that libraries implement the Aqua-Browser system as a way to increase serendipity: "It overlays your catalog, and basically...when you put a search term in the menu on the left side, it does this web of related terms. It's a visual thing...It's great for kids... Also, if you misspell it, it kinda pushes you to close by spelling words that you and can click on and go directly from one to another. For me, I'd want it do it automatically. But for the patron, I'd

want a visual representation of what terms you could choose from." This was a unique suggestion.

Overall, the comments of the eleven people interviewed as part of this study seemed to indicate that libraries are already doing many things that nurture serendipity - such as collocating similar materials and providing open stacks for shelf-browsing. Much is also going right in information retrieval systems - such as the use of subject headings in OPACs. However, the interviewees were able provide suggestions of things that libraries and information systems should start doing or do more of. They also provided insight into the nature of serendipity.

### **Importance of Study**

#### *General Research Area and Situation of the Topic of this Research Within that Area*

This work belongs to the academic/research area of library and information science. Serendipity has a role in library and information science because information seekers serendipitously discover beneficial and relevant information. Information seekers stumble across citations, cross references, books, articles, and other items that are unexpected, but highly relevant and useful (Rice 139). Allen Foster and Nigel Ford's article, "Serendipity and Information Seeking: An Empirical Study," helps to place the topic of serendipity within the context of library and information science because they investigate how interdisciplinary researchers experience serendipity in their use of libraries and information systems. My current study of serendipity contributed to two areas of interest within library and information science: information retrieval and information seeking behavior. I was particularly

interested in exploring information retrieval strategies and information seeking behaviors that increase opportunities for serendipitous discoveries in libraries.

*Importance, Implications of This Research and Who Would be Interested*

Serendipity is an important and worthwhile topic to study because users benefit from serendipitous discoveries. Because library users benefit from them, it makes sense that librarians and information professionals would want to create opportunities for serendipitous discoveries to occur. This research into serendipity can help them to do just that. Serendipity is also important to study because research on serendipity can have implications for the physical layout of the library and for the design of information retrieval systems. If they recognize the value of serendipity, librarians and information professionals may want to build libraries and information systems that are conducive to serendipity. Users may benefit from libraries and information retrieval systems that provide opportunities for serendipitous information encountering.

Serendipity was also important because users do not always know exactly what will meet their information needs. The existence or location of the item that will meet the information need may well be uncertain (Foster and Ford 320). Therefore, searchers will sometimes place themselves in situations in which they have the opportunity to serendipitously stumble across useful items and citations that meet their needs. For example, they may browse a physical library collection in hopes of making a serendipitous discovery as Marilyn M. Levine describes in "An Essay on Browsing." In addition, a serendipitous discovery may change and shape the

information need (Foster and Ford 320). This correlation between information needs and serendipity is a reason why serendipity is an important issue to study.

The vast amount of information currently available is another reason why the issue of serendipity deserves study and attention. As Joseph W. James and Louis B. Rosenfeld point out in their article, "From Security to Serendipity, or How We Have to Learn to Stop Worrying and Love Chaos," the amounts of information that contemporary searchers have access to are so great that an exhaustive search on any given topic is impossible to perform. Therefore, James and Rosenfeld suggest that information seekers make serendipity rather than exhaustiveness their objective: "Serendipity in retrieval means that the searcher would hope only to encounter *some* useful information" (James and Rosenfeld 81). Serendipity is an important concept for librarians and information professionals to think about because, if the objectives of the user change from exhaustiveness to serendipity as James and Rosenfeld suggest, we need to adapt. We need to think about how we can provide our users with the opportunity to serendipitously find *something* written about their topics or query even though they cannot possibly find *everything* ever written on any one subject.

The importance of this specific study of experienced searchers is that others can benefit from the experiences and ideas of these experienced searchers. This study of serendipity has preserved and recorded pieces of their wisdom and experience for current librarians and information professionals as well as future generations. Perhaps some of the insights and suggestions of these SILS faculty members and public librarians will actually be used in libraries and information retrieval systems.

My research into the topic of serendipity implies that librarians and information professionals can provide opportunities for their users to serendipitously encounter information. One implication of my research is that librarians can design the physical layout of the library in ways that foster serendipity. For example, Rice, McCreadie, and Chang point out that the various forms of browsing allow for the opportunity to serendipitously encounter information. Therefore, librarians can arrange the physical space of the library in ways that encourage browsing. However, serendipitous discoveries take place within information retrieval systems as well as in the physical library stacks. Therefore, my research on serendipity also has implications for the design of information retrieval systems. Such information retrieval systems include databases, OPACs (Online Public Access Catalogs), and internet search engines. For example, in his article, "Serendipity and Holism: the beauty of OPACs," James Rice makes the argument that OPACs are better able to provide opportunities for serendipitous discoveries than card catalogs because OPACs have more storage space and allow for more cross references (Rice 139). This means that the designers of information retrieval systems may want to include cross references and "find similar documents" features in their systems because these features would allow for the possibility of serendipity. These are the reasons why librarians and information professionals of almost all types would be interested in this research and could benefit from it. Creators and managers of digital information retrieval systems would also be interested in this research if they want the users of their systems to experience serendipitous information retrieval while using their databases, catalogs, and search engines.

