FACILITATING INTERACTION:

THE ROLE OF THE REFERENCE LIBRARIAN IN

ONLINE LEARNING ENVIRONMENTS

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ABSTRACT

FACILITATING INTERACTION: THE ROLE OF THE REFERENCE LIBRARIAN IN ONLINE LEARNING ENVIRONMENTS

JOHN JOSEPH DOHERTY

Through an interpretative research paradigm this study examines how reference librarians facilitate interaction in online learning environments. Much of library research has a positivist outlook that trends to a functionalist view of digital reference services. This study, however, draws on distributed learning theories in order to develop a grounded theory of instructional interaction of digital reference services.

The study used a mixed-methods research methodology, informed by case study and critical ethnography, to collect observational, interview, and questionnaire data. The site under study combines face-to-face, phone, and digital reference service at one service point. Data were gathered as follows: librarians were observed at their reference activities; interviews were conducted with four librarians that sought their impressions of the reference service milieu and the digital reference service specifically; a second interview was conducted using a stimulated recall method to analyze the librarians work with digital reference; the librarians completed self-reports that triangulated with observational and interview data; and, an analysis of the transcripts of the digital reference service.

The resulting data were analyzed by a constant comparative method based on

the grounded theory design. With this procedure, continual analysis by the researcher by means of comparing new data with previously collected data noted the similarities and differences among the data. Categories were thus allowed to inductively emerge.

It was concluded that librarians facilitate interaction in online learning environments through an evolution of the traditional practice of the reference interview. A new theory of reference interaction is suggested that calls for further studies to be conducted to test and refine it.

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Confidentiality precludes naming the participants in this study. Each contributed so much more than I had asked of them. You know who you are: without you this study would have been so much less.

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TABLE OF CONTENTS

Dedicated to the memory of

John James Pascal Doherty, 1932-2003

When I took hold of the mirror
I had a fright. I imagined him breathing through it.
I heard him say in a reassuring whisper:
I'll give you a hand, here.

Paul Muldoon, “The Mirror,” 1983

PREFACE

STATEMENT OF SUBJECTIVITY

> Between my finger and my thumb
> The squat pen rests.
> I'll dig with it.
>
> ("Digging," Heaney, 1966)

As a poet, Seamus Heaney established his ground immediately, placing himself firmly on the side of his oppressed ancestors. In "Digging", the first poem of his first collection (Heaney, 1966), he draws on memories of his father's and grandfather's digging of peat in the bogs of Ireland while at the same time distancing himself from that role. He saw himself as using his gift as a poet to give them a voice. As he would say a decade later: "Incomprehensible / To him, my other life" ("Casualty," Heaney, 1979).

It may seem strange to open a research dissertation with a poem. However, the research that follows is not only firmly grounded in my own professional practice but in my personal experiences and growth. In Chapter Three I note that one way for a researcher to uncover potential researcher bias is to participate in a bracketing interview. This preface is the result of my bracketing interview. It is important to the reliability and validity of the research here reported that readers understand my personal, professional, and theoretical backgrounds in order to better interpret my findings.

It should be noted at the outset that the digital reference service that forms the core of this study was, in part, created by me. Along with two other colleagues, I was responsible for this service being adapted from an earlier e-mail service to the current fully integrated service. In saying this, however, at this writing I had ceased active involvement in the development and management of the service four years ago.

The study that follows is a direct outcome of the theoretical development I have been working on my entire professional life, namely the application of critical theory to library philosophy and practice. My earliest published works challenged the role of librarians in canon development (Doherty, 1998b) and examined a non-traditional reference resource (Doherty, 1998a; Doherty, 1999). More recently my work has focused on re-thinking the dogma of the reference interview (Doherty, 2005/6; Doherty, 2006). This study is directly related to the latter work on the reference interview. Seamus Heaney used his pen in a critical theory sense to give voice to the silenced and oppressed of Ireland; I have used my research to develop a sorely lacking area in library philosophy and practice, that of critical theory.

The overall describing and questioning of societal norms that is a matter of course for a critical theorist is, I believe, ingrained in anyone who grows up in a damaged society, such as the Ireland of the Troubles that I grew up in and as Heaney, among many others, so poignantly documents. One wonders why such societies are the way they are, especially if one manages to exit the situation and look in from outside and see how damaged it actually is. Such was the emigrant fate of many Irish, including my own father, to whom I am dedicating this work. He got out, and he returned. But he raised his family with the questions he never contentedly answered.

He raised critical theorists, even though we had no idea that we were so.

To have become a librarian, an avatar of a functionalist, hegemonic profession to a critical theorist, may therefore seem somewhat dissonant. But it was in librarianship that I was first exposed to many of the theorists that later came to influence this and my other research. For example, I was introduced to the works of Michael Harris and Stan Hannah (Harris & Hannah, 1993), among the usual library science suspects. They tried to introduce critical theory to a profession ill-suited to it. Only in 2006, for example, have library theorists taken Harris's and Hannah's development of the critical theories of Antonio Gramsci and others and applied them to the trademark pedagogy of librarianship, information literacy (see, for example, critical information literacy as suggested by Elmborg, 2006).

My own recent theoretical work is a direct outcome of this personal and professional journey. I have sought to apply the work of Paulo Freire, Henry Giroux, and the critical pedagogues of educational theory to reference work. I am looking for a replacement to what I have called the inherent patriarchal practices of the reference interview, a protocol of reference service that is privileged in library schools and in library literature. I believe that any new theory of reference practice, just like the reference interview, does not lend itself to being tested in the traditional, technical rationalist mode of library research. As such, therefore, the research design of this dissertation is also somewhat predicated on this subjectivity.

The Northern Arizona University College of Education doctoral program in Curriculum and Instruction encourages its students to learn about research paradigms in part to help the student come to terms with the paradigm he or she is most comfortable with. I am a critical theorist, perhaps even a critical pedagogue. In terms of library science, this places me firmly, but comfortably, on the periphery of our academic discourse. In this study, I have kept this sense of my own place at the fore of all I have done in data collection, analysis, and discussion. It is my intent to have my research participants speak in their own voices, and to allow those voices to inform my findings. In any research it is impossible for the researcher to completely distance him- or herself from their subject. By noting here my own subjectivities I hope to give the reader enough information to identify if and when I have failed in that intention.

CHAPTER ONE

OVERVIEW OF THE STUDY

Introduction

Digital reference services in libraries lack a general theory that reflects the learning that occurs in reference interactions between the librarian and the user. Rather, the traditional reference interview, grounded in face-to-face service, has earned a canonical place of theoretical privilege, crowding out discussions of learning. It could be termed the metanarrative (Lyotard, 1984) of reference services, legimating as it does all other forms of librarian and learner interactions. Indeed, as reference services transition to an online environment, especially through "Ask A Librarian" email and chat services, so has the reference interview. As a basic reference text (such as those used to train—and socialize—professional librarians to librarianship) suggests, the most common complaint among reference librarians is that few people know how to ask reference questions (Katz, 2002).

The reference interview is traditionally defined as a transaction between a user and a librarian with the goal of eliciting the information needs of the user. I argue elsewhere for the need to develop new reference theories, especially in relation to digital services that are framed in learning interactions (Doherty, 2005/6; 2006). I suggest that there is a need to develop a new theory of reference services that delegitimizes the reference interview metanarrative in favor of the socio-cultural aspects of learning. Through a mindset that privileges interaction as opposed to transaction, technology could then drive a change in traditional as well as digital reference services. This new theory must also privilege the role of the learner and the learning experience, as opposed to the patriarchal tendencies inherent in the reference interview.

In digital reference services the technological milieu provides librarians with the opportunity to move beyond the traditional reference interview, and develop more practical interactions that privilege learning over process. Schwab (1978), in developing commonplaces for traditional instruction, emphasizes interaction; while Moore (1989) has applied these commonplaces to online learning and specifically focuses on the interactions between learners, instructors, and content. Milieu was later added to this model by Gunawardena and McIsaac as learner to technology interactions (2003).

This study, therefore, describes the role of the librarian in an interactive learning environment of asynchronous digital reference service, sometimes referred to as "Ask A Librarian." In part, it is suggested that asynchronous digital reference services are so organized as to preclude an effective use of the reference interview. Indeed, recent literature on the reference interview suggests this preclusion is seen as a major weakness of digital reference services (Ross, Nilsen, & Dewdney, 2002); and thus, as I contend (Doherty, 2006), there has been an uncritical move towards the development of synchronous, chat-based services that will incorporate the perceived interactivity of the reference interview while excluding learning. Indeed, much of the recent literature on synchronous digital reference services discusses how, as Bartolini (2005) phrases it, the librarian can conduct a live interview.

The Reference Interview Defined

Katz (2002) speaks of the reference interview in strong patriarchal tones:

> The first [objective] is to find out what and how much data the user needs. This should be simplicity itself, except that most people do not know how to frame questions. The child looking for information on horses may be interested in pictures, an encyclopedia article, or possibly a book on riding. No matter what the scope of the query, it will probably come out as "Do you have anything on horses?" (p. 19)

It has been a part of library practice since Green first presented an initial form of it to the profession in 1876. Hutchins (1944) was the first to coin the term reference interview by addressing the factors librarians should consider in the dialog between themselves and their users. She further defined the interview according to the following: time required by the interview proper; clarification of the question; ascertaining of the reader's needs; and, the results of the interview. Since then the reference interview has been refined by a variety of models that consider other factors such as non-verbal communication (Gothberg, 1995).

As the recent textbooks in reference service (Bopp & Smith, 1995; Grogan, 1991; Katz, 2002) indicate, the reference interview has earned a canonical place in the theory and practice of reference services. These texts present the reference interview in two stages, question-negotiation and the actual search. The basis of the reference interview is on the user's self-identification of an information need. From here, the question-negotiation stage defines the context or framework of the users. This is critical—if the question is misunderstood then the whole interview could be adversely affected.

Statement of the Problem

Missing from much of the literature on digital reference services is an intersection with online learning theory, or most particularly distance/distributed learning theory. In part, this is due to a basic assumption of the reference interview that learning may not really be occurring. Rather, process is what is valued in the reference interview (Kuhlthau, 1993; 1994). The literature reflects such an orientation to the process, and while some have advocated for keeping the user at the center of the reference interview (Fine, 1995; Morris, 1994), the librarian is still the privileged partner in the endeavor. Merton, in discussing manifest and latent functions, suggests that there are intended and unintended consequences of a particular action (Merton, 1957). Applied to the reference interview, I see that the manifest function is to assist the user in getting to the appropriate expression of their information need; however, the unintended consequence, or latent function, of the reference interview is to devalue the expertise and experiences of the user, and, in many instances, place the user in a subordinate role to the expert questioner that is the librarian.