## Summary and Conclusion

This research into the concept of serendipity examined how experienced searchers create and take advantage of opportunities for the serendipitous discovery of information. I placed serendipity in the context of library and information science. In this context, serendipity means a happy accident in which a user encounters a useful item or citation somewhat by chance. A review of the literature revealed that serendipity is related to the concepts of personal networks, media exposure, and browsing. My literature review also identified a variety of frameworks through which serendipity can be understood. The professional literature on this topic also pointed out two major obstacles that must be overcome in order for serendipitous discoveries to take place. These two obstacles were finding too much relevant information and finding useless information.

The research method that I selected was qualitative interviews with five SILS faculty members, two librarians from the Chapel Hill Public Library, and four librarians from the Durham County Public Library. The interviews were recorded, transcribed, and analyzed using a variation of Glaser and Strauss' 'grounded theory.' Throughout this process, I acted ethically and took care to protect the privacy and confidentiality of the interviewees. Admittedly, this method did not produce data that is particularly valid or reliable, but those weaknesses were overshadowed by the strengths of this study. These strengths are its flexibility, the depth of the data collected, and the ability to record the experiences and ideas of the experienced searchers interviewed.

The literature and the qualitative interviews led me to conclude that serendipity was important to study because 1) Users benefit from it; 2) Information seekers do not always know what they are looking for; 3) The enormous amounts of information available make exhaustive searches impossible to conduct; and 4) We can learn from how others experience and take advantage of serendipity. Because serendipity is an important topic, researchers should explore areas for further research beyond the scope of this study. The relationship between serendipity and information overload needs to be studied in further detail. Additional studies might look at serendipity in contexts other than library and information science. For example, Royston M. Roberts's book, *Serendipity: Accidental Discoveries in Science*, chronicles serendipitous breakthroughs in science. In his introduction, Roberts asks, "What do penicillin, X rays, Teflon, dynamite, and the Dead Sea Scrolls have in common? Serendipity!" (Roberts ix). Further research might also look at why some information seekers seem to be better at stumbling across relevant citations and items than others. Another area for further research would be the effectiveness of bookstore style layouts in small or medium sized public libraries. Such research might consider whether or not that layout promotes serendipity better than the commonly used Library of Congress and Dewey classification systems.

Serendipity is fascinating to study because of the wonder, joy and excitement users feel when they stumble across just the right thing at the right time. One of my favorite stories of serendipity comes from Sandra Erdelez who tells about a woman

who had a hard time finding information for a job-related project and was concerned about failing in the eyes of her supervisor. One day, while doing laundry in her apartment complex, she found an article in an

unfamiliar magazine that was lying on a table in the laundry room. The article specifically dealt with the problem she was trying to resolve (Erdelez 28).

Finding that article in the laundry room is a beautiful illustration of a happy accident.

Imagine her joy and relief in stumbling across that article! Part of the joy of serendipity is being pleasantly surprised by life and by what information is available.

We as librarians and information professionals should do what we can to provide opportunities for our users to experience such unpredictable “light bulb moments.”

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Appendix A

### **Recruitment E-mail**

Subject: Help Me Explore the Concept of Serendipity in Libraries!

Message Body: I am conducting a study of the concept of serendipity in libraries. Would you be willing to be part of this study?

Qualification criteria include:

- Above 18 years
- Be a current faculty member of the School of Information and Library Science at the University of North Carolina at Chapel Hill or currently employed as a librarian by the Chapel Hill Public Library or the Durham County Public Library.

The purpose of this study is to provide some insight into the question: what information seeking strategies do experienced searchers employ in order to provide opportunities for the serendipitous discovery of information? Serendipity is an important concept to study because it has potential implications for the ways in which materials are organized in the physical library as well as the design of information retrieval systems - such as databases, OPACs (Online Public Access Catalogs), and internet search engines. Your experiences and opinions regarding this topic are valuable!

If you participate in this study, you will be asked to allow me to interview you regarding serendipity and how you personally actively engage in it, as well as how you remain open to taking advantage of it. The entire procedure will take about a half hour. If you are willing to participate in this study, please reply to this e-mail ([eageorge@email.unc.edu](mailto:eageorge@email.unc.edu)), and we can arrange an appointment for the interview at your convenience. This research study and this message have been approved by UNC Institutional Review Board (IRB study # 07-1721). If you have any questions about this study, please contact me or my faculty advisor, Dr. Gary Marchionini.

Thank you!

- Elizabeth Watson

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Appendix B: **Informed Consent Form**  
**University of North Carolina-Chapel Hill**  
**Consent to Participate in a Research Study**

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**IRB Study #07-1721**

**Consent Form Version Date: 10/31/07**

**Serendipity in Libraries and Information Seeking**

**Principal Investigator:** Elizabeth Watson

**UNC-Chapel Hill Department:** School of Information and Library Science

**UNC-Chapel Hill Phone number:** 509-280-0568

**Email Address:** [eageorge@email.unc.edu](mailto:eageorge@email.unc.edu)

**Faculty Advisor:** Dr. Gary Marchionini (919) 966-3611; [march@ils.unc.edu](mailto:march@ils.unc.edu)

**What is the purpose of this study?**

The purpose of this study is to provide some insight into the question: what information seeking strategies do experienced searchers employ in order to provide opportunities for the serendipitous discovery of information? We will discuss how experienced searchers - library and information science faculty as well as reference librarians at a public library - understand serendipity, take advantage of it, solve the problem of searching or browsing broadly enough that they will be likely to serendipitously encounter relevant information objects but not so broadly that they are overwhelmed and suffer from information overload, and any suggestions they have for improving serendipity in libraries and other places.

**How many people will take part in this study?**

If you decide to be in this study, you will be one of approximately 11 participants – 5 faculty members from UNC’s School of Information and Library Science, 2 librarians from the Chapel Hill Public Library, and 4 librarians from the Durham County Public Library

**How long will your part in this study last?**

Your participation in the study will take approximately one half hour, during one session.

**What will happen if you take part in the study?**

You will be interviewed regarding serendipity and how you personally actively engage in it, how you prepare yourself to receive or take advantage of it, and any suggestions you may have for improving serendipity in libraries and other places. Our conversation will be audiotaped, transcribed, and analyzed.

**What are the possible benefits from being in this study?**

Research is designed to benefit society by gaining new knowledge. Librarians, other information professionals, and the users can benefit from your knowledge, experience, and ideas and become better equipped to nurture serendipity and take advantage of it. You personally will potentially gain some insight into information seeking by reflecting on your experiences of serendipity and how you can take advantage of serendipity in the future.

**What are the possible risks or discomforts involved from being in this study?**

I do not know of any personal risk or discomfort you will have from being in this study. There may be uncommon or previously unknown risks. You should report any problems to the researcher.

**How will your privacy be protected?**

I will make every effort to protect your privacy. I will not use your name in any of the information we get from this study or in any of the research reports. The transcription of your interview will not contain any information that can identify you. Any e-mail messages between you and the researcher will not leave the UNC webmail server, and if telephone contact should be necessary, any phone numbers or phone messages that could identify you will promptly be deleted from the researcher's cell phone.

**Will you receive anything for being in this study?**

After you have completed the study activities, you will be given a chocolate bar in appreciation of your participation. If you must withdraw from the study prior to completing it, you will still receive your chocolate bar.

**Will it cost you anything to be in this study?**

There will be no costs for being in the study other than your time.

**What if you are a UNC employee?**

Taking part in this research is not a part of your University duties, and refusing will not affect your job. You will not be offered or receive any special job-related consideration if you take part in this research.

**What if you have questions about this study?**

You have the right to ask, and have answered, any questions you may have about this research. If you have questions, or concerns, you should contact the researchers listed on the first page of this form.

**What if you have questions about your rights as a research participant?**

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the Institutional Review Board at 919-966-3113 or by email to IRB\_subjects@unc.edu.

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**Participant's Agreement:**

I have read the information provided above. I have asked all the questions I have at this time. I voluntarily agree to participate in this research study. (Please keep a copy of this form for your records.)

\_\_\_\_\_  
Signature of Research Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Research Participant

\_\_\_\_\_  
Signature of Person Obtaining Consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Person Obtaining Consent

## Appendix C

## Serendipity Interview Questions

### Part 1: What you think serendipity is and how you actively engage in it

1. What do think serendipity is? How would you define this concept?
2. Researchers as well as librarians can be reluctant to admit that chance played a role in their success: how many librarians really want it known that they just happened to stumble across a citation rather than locating it as a result of a sophisticated search strategy? Do you attach any such stigma to serendipity? Why or why not?
3. Please think of a singular instance in which you serendipitously discovered something in a library. What did you find - a book? a journal article? a magazine? something else?
4. How did you encounter it? What methods did you use to search or browse and why?
5. When you are searching for information, how do you design your search or define your browsing area in such a way that it is broad enough that you are likely to encounter relevant information, but not so broad that you feel overwhelmed?

### Part 2: How you prepare yourself to receive or take advantage of serendipity

6. What, if any, media sources do you regularly expose yourself to in the hopes of serendipitously discovering information? Do you subscribe to any RSS feeds, listservs, or professional journals? If so, do you typically read or scan them?
7. Many people feel constantly bombarded by these media sources - what do you do when you feel this way? If you have never felt this way, how would you recommend someone who feels inundated by these sources deal with the problem?
8. Personal networks such as family, friends, acquaintances, co-workers, and professionals within a community can sometimes be sources of serendipitous information encountering and can help an information seeker to deal with information overload by recommending articles, books, websites, and other such documents thereby helping the seeker sort through a potentially overwhelming number of resources. What has been your experience in this area?

### Part 3: Suggestions for improving serendipity in libraries and other places

9. What suggestions do you have for nurturing serendipity in libraries? Would you recommend any changes in the physical layout of the library or in the organization of materials in the library?

10. What suggestions do you have for nurturing serendipity in information retrieval systems - such as databases, OPACs (Online Public Access Catalogs), and internet search engines? Would you recommend any changes to these systems?