This study moves beyond the process-oriented research that dominates the academic discourse on digital reference services to examine more closely the transition of traditional services to the online or digital environment. As will be seen in Chapter Two, much of the literature on digital reference services is not engaged critically; rather, it reflects on traditional services and ways of using online technologies to deliver an online version of the reference interview (Bowman, 2002). Rather, this study will place digital reference services within the frame of distributed learning theories to uncover the role assumed by librarians in a learning interaction. However, as one reviews the research on digital reference services in either synchronous or asynchronous format, one can see a trend in the type of articles presented: mainly process oriented (Carter, 2002; Johnson, 2004; Pomerantz, Nicholson, & Lankes, 2003; Pomerantz, Nicholson, Belanger, & Lankes, 2004), with a few recent additions that are beginning to suggest ways of assessing or evaluating such services.

As such, therefore, the academic discourse in librarianship ignores the inherent privileging that librarians claim to be anathema to their service roles. In other words, librarians assume that users need access to information and that librarians are the facilitators of this access. However, such a view allows librarians to hide behind the supposed neutrality of the information being provided, where they assist in accessing the information needed while not making any judgments on that information or the potential uses the information could be put to (Jensen, 2004). Good (2006/7) argues that this is moral relativism of the worst kind.

Purpose of the Study

This study will therefore examine the digital reference interaction in the context of reference services in general. I have argued elsewhere (Doherty, 2005/6; Doherty, 2006) for a more learning-focused form of reference service, one in which the privileging of the reference interview is replaced by a critical dialogue among equals. Such a focus would better benefit from a more critical theoretical perspective, where the traditional practices of reference services could be deconstructed to reveal the hidden roles libraries play in an unequal, hegemonic culture. Further, framing this discussion within distance education theories, and in particular within the theories of distance/distributed learning, transactional distance, and interaction, adds a lens missing from the library literature. Distributed learning theory, for example, places importance on social presence and interaction for the development of effective online learning experiences. In respect to the interaction between librarians and their users, dialogue is an extremely important component that does not seem to belong in the reference interview process. Instead of assuming, as the reference interview does, that a user does not know what information is needed, dialogue in reference interactions suggests an equality of expertise, wherein the librarian assumes the more empowering role of partner as opposed to information guru. Therefore librarians could value both the perspectives and experiences of the users as well as their own, and work from both as a starting point in a reference interaction.

Much of the literature on digital reference services can lay a claim to learner to technology and learner to content interactions (see, for example, Lankes, 2003; Pomerantz et al., 2003; Pomerantz et al., 2004). Berge (2002) contends that only through well-designed interactions within the contexts (as well as the limitations) of both the learning activities and the delivery system can interpersonal interactions be developed to support effective online learning. Moore (1989; 1993) specifically suggests that the learner to instructor concept provides the learner with instructor feedback, motivation, and dialogue. For the librarian in the online learning environment this can be taken to be a response to the structural limitations of the reference interview. Indeed, drawing on phenomenology, Budd, in 1995 before the advent of digital reference services, suggested that librarians cannot forget that the library is a product of intentionality:

> [O]nly if a user understands his or her question can the librarian understand it and respond to it. All else is an imperfect approximation. The process, though, can (and probably should, in many instances) be an iterative one that may, if successful, reveal or develop intention through a joint exploration by the user and the librarian. If the process is carried far enough, there may be a transformation that leads to understanding. (Budd, 1995)

This is why synchronous solutions (usually in the guise of online chat) to digital reference are so prevalent.

An Operational Definition of Instructional Interaction

In a recent co-authored study, I led research that sought to examine librarians' instructional intent through an analysis of the content of answers to questions in an online Ask A Librarian database—the same database that will be used later in this study (Appendix G excerpts portions of this study). The study examined question and answer data that are stored for interactions that occured between October – November, 2004 and 2005. The complete database has stored questions and answers from the inception of the service (June 2002) to the present—this is an active service. Two previous internal analyses (one that I conducted) suggest that the sample chosen for this study is representative of a calendar year's worth of data.

Description of the Digital Reference Service Studied

In keeping with the theoretical orientation explored above and in more detail in Chapter Two, within this service there is no presumption that the user is not quite sure of the question. A public online web form has the user input questions upfront, before other information such as a contact email address. The first of the aforementioned internal analyses of the service from June 2002 through April 2003, based on an emergent design methodology, shows that many of the questions could easily fall into one of a series of emerging categories. Due to this analysis the service was redesigned in May and June of 2003 to allow for a more phenomenological coding of the answers into the categories suggested in the study. Also, this allowed for the development of canned response forms to be used for the category thus coded. Both analyses suggested that the response usually was appropriate and detailed enough to conclude the interaction. This service, therefore, does not seek to engage in an interview with the user (and essentially cannot as it is asynchronous). What it does do is encourage the library staff responding to the query to take the question at face value or make some a priori assumptions in respect to the information need of the user. While this latter approach is itself quite loaded in sociological terms, it is at least a first step in placing value on what the user has expressed.

During the period the data were collected for our study, the response involved the librarian selecting from a list of canned responses (see Appendix A). Straw (2006) notes the value in using canned messages, especially in how it can release the responder from some of the more onerous procedural tasks in drafting a response. The librarian then customized the content of the canned message to meet the specific needs of the question. As can be seen in Appendix A, 19 of the canned response forms are coded as Procedural, while 8 are coded as Instructional based on the aforementioned definition and purpose of instructional interaction.

The operational definition of instructional interaction is here said to be the level of customized content. In a directional response, it is expected that there would be less customized content. Thus, there was more dependence on the canned message and its pre-prepared content to answer the question. However, if one agrees with a theoretical grounding more focused on a learning interaction, one would expect to see the structure of the canned message adapted by the librarian so that a dialogue would be initiated in which expertise is neither assumed nor given (Freire, 1993). More customized content suggests more instructional interaction in socio-cultural terms. For example, each of the 659 answers from the October and November 2005 period was analyzed and coded in terms of how much the content differs from that of the standard answer form used. In other words, how much has the response been customized? This study discovered that Instructional responses are more customized than Procedural responses (Appendix G).

Based on this operational definition, this present study will look at the role of the librarian in creating this instructional interaction.

Research Questions

As this project seeks to describe the role of the librarian in digital reference service interactions, it is important to discern the actual activities of the librarians. Therefore, this study will seek to find out what that role is by asking the following:

1. How do librarians respond to digital reference service questions?
    i. What influences the time it takes to respond?
    ii. What is happening in the process of responding to "Ask A Librarian" queries?

However, the research project also seeks to describe the instructional intent of librarians during their interaction with the user. Therefore, the research will also ask the following:

2. What affects the type of response provided by librarians to digital reference questions?
    i. What are the types of questions being asked, and how do they influence the response?
    ii. How do librarians weight quality or quickness of response in responding to digital reference questions?
    iii. How is a digital reference interaction initiated?

Study Design

Elmborg (2006) notes that librarians are increasingly seeing themselves as educators, especially in the academy. This implies many challenges for the theories and practices of the library profession, and calls for a more critical paradigm in library literature. Drawing on Giroux (2003), I have elsewhere noted that rather than proclaim a positivist notion of neutrality, critical theory openly takes sides in the interest of struggling for a better world (2005/6). This study, therefore, was done through a critical lens, as examined further in Chapter Three. It describes the role of the librarian in creating an interactive online learning environment. Such an interaction, it is suggested, is a much less patriarchal form of interaction between the user and the librarian than the reference interview.

The study was conducted at a busy academic reference desk over the course of six weeks. Volunteer participants were observed and interviewed, and had the content of their digital reference interactions analyzed. Ideally, a representative mix of librarians in respect to education, experience and sex (the reference staff are all Caucasian) would have been sought. However, due to the limited number of potential volunteers and thus issues of confidentiality this mix is not revealed in the study.

The formal research period took place between October and December 2006. Internal documents cite this as one of the more intense periods of both "Ask A Librarian" interactions and other interactions at the reference desk generally. In stage one of the study period, I observed all of the informants during their reference desk shifts; attention was paid to the digital reference service interactions, but all aspects of the shift were accounted for. These observations provided me with the opportunity to establish the context for the service and provide a description of the setting. Such observations also allowed me to set the context for the next two stages. Also, in this stage, at the end of each shift, informants were asked to do a brief online written reflection on their shift. They were prompted to consider if there was anything unusual, or if there was something they might, on reflection, have done differently.

Stage two of the study was an analysis of the particular questions and answers the informants were responsible for and which went through the digital service during the period of the study. Part of this analysis is a repeat of my aforementioned unpublished study, in order to categorize interactions as Instructional or Procedural. This began two weeks after the observations started in order to leverage the database archive privacy function that deletes all user information.

Stage three was in two phases: first, interviews were conducted to gain perspective on the participants' thoughts on their roles and to clarify information uncovered during the observations and through the reflective responses; second, a follow-up interview was conducted in which the data gathered in the first interview were informed by the analysis of the archived questions and answers, an analysis of the observations, and an analysis of the first interviews. This second interview was in the form of stimulated recall, where, using particular questions and answers as artifacts, the intent was to describe the thought processes of the librarian when responding to the questions.

Appendix B has a sample set of interview questions; it should be noted that some of the questions in the second interview changed depending on the context of the interview and/or the results of previous stages of data analysis. An analysis of the questions and answers was also performed to determine patterns of questions and related answers in order to select the artifacts for the stimulated recall component. Part of the coding had the participants' questions and answers categorized together. General questions and answers through the period were coded as well in order to develop a sense of the typicality of the participants' interactions. Further, the observations and interviews were transcribed and coded through a form of constant comparative analysis.

Limitations of the Study

As noted in the preface, I was a developer and former manager of the digital reference service being studied here. In order to address potential researcher bias, there was a bracketing interview conducted (see the preface) to assist both myself and the reader in uncovering and labeling any potential biases.

Also, among the members of the reference department, some are the active managers of the current digital reference service and/or former developers and managers of the previous iteration of the service, as well as the current department head of all the staff involved in the service and the current supervisor of the researcher. The research design included some of these department members in early stages of field testing interview instruments but did not include them as participants in the formal study. There are also a number of volunteers who work at the library's reference desk, and are thus expected to answer digital reference questions. They were also excluded from the study due to their ephemeral participation in the program.

It should be further noted that the study design is short lived, in that it was focused on a period of particularly intense business at the reference desk and through the digital reference service. The sample size (n=4) is also a limitation, but this is drawn from a full-time group of 13, including those non-volunteer staff mentioned above.

Summary

The metanarrative of the reference interview is an outmoded and patriarchal form of reference practice that should be critically rethought in terms of new, digital reference practices. In particular, any new theory of digital reference services must involve an interaction among equals. This current study seeks to define digital reference services in terms of instructional interaction, and to uncover and describe the roles of librarians in librarian to learner interaction that favors a dialogue over an interview. Utilizing an ethnographic and phenomenological informed case study methodology the study employs interviews, observations, and content analysis to construct an image of digital reference interaction in practice.

CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

Chapter One provided a brief overview of the research literature on digital reference services. This chapter, a review of the literature, will elaborate on that overview while also discussing some of the positivist assumptions that have defined its agenda. Later, this review will ground an analysis of digital reference services in the history of the reference interview, defined in Chapter One. It will also be argued that it is within distance/distributed learning theory that digital reference services finds the more interpretative and critical theory epistemological niche that informs this study.

The Positivist Epistemology of Library Literature

Library research literature is grounded in the positivist epistemology that has dominated the history of library and information sciences. Library workers have sought to define universal laws for the discipline, to construct a manifestly objective paradigm of library and information services that is represented in how information is organized, presented, and accessed (Budd, 1995). This paradigm was "pluralist," with a blind sense of "shared power, consensus, and a neutral state" (Harris, 1986, p. 214). For Harris, there was a dream to establish a "physics" of librarianship, owing much to the suggestions of Mevil Dewey that the roots of the profession are in mechanical and technical rationalist practices of information organization (pp. 217-218). Many library science critics, however, have also sought to establish a more critical paradigm for library research, but a myth of neutrality still holds sway over library literature to the present (Jensen, 2004).

Social epistemology, functionalism, and substitutivity

One foundational, positivist theoretical framework that emerged in library and information sciences in the 1950s was social epistemology. In its original sense this referred to the role of bibliography in the social process of communication and in how to define bibliography according to these social processes:

> [T]here must be appropriate communication (1) *within* each group, (2) *among* the several groups of scholar-specialists, and (3) *between* groups at the scholarly level and the various groups of practitioners, operators, educators, and lay public. Only thus can the results of scholarship be socially useful, and only to the extent that social utility can be established can we justify the increasing social and economic costs of scholarly communication and research. (Egan & Shera, 1952, p. 126, emphasis in original)

Shera later developed this sense of the social construction of knowledge as being more dynamic between the knower and the known (Shera, 1970). This led to library and information science developing a functionalist, logical-analytic framework to the organization of and access to information (Benoit, 2002), with information itself considered a documentary product of knowledge, or the object of Frege's semiotic triangle (Benoit, 2002, p. 445, after Andersen, 1990).

McDowell (2002) notes that information scientists (in the context of the present study, librarians) share the goal of dissemination of information with social epistemologists. Further, it is the goal of librarians to get the right information to the right people. As McDowell implies, however, social epistemology is essentially a non-critical look at the practices that impact societal knowledge and the development of that knowledge. In essence, there is a need for epistemic trust, or the "confidence that someone is an epistemically co-operative and responsible person whose statements provide one with justification or belief…. A practice that increases knowledge through epistemic trust would be one that enhances others' assurance of the truthfulness, reliability, or intellectual integrity of a given source" (p. 54). The librarian functionally operates in this role, as evidenced by the reference interview.

Egan and Shera's theory of social epistemology has thus been very influential in the development of bibliographic practices, where information was organized in a way that was both non-judgmental but also reflective of the social realities of knowledge creation. However, influential here too is Frege's (2001 [1892]) mediated reference theory, or more specifically a theory of substitutivity that suggests truth may not be seriously impacted when one word is substituted in place of its synonym. Social epistemologists in the library and information sciences see this as a way to objectively organize knowledge, which theoretically describes the practice of cataloging, and, I would argue, the interpretative role played by the librarian in the reference interview.

The profession's commitment to this positivist-based stance has only served to strengthen the functionalist aspects of library and information science. However, with the emergence of the Internet, and a developing sense of a post-modern information age, there is a re-emergence of a critical sense of the functional aspects of library literature. Weinberger (2006), for example, after Focault (1980), opines that knowledge confers power "in the name of the nature of reality" (p. 18). This assumes that knowledge, in the social epistemology sense, is representative of social reality and that it is therefore not ambiguous. Thus, Weinberger continues, as knowledge is as big as reality we must have filters in order to comprehend it. These filters are usually in the form of experts working in social institutions that document knowledge. In essence, librarians. In saying this, Egan and Shera acknowledge the transient nature of socially constructed knowledge. After all, their theory of social epistemology for bibliographic services called for appropriate communication (Egan & Shera, 1952).

Weinberger (2006), however, says further that it is only really facts that society has come to any consensus about (p. 18). Most importantly, however, is his suggestion that driving ambiguity out of the system of knowledge tends to lead to falsification. In direct contradiction to Frege he is suggesting that "[t]he universe is analog, messy, complex and subject to many interpretations," which calls for many experts suitably supported by "millions of non-experts" (p. 19). In essence, Weinberger is here describing the post-modern information environment that finds its avatar in the Internet. Knowledge, through information, no longer resides in the hands of the few.

Academic librarians, especially, are only just beginning to develop ways in which to devolve information power to researchers, and this is emerging in the research into digital reference services. Such research delves into an intersection of studies occurring outside of the discipline, especially in education and in computer mediated communication (CMC). At this intersection is an emerging post-modern sense of information organization and access leading to a new, more critical paradigm in library research, although it is a paradigm still in its infancy. Much of the research at this intersection is mostly theoretical, with few empirical studies applying these theories to practice.

In saying this, however, there is little evidence that these intersections suggest a reframing of the research from a procedural orientation to a learning orientation. This review of the literature frames digital reference services in distributed learning theory, suggesting that only through this frame will the true roles of librarians in the learning interaction be seen. As such, therefore, a review of the history of the reference interview will also be important, as this will present the current conceptual framework of digital reference services and research. Finally, this chapter concludes with a review of the current literature in digital reference services.

Distance/Distributed Learning Theory

Through much of its history distance education has been dominated by the correspondence course model. It was focused on a geographical definition of distance that suggested procedural forms of solutions to the learning needs of students. Garrison (2000) labels this the industrial era of distance education due to the focus on these “structural constraints” (p. 2) and suggests current theoretical development is transitioning the distance education field into a more post-industrial era, where there is a focus on “transactional issues” (p. 2). In part this post-industrial model has been influenced by the emergence of communications technologies that allow for more learner control, social presence, and interaction in distributed learning environments.

Combined, these also account for issues around transactional distance that has redefined distance education in terms of distributed education.

The Industrial Model of Distance Education

Distance education is as old as the instructive letter (Lockmiller, 1971). In the modern sense, however, it emerged from the midst of the Industrial Revolution in the middle of the nineteenth century, when the mail became cheaper and more reliable and mass production began to emerge. This model of correspondence education is focused on instruction through written and printed instruction (Lockmiller, 1971), although programs such as the United Kingdom's Open University also presented video and audio components usually delivered, until recently, through the public British Broadcasting Corporation. Teaching is provided by materials that are organized into a series of sections, usually sequential, with anticipated questions built into the material. Students proceed at their own pace and can be tested at the end of each section before proceeding to the next sequence of learning. No direct interaction between teacher and learner is expected, and certainly no role for a librarian is implied.

From a contemporary perspective this lack of emphasis on interaction seems jarring. Yet it is an example of the dominance of the industrial model in distance education. The field was focused on structural and organizational issues, such as those proposed by Otto Peters. In the ideal rendering of this industrial model (Garrison, 2000, p. 6), Peters (in Peters & Keegan, 1994) directly suggested the need to adopt industrial approaches to distance education, especially in the production of course materials. The intent was to utilize mass production techniques to realize a better cost-benefit ratio. Such a focus has dominated the administrative side of distance education since, where there is a realization of minimal costs to produce distance learning on the part of the teaching institution.

Wedemeyer (1971) broke from this model to focus on educational issues as opposed to procedural and administrative concerns. His concept of independent learning was to dominate the theory of distance learning for the next decade and create a niche librarians would put themselves into. He categorizes independent learning in terms of internal or external students. The former occurs within an institution, where students are enrolled; the latter refers to those outside of the institution. Here he makes an implied distinction between students and non-students respectively. In other words, there is a latent sense that external students are not learning to the level of internal students. Independent study is operationalized here as degrees of freedom: self-pacing, self-direction, and self-selection (p. 550). Yet, for internal students the focus is on the exceptional learner, through mechanisms such as honors programs. External students, however, are provided independent learning from a different perspective, building on the social issue of democratic access to education for all (p. 549). This is somewhat reminiscent of the development of public schooling and, in the library discipline, the emergence of the US public library system and its ethic of intellectual freedom and information access.

Wedemeyer refined this definition of external independent learning by suggesting it takes place outside of institutional control. He emphasizes geographic distance from the institution (1981). In other words, independent learning is framed as freedom from others (Garrison & Baynton, 1987). Implied in much of the early post-industrial conversations, however, is the assumption that it is difficult to replicate face-to-face instruction at a distance. Both Wedemeyer and Peters remain convinced of the structural value of independent learning and there has generally been much discussion about it in an adverse relationship to interaction. Moore (1989; 1990; 1991; 1993), however, developed the theory of transactional distance that emerged in the early 1970's to add dialogue as a dimensional complement to structure. Structure, he suggests, is the course design, including the medium and the organization of content. Independent learning would fall into this structural aspect, as it is focused on this medium and content.

Dialogue, however, involves communication that might be two-way between the learner and the instructor, or could be built into the learning materials. This was further developed by Holmberg (1989) as guided didactic conversation which refers to simulated conversations built into the course materials. These would include, for example, the anticipated questions and answers that were a part of the correspondence learning materials. In an echo of Joseph Schwab (in Schwab et al., 1978), however, who developed commonplaces for traditional instruction, Moore emphasized interaction beyond a simple two-way dialogue between the learner and the instructor. He echoes and applies Schwab's commonplaces to online learning and specifically focuses on the interactions between learners, instructors, and content. Milieu, the forth of Schwab's commonplaces, was later added to this model by Gunawardena and McIsaac as interactions with instructional interfaces (Gunawardena & McIsaac, 2003).

The Post-Industrial Model of Distance Learning

Moore's concept of transactional distance therefore redefines distance education in pedagogical terms rather than geographic terms:

> [D]istance is determined by the amount of dialog which occurs between the learner and the instructor, and the amount of structure which exists in the design of the course. Greater transactional distance occurs when an educational program has more structure and less student-teacher dialogue, as might be found in some traditional distance education courses. (Gunawardena & McIsaac, 2003, p. 361).

Moore later adds another dimension, that of learner autonomy, suggesting that a course with high transactional distance places greater responsibility for learning on the learner. Garrison (2000) suggests that Moore is discussing learner control in a continuum with teacher control at the other end.

For Garrison and Baynton (1987) control is a more inclusive concept in relation to the learning process and belongs at the center of transactional distance theory. Control is intended here to absorb and replace independence, which would rather form one of three dimensions of control; the others being power and support. Control of learning is therefore a “dynamic balance” of these dimensions that is manifest in the two-way communication process between the teacher and the student (p. 3). It should be noted that the typology of transactional distance would suggest this communication can also occur as interactions between the learner to learner (self-reflection), learner to instructor, learner to content (the traditional model) and learner to technology. The assumption behind the traditional sense of independence is separation of the instructor and the learner. However, from a structural perspective, Garrison and Baynton (1987) suggest that there can be a high degree of teacher direction in the materials presented. Indeed, this is implicit in the traditional correspondence model (p. 4). Independence, however, is freedom to choose, and thus is separate from this assumption of distance. Power is then the ability to assume responsibility for learning, or the ability to be independent in choices—Bayton (1992) reframes this as competence. Support would finally be the resources that the learner can access and use—such as the library—in such a way as to facilitate power and independence.

Learner control, therefore, refers to learners making their own decisions concerning the paths, flow, and events of instruction (Williams, 1996) to "influence, direct, and determine decisions related to the educational process" (Baynton, 1992, p.18). In saying this, however, Williams (1996) makes a very clear qualification that learner control is a result of instructional design, wherein the designer chooses "whether, when, and how to place" instruction under the control of the learner (p. 957). Therefore, the value in what is termed learner-controlled education is that it enhances the student's learning experiences. The learner is free to choose learning activities that best suit his or her preferences and needs, and so it is expected that his or her involvement, mental investment, and achievement will increase. Garrison (2000) sees this as a challenge for the era of post-industrial distance education, with a focus on transactional issues. As Williams (1996) notes, learner control is ceded from teacher control, and is usually built into the instructional design. This recalls Holmberg's (1989) guided didactic discourse, but with a more post-modern sense of the educational interaction between the learner and the teacher.

Transactional Distance, Distributed Learning, and Situated Cognition

Moore (1989; 1991) and Gunawardena and McIsaac (2003) developed the typology of transactional distance to emphasize the instructional interaction. Later, Moore with Kearsley (Moore & Kearsley, 1996) states that transactional distance framed in distance education is the interplay between learners and instructors in learning environments that are separated from each other. It is "the physical distance that leads to a communications gap, a psychological space of potential misunderstandings between the behaviors of instructors and those of the learners" (p. 200). Interaction, therefore, becomes key.

This typology emphasizes interaction between learners and learners, learners and instructors, learners and content, and learners and interface. Learner to learner interaction refers to the dialogue between students; learner to instructor to motivation, feedback, and dialogue; learner to content to how students work with the materials for the course; and, finally, learner to interface (in the emerging post-industrial context this could be relabeled as learner to technology) to interaction between the learner and the medium in which the course is delivered and facilitates the previous interactions (Gunawardena & McIsaac, 2003; Moore, 1989).

For Moore (1993), transactional distance theory is the fusion of humanistic and behaviorist pedagogical traditions that at first seem incompatible (p. 31). What he labeled learner autonomy, but which later emerged as independence as discussed above, allowed these two traditions to merge and formed the basis of the development of transactional distance. As such, the emergence of transactional distance theory is where the paradigm shift from a correspondence model of distance education to a distributed model can be truly perceived. Indeed, distance education can be seen to be a subset of distributed learning, where the latter is focused on student control regardless of location (Oblinger, Barone, Hawkins, American Council on Education, Center for Policy Analysis, & Educause, 2001, p. 1).

As mentioned, this new theory is focused on interaction, and thus raises the idea of situated cognition. This theory focuses on the interaction of knowledge with doing, suggesting that knowledge itself is an integral part of the activity in which it is learned (Brown, Collins, & Duguid, 1989). For example, work on vocabulary teaching shows us that children learn words best in their context rather than from an abstract form of learning, such as a dictionary (Miller & Gildea, 1987). Understanding, in other words, is developed through continued, situated usage (Brown et al., 1989). This is in direct contrast to early curriculum development theory that spoke of knowledge as part of a furniture of the mind, promoted especially by G. Stanley Hall (1881). Lave, however, took the idea of situated cognition a step further, emphasizing its social aspects:

> [A]rrangements of knowledge in the head … are socially organized in such a fashion as to be indivisible. "Cognition" observed in everyday practice is distributed—stretched over, not divided among—mind, body, activity and culturally organized settings (which include other actors). (Lave, 1988, p. 1)

Distributed cognition, as this came to be known, therefore suggests that knowledge and cognition are not confined to an individual. Rather, ways of knowing are connected to the everyday aspects of life, including people. Thus, the emphasis is on a dialogical interaction between the individual and their environment, of which the library is one part.

Learning Communities

For McIsaac, Blocher, Mahes, and Vrasidas (1999) interaction is the "single most important activity in a well-designed distance education experience" (p. 122). They draw on many of the ideas presented above to justify this statement, especially in terms of motivation. Yet, this also speaks to the concept of communities of practice proposed by Wenger (1998) and others. For Wenger, learning is central to the sense of being human, and that learning itself is actually a form of social participation, especially participation in practice where "understanding and experience are in constant interaction" (Lave & Wenger, 1991, p. 52). Therefore, groups of people participate in the communal learning activity that creates shared meaning. This speaks to the importance of designing effective online learning communities of practice where "[p]articipation is always based on situated negotiation and renegotiation of meaning in the world" (Lave & Wenger, 1991, p. 52).

Technology is a tool to build such communities, within the contexts of transactional distance theory and the distributed education theories and practices discussed above. For example, Lally and Barrett (1999) draw on Moore's (1991) two dimensions, structure and dialogue. As noted, these variables dynamically determine the definition of transactional distance. Dialogue can promote interaction and thus decrease distance. Lally and Barrett (1999) tested this idea by creating online learning communities that utilized computer mediated communications (CMC) tools to facilitate the academic and social discourses within their educational programs. Their research suggests that an electronic community can reduce transactional distance, develop distributed cognition, and thus promote effective learning. Indeed, while the elements of learner-controlled education were all reflected in this study, many of the students referred to the support mechanisms the learning community developed. Further, this study suggests that while there is a sense of independence and power in a many-to-many CMC-based model, effective learning is best seen when there is an element of teacher control to develop a co-operative learning community of practice.

Thus, Tu and Corry (2002) have developed a definition of learning communities from a social learning perspective and discuss how technology can be used to develop eLearning communities. They note that eLearning does not necessarily promote community learning, as poorly designed online learning can promote an independent or correspondence model. eLearning communities, however, emphasizes interactions and learning activities that occur online, where the community learns, retains, and evolves knowledge together (p. 208). Further, technology allows the instructional designer to move away from the standard use of computer technology to present and store content, with learning management systems now providing more interactive tools (Tu, 2005). The implication again is that community building depends on interaction, and that the former is essential to learning.

Berge (2002), however, suggests that research does not support the widely held belief in the distance education literature that interaction is "desirable and positively affects the *effectiveness* of education" (p. 181, emphasis in original). From a constructivist perspective, instructional designers should rather view interaction in the context of teaching methods and the delivery system available. Berge, therefore, presents an eLearning design model and discusses it within the frame of active eLearning, interactive eLearning, and reflection eLearning. The model is learner-controlled, in that it seeks to shift control of the learning from the instructor to the student. Through a pre-learning task analysis, Berge develops a model that includes interaction eLearning, or interaction with content, peers, and the instructor in a CMC-based online learning environment that owes much to the transactional distance theories of Moore and others. Berge suggests that these are particularly important in the design of constructivist eLearning environments. In keeping with his original introductory statement, he reports that while learning research does talk about the importance of interpersonal interaction some distance educators still speak of the independent learner (p. 186). It is his contention that only through well-designed interactions within the contexts (as well as the limitations) of both the learning activities and the delivery system can interpersonal interactions (between learner and learner(s) and learner and instructor) be developed to support effective learning. The implication supports the contention above that interaction is key to developing community in online learning environments, and that this community would support effective learning. The role played by the librarian and digital reference services is an essential, empowering component of that community.

The Reference Interview

The emergence of distributed models of learning noted above have a roll on effect to the many areas of support for learning. Indeed, as seen above these support mechanisms are an important dimension in the development of learner-controlled education, for without effective support students cannot be expected to become independent or empowered. One historically important educational support service is the library, or the academic library in the case of higher education. The library supports learning in a variety of ways, not the least of which is reference or research services. This section of this review will explore the history, development, and protocols of an orthodox theoretical construct of reference services, the reference interview (briefly outlined in Chapter One), and examine how it supports online learning and learner-controlled education. It will then look at how distributed education theory could inform the reframing of the reference interview into a more dialogical, interactive protocol that acknowledges the new paradigm of distributed education and conclude with some suggestions for this protocol.

The History of the Reference Interview

The reference interview has been a part of library practice since at least 1876, when Samuel Green provided a series of illustrations that showed the needs of users for assistance (Green, 1876). Indeed, a century later Slavens (1985) returns to the documentation theme of Green's article, rhetorically re-enforcing much of the original implications. For Green, the librarian is the classifier of knowledge who interprets the immediate information needs of the user in terms of how that knowledge has been structured by the library. This is obviously very influential in the development of the later theory of substitutivity mentioned previously. Green does not endow the librarian with specific subject knowledge; rather the role of the librarian becomes one of mediation between an information need and the information itself.

As such, therefore, Green has defined the implied structure of the reference interview without actually labeling it so. He also established the patriarchal context of the reference interview with rhetoric that places the information user in the role of an applicant for information with the librarian in charge of the process, holding on to the applicant until the applicant expresses satisfaction with the transaction. Also, however, the librarian assumes a role of impartiality in respect to the information they are facilitating access to. As Green notes, the librarian must "[a]void religiously the practice of cramming the minds of young inquirers with one-sided views in regard to questions in dispute" (1876, p. 80). Only recently has this sense of neutrality in library services been challenged as leading to moral relativism (Good, 2006/7). Jensen (2004) suggests that by choosing a false sense of neutrality librarians actually make political decisions that are more exclusionary than not. I have also argued that the myth of neutrality is actually hegemonic, in that it perpetuates a dominant cultural paradigm of knowledge, leaving little room for a multi-literacy perspective to emerge (Doherty, 1998b; Doherty, 2005/6; and see also Elmborg, 2006).

Hutchins (1944) was the first to coin the term "reference interview" by addressing the factors librarians should consider in the transaction between themselves and their users. She further defined the interview procedurally: time required by the interview proper; the librarian's activities of clarifying the question and ascertaining the reader's needs; and, the results of the interview, usually in the form of the user's self-reported satisfaction or the librarian's assumption of the need being met based on the context of the interview. Since then the reference interview protocol has been slightly refined by a variety of models that consider other factors such as non-verbal communication (Gothberg, 1995), but has essentially remained unchanged. Were one to adopt Garrison's (2000) terminology, this protocol is grounded in an industrial mode of thinking.

In a recent textbook the reference interview was explored in detail (Ross et al., 2002). The prime part of the reference interview explicated here is that the librarian and user take turns in which, again, the intent is for the librarian to elicit the true information needs of the user. However, this is not possible in an asynchronous email transaction, where turn-taking can be prolonged (Ross et al., 2002, p. 197). In true functionalist mode it is suggested that there is a need to get at the users real question through an online reference interview:

> Devote your greatest attention to refining the part of your [web] form that elicits the information needed. This is the electronic equivalent of the reference interview. A box that says, "Type your question here" is *not* good enough. You can help the user understand what kinds of details you need by providing a link to an example of a form that has been filled out in a way that makes the context of the question clear. (Ross et al., 2002, p. 204, emphasis in original)

In other words, there is a drawback to asynchronous digital reference services; there is no true opportunity to develop a reference interview with the user in which the user is not made to field a questionnaire before expressing their need. Indeed, missing entirely from this model is any sense of a learning interaction. Such heavily structured web forms only serve to increase transactional distance. In many instances, however, libraries have indeed implemented the “Type your question here” approach, one that better values the experience and expertise of both the user and the librarian in asking and answering the right question (see, for example, Janes, 2002).

The reference interview protocol, therefore, is a structured conversation between a librarian and a library user in which the librarian responds to the explanation of an information need by first attempting to clarify that need and then by directing the user to appropriate information resources. The interview is structured according to the following series of steps (adapted from Sutton & Holt, 1995):

- The user states a question or describes a problem.
- The librarian clarifies the information need. This can sometimes require stepping the user back from a simple request for a specific resource by assuming that it is not the best resource to assist the user.
- The librarian also suggests further information resources to address the information need while also explaining the nature and scope of information they contain.
- The reference interview then closes after the librarian has provided the appropriate information or made a referral to an outside resource.

Usually throughout the process the librarian solicits feedback from the user in order to ascertain the appropriate next steps to take. Generally, questions are also used to conclude the interview, asking if the user is satisfied with the transaction.

Sutton and Holt (1995) are slightly more open than most in their definition of the reference interview, calling it a conversation between the reference staff and the library user (p. 36). Again, however, the presumption of the interview is the need to clarify the information need and aiding the user in meeting that need. Once more, it is generally framed as a modernist interaction in which the user is a supplicant. Sutton and Holt further present the interview in a series of increasingly complex transactions, from a basic directional question to a more in-depth research consultation. Generally, after Durrance (1992), they present the interview as a series of steps that presents a problem-centered rather than a question-centered approach. In saying this, however, they disregard the problematic of librarian control that is implied by Durrance.

As the recent textbooks in reference service (Bopp & Smith, 1995; Grogan, 1991; Katz, 2002) indicate, the reference interview has earned a canonical place in the theory and practice of reference services. The textbooks reify the reference interview in two stages, question-negotiation and the actual search. Kuhlthau (1993) further organizes the second stage, the search process, in terms of discrete events:

1. initiation (recognition of information need)
2. selection (identification of topic)
3. exploration (preliminary examination of potential information resources)
4. formulation (articulation of needs as submitted to system)
5. presentation (completion of subject search)

The emphasis is on a practical and procedural approach versus a theoretical approach. The theoretical development of the reference interview has not been developed much further than this except to further emphasize the objective role of the librarian (Ross et al., 2002). Missing from the literature is a formal intersection with mediated communication theory, or, when discussing online reference services, computer mediated communication.

Radcliff (1995) provides a more theoretical approach based on a consumer model from the medical professions. She compares the doctor-patient relationship to that of the librarian-user. In both instances, user satisfaction is dependent on the provider's (the doctor's or the librarian's) understanding of the value of interpersonal communication. Librarian-user satisfaction, she concludes, is affected by warmth, self-disclosure, feedback, and immediacy, which, it could be argued, are aspects of interaction towards building a better social presence for librarians and thus lessening the transactional distance. As reference services transition to an online environment, these issues are relevant to the effectiveness of the reference interview.

In saying this, however, the effectiveness of the traditional reference interview itself has been challenged at times. For example, the extent of question negotiation has been argued in library literature for quite some time. Lynch (1978) observed that few of the questions asked at a public library reference desk needed more than a cursory negotiation, and that of those requiring more, only 13 percent were substantively altered through the interview process. Grogan more recently noted that "[m]ost of the library users who put questions to the librarian know exactly what they need and ask for it clearly" (1991, p. 63). Janes also suggests that librarians in digital reference interactions are selectively applying the orthodox procedures of the reference interview (Janes, 2003).

On the orthodox side, however, research seems to support the reference interview protocol. For example, one empirical study employed both survey and case study methodology to uncover the reference process in United Kingdom academic libraries. A typology of inquiries was developed that included categories such as Directional, Informational, Ready-Reference, and Instructional (Alafiatayo, Yip, & Blunden-Ellis, 1996). As a result the researchers strongly supported the reference interview by concluding that the most important role of the librarian at the reference desk is the identification and selection of resources necessary to help the researcher. It is a role that implies a strong sense of neutral bibliographic expertise on the part of the librarian and is very supportive of the traditional, positivist reference interview model. Indeed, the authors speak of reference as more of an advisory role than anything else (p. 370).

Digital Reference Services

The traditional reference interview is part of the functionalist aspects of reference services. It is a manifestation of the logical-analytic framework of information science (Benoit, 2002) that is also very evident in the social epistemology library and information sciences mentioned previously. Shera stresses that the organization of and access to information be dynamic in order to better reflect society. He aligned the bibliographic organization of information to the social processes that create knowledge (Shera, 1970). Bibliographic organization of knowledge, however, is a form of control that converts the natural language of knowledge into a system of controlled vocabulary that needs mediation, in the form of the reference interview, to interpret.

Merton's (1957) theory of manifest and latent functions draws attention to this implied role of the reference interview. Its manifest function is to assist the user in getting to the appropriate expression of their information need and to matching them with the most appropriate resource to meet that need. In other words, its manifest function is to have the user define her need in the substituted terms, or tokens of the information system. However, the unintended consequence, or latent function, of the reference interview is to devalue the expertise and experiences of the user. The reference interview assumes that users need help in defining their information need. In some instances, this may indeed be the case and is certainly implied by substitutivity. In many, however, this is not so, especially when one considers distributed cognition in the online learning environment, where sometimes the social epistemology sense of knowledge and knower may not always have a clear sense of the knower (see, for example, Weinberger, 2006).

As noted above, effective online learning environments should be focused on lessening transactional distance through the development of learning communities and learner-controlled education. This latter does not imply learner independence solely, but looks at control as a dynamic interaction of independence, power, and support. One of the major forms of support discussed by Baynton (1992) and Garrison and Baynton (1987) is the library. Library support, therefore, should not be focused on taking control away from the learner, but in actually enhancing or facilitating greater learner control (Garrison & Baynton, 1987, p.8). In online learning environments, therefore, the traditional reference interview should be re-thought in order to provide better support of learner-control.

However, as reference services have transitioned to online learning environments so too has the traditional reference interview. Indeed, much of the recent literature has been focused on developing practices for synchronous-based digital reference services that implies a need to move traditional reference interview protocols online. For example, Taher (2002) focuses on the technology and tools that can better support the reference interview online. He does not question the inherent issues with the interview that I have noted here. Rather, he opens with a quote that sets a patriarchal tone towards the user that is reminiscent of Green (1876).

Bringing reference interview protocols online would therefore mean an overly structured and librarian-controlled protocol that would increase transactional distance between the librarian and the user, and thus lessen the effectiveness of the learning experience. Johnson (2004) and Taher (2002), for example, worry that synchronous solutions to digital reference lengthens the reference interview process, especially for the user in need of a quick response. McGlamery and Coffman (2000), early leaders in the development of synchronous digital reference services, suggest there is a need for synchronous solutions in order to meet the needs of users that are becoming used to such services elsewhere, thus implying that librarians bring a value-added service to the Internet that free resources such as Google Answers does not have: a trained information professional at the other end of the chat window and that this professional is trained in the reference interview (Pomerantz et al., 2003; see also the work of Pomerantz et al., 2004).

For Lankes (2003), however, the perceived differences between asynchronous and synchronous online reference is fallacious; the only difference is in a time lag, and in many instances that time lag is relatively short (Adams & Evans, 2004). Tu (2002) also notes that learners do not perceive much difference between synchronous and asynchronous forms of online communication as sensitive means of communication. Indeed, Tu reports that even when learners were able to choose one-on-one private synchronous chat, asynchronous email was still seen as more personal, and thus earned a higher social presence rating. (p. 41). Therefore, an asynchronous and dialogical form of reference interaction in online learning environments may be more appropriate, especially as online library users are more independent (individualistic, egalitarian), and thus can better frame their questions (Wilson, 2000). The goal of a digital reference interaction would be to support the development of online learning communities, to support what Lally and Barrett refer to as socio-academic interaction (1999). Indeed, the latter research shows that new technologies have a significant role to play in the development of the support so essential to online learning. The conclusions herein can be taken a step further to suggest that this support extends beyond that of direct learning within the course to the support dimension offered by the institution as a whole in learner-controlled education. The library would be a part of this, and digital reference services a direct contribution to that support.

Tu has framed this within the contexts of social presence (2002; 2004; Tu & Corry, 2002). This is comprised of three dimensions: social context, online communication and interactivity, and online privacy (2002). Each of these suggests procedural issues for a digital reference interaction. For example, if the interaction occurs asynchronously, privacy must be maintained for the learner. Many digital reference services do request email addresses in order to respond to a user. As Tu's (2002) study reveals, while many do not view email as confidential, it is rated higher for privacy than any other medium and seems to be preferred for that reason. This has not been examined in the digital reference services literature that has been exploring chat solutions. Also, in the same study by Tu, interactivity was operationalized in four variables: "CMC as pleasant, immediate, responsive, and comfortable when dealing with familiar topics" (p. 42). Immediacy unsurprisingly rated high in synchronous forms of communication, but asynchronous forms were not rated much lower. Responsiveness, however, was rated significantly higher in asynchronous media. Digital reference services with a goal of supporting and facilitating learners in information rich environments would be focused on responsiveness over the other variables, and thus suggests email would be most appropriate and welcome. Further, Lankes (2003) and Adams and Evans (2004) imply immediacy could be defined along a continuum in digital reference services, and when the interaction occurs relatively quickly the user is usually satisfied. Coupled with a high perception of responsiveness, this would add to a strong perception of library support.

Conclusion

The canonical place of the reference interview in traditional reference services, therefore, is an obstacle to providing the necessary library support in online, learner-controlled education. As seen above, too much effort has been applied to bringing the reference interview over to the online learning environment. Rather, becoming informed by distributed learning theories and practices in online learning environments would allow for a re-framing of the reference interview where the focus would be on the learning interaction as opposed to the protocols of the questions. For Durrance (1992) the reference interview was problem centered rather than question centered. In a digital reference interaction it may seem that the reverse is true, as it is mostly the question that forms the initial context of the interaction. However, the librarian also sees the question in its social context, owning responsibility for providing an effective, critical response to the user that empowers her to independently develop her own information fluency. Thus, a digital reference service is neither question nor problem centered. It is learner and learning centered.

CHAPTER THREE

METHODOLOGY

Purpose of the Study

The purpose of this study was to describe the role of librarians in digital reference services. This is an area currently under-developed in the positivist-oriented digital reference service research. This study applied an interpretative and critical theory frame to describe the roles of academic librarians in the interaction between themselves and the online user. Using a multi-method approach informed by critical ethnography and case study, the study describes the processes and actions taken by librarians and library staff in an increasingly important part of their daily reference service activities.

Restatement of the Research Questions

1. How do librarians respond to online reference service questions?
    i. What influences the time it takes to respond?
    ii. What is happening in the process of responding to "Ask A Librarian" queries?
2. What affects the type of response provided by librarians to online reference questions?
    i. What are the types of questions being asked, and how do they influence the response?
    ii. How do librarians weight quality or quickness of response in

responding to online reference questions?

iii. How is an online reference interaction initiated?

Research Design

Methodology

Much of the research in digital reference services (see, for example, Lankes, 2003; Pomerantz et al., 2003; Pomerantz et al., 2004) has little basis in CMC research, and no engagement with Moore's three types of interaction (1989; 1991) as described in Chapter Two. Were the research to be more broadly focused it would be more informed and, perhaps, less positivist. It should be emphasized that much of this research is framed within the contexts of library services, where access to content is the prime concern (Hanson & Levin, 2003) rather than within a more encompassing goal of student learning. This latter goal would suggest a reframing of the research paradigm to a more interpretive focus. Further, a critical theory lens would allow for a more reflective analysis of the assumptions of information access and management, accounting for the post-modern organization of information brought about by the emergence of the Internet.

One example of this research can be seen in a recent study that looked at the perceptions and views of the users of digital library services (Koohang & Ondracek, 2005). Through a questionnaire instrument developed by the researcher earlier and a statistical analysis of the obtained results, the research discovered that prior online experience matters in the views and perceptions of usability of a digital library. This could be extended to all forms of digital library services, but the instrument was broadly designed to deal with web services in general, and digital reference in particular. In another example, Alafiatayo, Yip, & Blunden-Ellis (1996) used survey research to inform the development of interview and observation protocols for a case study of reference librarians at two separate institutions. They recognized that their questionnaire would only uncover some aspects of reference service, and sought a more interpretive way to reveal attitudes and behaviors of librarians in respect to reference services. The methodologies and methods of interpretive studies examine how respondents interpret their world, and then define or describe such interpretations. Closely related to the interpretive paradigm is a critical theory framework, that takes these results a step further to uncover forms of inequality, injustice, and power represented in the research situations, and to suggest actions that would transform the situations.

I have elsewhere suggested that digital reference services need to be examined critically as there is a strong gate-keeping function in library services generally (2006). Critical research is underrepresented in library and information studies. Therefore, any interpretive study of online reference needs to be informed by critical theory. For this present study Alafiatayo, Yip, & Blunden-Ellis (1996) will serve as a methodological model. These researchers took their survey research results and applied them to the development of research protocols using a case study methodology. Case study research deals with a bounded system or a case that is studied over time in detail. Such detail necessitates in-depth data collection through multiple methods and multiple sources that can provide rich information in the context of the case (Stake, 1995). Hays (2004) suggests that case study research is similar to ethnographic research, except that the latter asks broader questions, tends to be more culturally focused, and involves more time in the field. Similar to ethnographies, case studies employ multiple research methods to get this rich data, including observations, interviews, documents, and reports (Yin, 2003).

In saying this, however, as this present study had a critical perspective, in that it sought to uncover the role of the librarian in online reference interactions, the research methods were further informed by ethnography. LeCompte & Preissle (2003) note that educational ethnographies, like case studies, provide rich, descriptive data. They further note that this data is "about the contexts, activities, and *educational beliefs of participants* in educational settings" (p. 8, emphasis added). Overviews of ethnographic research all suggest that it has as its primary goal cultural interpretation (Preissle & Grant, 2004; Wolcott, 1997). Fetterman (1998) adds that an ethnography is about the routine, daily lives of people. Noblit (2004), however, suggests that "ethnographies are products of the ethnographers' culture than of accounts of another culture" (p. 191). He notes that ethnography could be considered a product of colonialism. A similar statement could be made about case study itself, and how it can represent more the researcher than the case. Noblit offers a postcritical ethnographic research methodology in which representation and researcher positionality need to be considered in dialogue with critical ethnography. From a post-modern perspective, a critical study of digital reference, therefore, should aim towards a rejection of the meta-narrative of objective knowledge while also examining both the assumptions of the librarian and those of the researcher, particularly when the research is a part of the setting being investigated. The present study therefore obtained its data from natural settings, and thus shares the methods of observation, interviews, and artifact analysis.

Bracketing interview

As noted in the Preface, in order to capture any inherent assumptions and biases in an interpretive paradigm it was necessary to initially conduct a bracketing interview. Patton (2002) describes this as the process by which the researcher examines himself so as to remove any personal bias, involvement, and assumptions that could affect the study. The interview was conducted by a College of Education professor well-versed in the process and in interpretive research. The interview brought forth my research prejudices and biases, and uncovered assumptions and beliefs that I brought to the study. This is especially important when one considers the role I have played in developing online reference services; Patton, however, explains that "Closeness does not make bias and loss of perspective inevitable; distance is no guarantee of objectivity" (p. 17). As already noted, the Preface is the direct outcome of my bracketing interview.

Research Methods

A study of the digital reference service was conducted during October and November 2006—the boundaries of the case. Multiple methods were used in this study to document and describe the interaction between the user and the library staff, to describe the intent of librarians in their responses, and to document the place of the online interaction in the context of the whole of the site's reference services.

The service under study incorporated online interactions into the regular business of a medium sized academic library's reference desk. In other words, digital reference occured in the context of in-person, or face-to-face, and telephone reference. All interactions occur at this one point, where the digital service is fed from a web form to an MS Access 2000 database concurrently with an email generated to the reference desk email client. Many digital reference services retain some form of transcript of the interaction. In this service, for example, the question and answer were recorded. The librarians were flagged to the email and responded to it via a web form set up to allow for use of customizable canned responses. The librarians selected the appropriate canned response based on their understanding of the question asked, and customized the response as needed. The response was then stored in connection to the question in the same Access database.

An examination of this data revealed themes in regards to instructional content. Also, as an asynchronous interaction is not supportive of the reference interview, so it was necessary to uncover the thinking processes that go into the librarian's development of an answer for a particular form of question. Through observations and an analysis of the questions, a purposefully sampled group of librarians were interviewed to uncover this data. The interview is the most important method an ethnographer can use (Fetterman, 1998; LeCompte & Preissle, 2003) and speaks most directly to the interpretive paradigm. It is here that the stories, so to speak, of the participants are told directly by the participant—in other words, to understand "the experience of other people and the meaning they make of that experience" (Seidman, 1998, p. 3).

A major issue with interpretive studies is in how the research is representative of the phenomenon under study. In the present study, this question would ask us if the research speaks to the interaction as representative of the librarian's attitudes towards digital reference service. In Chapter Four it will be seen that I include participant feedback based on a read of an early draft of the chapter. Stake (1995), however, suggests that an intrinsic case study would not be concerned with issues of representation as it is merely descriptive. However, in the present study there is a critical or postcritical perspective that goes beyond just description. Silverman (2001) argues that representation in such studies speaks more directly to generalizability, and thus recommends methods to meet this criteria (pp. 249-254). One is purposeful sampling, which the present study did. Theoretically grounded purposeful sampling that is clearly articulated in the study allows others to do something similar, and thus allows for the study to be more generalizable, and thus more representative of the situation under study.

Sample Selection, Participants, Confidentiality

The sample used in this study was drawn from the full time reference staff of a Doctoral I academic library in the Southwest. The sample was purposefully selected (or sampled) based on the researcher's own experience with and knowledge of the group from which the sample is drawn (Gay & Airasian, 2000).

Participants were chosen from a pool of permanently assigned reference desk staff (not volunteers). They were also required to hold an American Library Association accredited Master of Library Science degree or equivalent. It should be noted that while all the participants hold a professional library degree the reference desk was also staffed by classified staff that usually did not hold such a qualification.

In library literature such staff are generally referred to as paraprofessionals or paralibrarians. In this study, however, all the desk staff will be referred to generically as librarians. Participants were also required to have no current management role over either the reference services in general or the digital reference services in particular. Approval for use of human subjects was obtained through the Institutional Review Board. Informed consent forms were signed by the participants (see Appendix C).

Data Collection

Four final participants were selected based on the above criteria and the aforementioned digital reference services database was queried to retrieve the interactions the participants were particularly responsible for. These interactions were compared with the overall database of interactions by all staff for consistency.

An interview protocol was developed and pilot tested for clarity and consistency. It also involved mock interviews by the researcher. The purpose was to critically examine the protocols in order to note inadequacies. Also, by practicing interviews with a critical audience, I was able to uncover flaws and make suggested improvements. Field testing was conducted with some of the potential participants that were ruled out above. This step served to further assess the interview protocols in a near-live setting, and allowed me to further refine the protocols used in the final study.

The analysis of the interactions for the period under study (October 15 2006 – December 2 2006) was specifically designed to uncover the instructional intent of the canned responses as noted in Chapter One. A comparison of the interactions of the participants with those of the rest of the reference staff reveal how typical their interactions were in comparison to the whole group. Also, during the study period all of the reference desk staff were randomly observed during their reference desk shifts, when it was noted what else was occurring around them. Specific attention was paid to the participants of this study. Participants were asked to document briefly their end of shift impressions of the time they spent working reference services.

Data were analyzed and used in the development of an open-ended second interview protocol. However, in the first interview (see Appendix B) participants were asked some specific questions about their digital reference service experiences. The second interview took place at the conclusion of the study period, and involved an exercise in stimulated recall wherein two representative question and response interactions were chosen for more detailed analysis. These representative interactions were chosen by considering their typicality in the body of interactions as a whole and those designated to the participant specifically. Also, observations documented other activities occurring at the reference desk at the same time as the question was retrieved in order to contextualize the response.

Data Analysis

All interviews were taped with the consent of the participants and transcribed for analysis. The transcripts themselves were verbatim records of the interviews. Participants were given the chance to review the transcripts for accuracy and to verify whether or not emendations, deletions, or other edits or modifications were needed. They were also reviewed for potential identifiers. Self-reports of each participant's reference shift were recorded via a web form and were stored in text form for later coding.

The resulting data were analyzed using a constant comparative method after Glaser & Strauss (1967). With this procedure, continual analysis by means of comparing new data with previously collected data noted the similarities and differences among the data. Categories were thus allowed to inductively emerge (Strauss & Corbin, 1997; Strauss & Corbin, 1998). Also, constant comparative analysis is a procedure that had the advantage of beginning as soon as data gathering began, meaning that the analysis was ongoing from the outset and fully integrated into the progression of the study. While data were being collected they were examined for key themes or categories. This also allowed for a recursive exploration of emerging categories as subsequent data were collected.

When all the data were collected further analyses and interpretation was begun using a coding system used in grounded theory after Strauss & Corbin (1998). Grounded theory refers to theory that emerges from the data. The transcripts and self reports were coded using WEFT QDA qualitative data analysis software through multiple readings of the data. Open coding was initially performed to allow for the emergence of the broader categories or themes. As these categories emerged so too did subcategories that further defined the broader categories. Axial coding was then conducted to make the connections within these categories and subcategories. Finally, selective coding was utilized to refine the emerging theory from the data.

Credibility, Transferability, Dependability and Confirmability

As noted previously, this study is consciously located in an interpretive/critical paradigm of research. As such, the positivist criteria of internal and external validity and reliability and objectivity need to be addressed. Silverman (2001), for example, differentiates research from anecdotal studies, and echoes Shulman (1997) in defining it in terms of disciplined inquiry—Silverman prefers the term credible (2001, pp. 219 ff.). Reliability and validity, therefore, are important constructs in interpretive studies, and can be assessed in different ways than the generalizable benchmark in positivist studies. As LeCompte & Preissle (2003) note, it is hard to generalize or repeat studies conducted in their natural settings (p. 332); they emphasize that this can be a highly subjective and intuitive exercise. However, an explicit documentation of the methods and data allows for a sense of internal reliability to emerge. Comparisons of analysis with other research, for example, can further inform in respect to the reliability of interviews.

One test of internal validity of an interpretive study is the bracketing interview mentioned above, where the researcher himself is under examination. This is especially important in an ethnographically-informed study, considering Noblitt's (2004) criticism of researcher bias. LeCompte & Preissle (2003) also suggest that the results can be externally validated through comparison of the typicality or atypicality of the results obtained (p. 349). Participants can also be consulted in respect to the accuracy of the researcher's reporting. Silverman (2001) challenges data triangulation as a measure of validity in field-based interpretive studies (p. 248), offering instead measures such as the constant comparative method (that find other cases to test the provisional hypothesis) or comprehensive data treatment (the generalizations made about the data applies to *all* pieces of the data). These methods were used in the present study.

A major issue with interpretive studies is in how the research is representative of the phenomenon under study. In the present study, this question asks if the research speaks to the interaction as representative of the librarian's in digital reference service. Stake (1995), however, suggests that an intrinsic case study would not be concerned with issues of representation as it is merely descriptive. The "thick descriptions" that are documented in this study allow the reader to decide whether or not to make what Stake calls "naturalistic generalizations", or "conclusions arrived at through personal engagement in life's affairs or by vicarious experience so well constructed that the person feels as if it happened to themselves" (p.85).

However, in the present study there is also a critical or postcritical perspective that goes beyond just description. Silverman (2001) argues that representation in such studies speaks more directly to generalizability, and thus recommends methods to meet this criteria (pp. 249-254). One is purposeful sampling, which the present study did. Theoretically grounded purposeful sampling that is clearly articulated in the study allows others to do something similar, and thus allows for the study to be more generalizable, and thus more representative of the situation under study.

Therefore, credibility, transferability, dependability and confirmability here stand in for positivist criteria of internal and external validity, reliability and objectivity in interpretive research (Denzin & Lincoln, 2002). Dependability, it should be noted, also describes how the reader can follow the study from its conception to its conclusions. For the researcher, therefore, it is important to keep a detailed and organized record of research procedures, interview protocols, transcriptions, questionnaires, and the data analysis.

Triangulation

Triangulation is the "use of multiple methods, data collection strategies, and/or data sources, in order to get a more complete picture and to cross-check information" (Gay & Airasian, 2000). In this study, therefore, the data sources that were used to accomplish triangulation included comparisons of the interviews with the digital reference services documentation, observation notes, stimulated recall interview, and participants' own self-reporting. Also, data triangulation occurred by a comparison of interview transcripts and the "member-checked" transcripts.

In this study, researcher triangulation was extremely important due to the biases that I brought to the research. I therefore also asked fellow doctoral students in advanced stages of their programs of study and who had no vested interest in the research, to review the data and determine codes and interpretations to examine for evidence of researcher bias. Similar codes and categories emerged in both the researcher's and triangulates' analyses.

Summary

Bernard (2006) suggests that the committing to a positivist paradigm over an interpretivist paradigm does not automatically decide whether or not quantitative versus qualitative methods or methodologies should be used (pp. 24-25). Rather, the research question should define the methodologies, and from there the methods to be used. The strengths and weaknesses of all can be considered in any final study that may be mostly informed by one methodology over another, but draw on methods commonly associated with a third. For example, (Alafiatayo et al., 1996) uses questionnaires informed by survey methodology and interviews and participant observation from case study.

Case study is strongest when it is looking for patterns; ethnography when it is looking at the context. Both speak to the etic and emic, the insider and outsider perspective, to the issues the researcher brings versus the issues the informants have, and how the two interact. Survey research, however, tries to place the researcher at a point of impersonal objectivity, which many would suggest is just not possible. For example, even simple decisions around the development of the questionnaire, including the wording of the question itself, is a subjective act that will impact the response. Survey research, on the other hand, is more easily quantified, and analyzed by generally accepted, some would say reified, statistical techniques. Indeed, the paradigm wars between a positivist and interpretive framework implies they cannot meet, and for the researcher knowing what paradigm she is most comfortable with helps to focus her energies on research she is best able to accomplish.

This study, framed within an interpretive and critical paradigm, employed a mixed methodology of case study and critical ethnography. It focused on the self-meaning and role constructed by librarians in their participation in a digital reference service. These librarians were chosen for this study based on their having a full-time commitment to the reference desk through which the service was delivered and also on their having a Masters in Library Science. Participants were then interviewed and observed at work, and transcripts of both were created. Also, participants were asked to complete mini self reports of their reference shifts. Finally, access to the database that recorded the questions and answers of the online reference service was achieved and analyses of these data were performed.

A constant comparative method of analysis was used that compared the newly acquired data with that already collected in order to identify similarities and differences. This inductive procedure allowed categories to emerge from the data. WEFT QDA coding software was used to facilitate this process.

CHAPTER FOUR

DESCRIPTION AND THEMES

Introduction and Overview

This chapter includes a description of the librarians' work obtained through observation, interviews, self reports, and artifact analysis carried out over a six week period in October and November of 2006. Some interviews also took place in the first week of December 2006. This is a study of how librarians served library users from a busy academic library's reference desk, with particular focus on digital reference interactions. I acknowledge that the site chosen for the study has a somewhat unique approach to its reference services, wherein all are combined at one service point. Many institutions still maintain a separation of digital and more traditional reference services. I have investigated both aspects, but focused on how the traditional services have impacted the librarian's provision of digital services.

This chapter, therefore, begins by describing the site under study, and, extrapolating from the interviews, observations, and self reports, further describes a typical reference desk shift. Finally, the various media of reference services are described and the various roles of librarians are noted. Chapter Five will include interpretation of the findings. The participants will not be referred to directly in this chapter. However, it should be emphasized that the chapter is firmly grounded in the experiences of these participants based on the data gathered. Therefore, quotes from the interview transcripts and self reports are verbatim except when certain words or phrases would identify them. In those instances the words are either replaced with blanks or edited out of the quote completely. Also, an early draft of these findings was shared with the participants and I include some of their comments from that review.

Description of the Research Site

The library where this service is located is the self-described keystone to academic life at the university. The physical facility was renovated and expanded in the early 1990s, providing more than 200,000 square feet of space. It serves a Doctoral I research institution in the West. It provides students with access to more than 1.5 million physical volumes and an increasing number of electronic journal and book titles—more than 35,000 at last count. This latter focus is one sign of the priority the library places on its support of the institution's extensive distance education mission. The building itself has undergone fluctuations in foot traffic over recent years. At first, with the development of a web site with relatively seamless access to online content, foot traffic declined. However, with the augmentation of more than 165 public computers and 40 wireless laptops to not only include library resources but productivity software, there is a trend towards increased building use. During the Fall 2006 semester the library recorded foot traffic of 341,082. This was similar to the Fall 2005 count, and an increase of 31% from Fall 2004.

Reference services are provided at this academic library close to the building entrance. The reference desk itself is large, with two computers and two phone lines connected to it. It is staffed 96 hours a week during the regular semester, opening at 8am on weekdays, closing usually at 10pm. About four years prior to this study the

Reference Department decided to reduce staffing from two to one person, who could either be a professional librarian or a classified staff person. This person usually has two phone lines to monitor, the immediate vicinity and the digital reference service.

The desk's closeness to the entrance seems to have been a deliberate placement, in that much of the entering traffic is directed towards it. In the immediate vicinity of the desk are 65 computers, with both student and public user access. This area is generally referred to as the reference room, though the area is a much more open plan than the term room suggests. A year before this study the library implemented a policy change where all other library computers (about 100) are locked to student access only. Many of the computers are linked to networked printers in a small room directly in line of sight to the reference desk. During the period of this study the library was undergoing a challenging transition in vendors that supplied printing capabilities to these computers. Briefly, this transition impacted services significantly and will be discussed further below. Face-to-face interactions occur at the desk and may necessitate staff leaving the desk for varied lengths of time. During observations it was also noted that some staff left the desk at irregular intervals to walk through the reference room and initiate some interactions that way.

The library's main information phone line and 800 number ring to the reference desk. The desk has two lines, with the main line rolling over to the second line if the first is busy. During some observational periods I noticed staff juggling both lines at times, placing one on hold while dealing with the second. A caller would be transferred to voice mail if both lines are busy or the phone is not answered.

Staff would be signaled if a voice mail is waiting.

Digital reference service comes through a Eudora email client on both desktop computers at the reference desk. Usually only one of these has the email client running at any given moment. It was observed that many staff seemed to be frequently working on the desktop pc. Such work could be described as either: doing research related to a user query (face-to-face, phone, or digital); writing a response to a digital query; or working on other things such as report writing, class preparation, or email.

A Normal Shift

Based on my observations, interviews, and the self reports of the participants, it is possible to construct a normal shift at the reference desk. The desk is scheduled in one hour increments and is staffed by librarians and classified staff from the Reference Department and by volunteer librarians and staff from other library departments. The Reference Department staff are expected to contribute 5-7 hours each for the weekdays, and are almost exclusively those assigned to cover the evening and weekend shifts. These latter shifts are scheduled in 2-5 hour increments.

Librarians are expected to triage users effectively and to provide equivalent service to all users regardless of the medium of interaction (face-to-face, phone, digital). The usual shift of an hour begins with a debriefing of the previous hour's happenings. In the interviews and self-reports participants sometimes referred to this obliquely by referring to what they were told by their colleagues. The debrief may include the sharing of typical questions, any assignments that students are working on, events that may need specific directions, issues with hardware and software, and a brief report on digital reference activities. At times the outgoing librarian may share some initial work he or she has done with an outstanding digital reference question and pass it on to the new person.

The librarian usually then completes anything the outgoing person has left for them while also actively working with any face-to-face user. For most shifts this entails the librarian leaving the desk area to work directly with the user. During this study period this more often than not meant a visit to the copy/printer room—all participants consistently suggested that the printing challenges were unusual. As interactions were completed the librarian would record the type of interaction on a web form commonly referred to by staff as the “tally sheet.” This posted a statistic for that interaction to an MS Access database for later use in internal reporting. The shift would carry on much the same way, with most interactions occurring face-to-face, less via the digital reference service, and some over the phone. At times the librarian might use an Instant Messaging service to call other staff out to the desk to help should traffic require it.

Face-to-Face Interactions

Observations of the service desk and its environs bear out much of what is stated about the normal shift. On many occasions the reference room itself was close to capacity, with quite a few computers being used by groups of people. Rarely was it noted that anyone was waiting for a computer. Indeed, when librarians noticed a person waiting he or she usually intervened. One such intervention was thus described:

> Several students needed computers in the reference area in order to print so had to ask kids to relinquish their computers (4 students). (Self Report, November 9, 2006).

Librarians and staff from other units kept an eye on computer usage in this area as library policy dictates that non-university users can only have four hours of computer time at one sitting. The reference desk has access to a monitoring system that records the length of time a computer is logged in. During the shift noted above, for example, only one computer was showing as free in the monitoring system. This computer, I observed, was at the far end of the room from the reference desk. At times this demand for computers presented a challenge to the librarian at the reference desk, as in the following example:

> One thing I would like to draw attention to was that during the shift students wanted help with research processes and wanted to use nearby computers in the reference area which was challenging since most of the computers were busy. I was able to find one open for each student that asked questions but it was difficult at times. (Self Report, October 30, 2006).

In saying this, while the reference room itself was at or close to capacity, interactions at the desk were generally not as demanding. While it is noted above that the librarians do have the option of calling for assistance at busy times I never observed any resorting to it. In many instances they were seen to practice the triage noted in the Best Practices of Appendix D. For example, this meant at times that the phone was allowed to go to voice mail. Also, it was observed that when the face-to-face traffic was busy the librarian would interact more with users in person and less with the computer, and, it is felt, with the digital reference service.

One self-report noted the following face-to-face interactions over a one hour period:

> Foot traffic questions kept me occupied: 1. Former geography faculty member came up to the desk and asked for help accessing a newsletter from a local photo club. I assisted him through his email account and he had not changed it from the faculty to the student system, so now he could access his emails and this newsletter that came as an attachment. 2. A staff person asked what film was showing tonight as part of the film series. 3. Two students wanted help locating videos. They wanted to know how to access Citizen Kane, so I worked with them in using the online catalog in searching for videos, pointing out the different formats of VHS and DVD and how that relates to their call number. 4. A student wanting to know how to print 5. A student wanting a stapler (3) asked 6. A student wanting a scissors 7. A student wanting to use scotch tape 8. Community user wanting to know what books we have in Russian 9. someone asking where our Lost and Found 10. Printing account question from fish and game. (Self Report, October 31, 2006).

This overall sense of variety in face-to-face interactions was described also as "the usual sort of questions," or, as other participants put it:

> Remember people at the desk, but I don't remember it being a particularly tough hour. Probably just busy enough to kind of keep the time moving. I wasn't bored out there. (Self Report, November 9, 2006).

> Foot traffic was okay, and I helped a few people either locate call numbers for books or search [database] to find some articles. I went up to the book stacks to find a book that was slightly mis-shelved for one student. (Interview, October 25, 2006).

Face-to-face interactions, therefore, were generally quite varied and at times pulled the staff away from the reference desk itself. At these times the desk was not staffed and thus both the phone and digital reference service would go unanswered.

Printing

One major factor that impacted reference service during the period of this study was the changes in the printing services at the library. On October 1, 2006 the library switched printing vendors. Previously all printing was through three printers networked to all the publicly available computers. Printing would cost 10 cents per page. The new vendor lacked some equipment to implement charging and thus, while printing was still networked as before, it was now free. During my observations my attention was frequently drawn to the printing/copying room next to the reference desk. At times there were significant queues of users building up. As the librarians became more used to the new environment these queues would flag them that there was an issue with printing, as noted in these three self-reports:

> It was a fairly quiet shift, though the building was busy enough. Early on there were problems with the printers in the printing/copying room, but they were reported. (Self Report, November 26, 2006).
>
> The tenor of the day was very much printing oriented. It was hard day with the printing environment and I would say that that eclipsed any real sense of the reference environment. (Interview, October 26, 2006).
>
> One of the printers went crazy, shooting out about a ream or so of paper before it was stopped. (Self Report, October 31, 2006).

Essentially, during this transition (which ultimately lasted the rest of the academic year) the free printing impacted every service point in the library, with the reference desk being frequently contacted by users for assistance due to its closeness to the printing/copying room.

Reference librarians assisted other library staff in troubleshooting printing issues. These included large print jobs slowing down the queue, erroneously printed items that ran off hundreds of blank pages, or even simple issues such as a lack of toner. When printing was working, everything was fine and librarians were engaged in providing other services. When it went wrong it had a tendency to overshadow everything else. One evening was remembered as follows:

> The night is a toner story in my mind. (Interview, October 25, 2006)

And, as further noted, the free printing increased demand for other printing and copying related services, as one participant noted:

> There was a fairly large number of community-type people making copies and printouts - at least a couple to do with designing flyers for home businesses, requesting office supplies and tools (scissors, tape, etc). (Self Report, November 13, 2006).

Even when printing was not an issue it still earned some note:

> Nothing really out of the ordinary - at least the printing/copying stuff wasn't an issue. (Self Report, October 25, 2006).
>
> Not one single printing question. I believe this to be a record. (Self Report, November 15, 2006).

Technology

Another major impact to service was technology. Reference librarians assisted users in using technology, usually in the form of software. I observed librarians working with users at their desktops, advising them on how to format a document in MS Word or use the graph wizard in MS Excel. The library provides access to the MS Office 2003 productivity suite of software, and all library staff have a basic understanding of how to use the programs. Participants, however, did not tend to specifically record interactions that involved using the MS Office suite. Rather, they reported on interactions involving software that demanded more of their time or were unusual. One, for example, reported on users asking for help using WordPerfect as opposed to MS Word, which was not loaded on the machine; another reported on an interaction where the popular Internet site MySpace had stopped working:

> MySpace apparently choked at some point because 3 people came up and wanted me to help them with it. It just wasn't logging in. (Self Report, November 20, 2006).

All four participants noted that there was an expectation that staff would have some level of expertise not only in the software the library provided access to, but in most other computer software and applications as well, especially those that were Internet-based.

Most of the technological problems for the desk staff tended to occur when the technology ceased to work or the user did not quite understand something when using the technology. One librarian was observed working very empathetically with a user who had failed to save her document and had lost it. This librarian ultimately called on some of the library's computer support staff to assist the user, and eventually a version of her file was recovered. I noted that at one point three library staff members, including the librarian, was with this user working on her problem.

Another major software librarians assisted with was student access to and use of the university's online learning management system. I observed many computer users doing work in this system, and many times librarians helped them with navigation issues, content access, using the chat system, submitting assignments, or even linking to library content such as electronic reserve readings or databases:

> Helped a student for 15 minutes with a [learning management system] application question, trying to send a SPSS file as an attachment for an assignment. Showed him how to save on the student network server as he was using a floppy. (Self Report, November 9, 2006).

It can be seen in another typical interaction that librarians were invested by the user with a level of expertise in software support that sometimes they do not have:

> An instructor came by to say six of her students in 3 different classes have had a problem seeing "My Computer" in the [learning management system] when they go to click on Attachments for assignments. I called [technical support] who said for her to contact them, which I told her and to have her students call the [support desk] when the problem arises. (Self Report, November 15, 2006).

The vast majority of the technological issues, after printing, usually involved network connections. These fell into two distinct categories—using a wireless connection and figuring out what happened to the main Internet connection. With the former, participants reported working with users to help them connect laptops to the university wireless network. This was an involved process that included setting up a Virtual Private Network (VPN) setting for university-affiliated users or using a security code for guest access. Users were constantly observed bringing their laptops to the reference desk for assistance and many times the librarians were observed huddled over the laptop with the user. One participant reported this as follows:

> Two students separately came up and needed help connecting their wireless laptops, showed them how to set up their VPN and they were successful in logging on. (Self Report, November 30, 2006).

When the network failed, however, there would be a roll on effect to all activities for both user and staff. On one occasion it was observed that librarians had placed signage in the reference room informing users of a network outage. On this occasion users could access anything on the university's internal network but once they tried to go outside of it to the Internet connections failed. At the reference desk, for example, this meant that the digital reference service was not working. One participant discussed such an outage and its impact:

> On [day] and [day] there was something that was different that would affect maybe some of my answers in that we had technical difficulties with ask-a-librarian and we were unable for much of [day] and much of [day], although it was intermittent on [day], to actually make a direct connection to the ask-a-librarian service. (Interview, October 26, 2006).

For users it meant they could not access subscription research databases or their non-university email accounts. Such outages, however, were exceptional. More often staff contended with slow networks or small outages. A slow network could therefore impact an entire shift, as reported here:

> The big problem was an issue with the network. The public login seemed fine, but logging into [student] accounts took about 10-15 minutes before the icons, etc., showed up. The students just sat there with the green screen, and if they had the patience it probably eventually showed up. (Self Report, November 1, 2006).

Technology issues such as these get reported to another library unit and the librarian then depends on that unit to respond. Sometimes, however, this took some time. For example, the technology support unit had been informed of the above outage, but had not responded by the time the participant had left the reference area:

> I reported it to ___ via voicemail, and by [time] they hadn't checked their voicemail, so am still uncertain what the problem was and whether we (or the campus computing center) can fix it. (Self Report, November 1, 2006).

Directional versus Instructional

All of the participants reported that face-to-face interactions tended to fall into two major categories, directional and instructional. In part, such labeling could be said to be suggested to them by their use of an online tally sheet they maintain during their shift that categorizes interactions into a number of areas, as shown in Appendix E. The categories are quite amorphous, but generally reflect a tradition in reference services nationwide that record interactions as directional, ready reference (general), specific, or research (Katz, 2002, pp. 16-18). The reference service studied here documented questions as directional, reference, and mechanical (hardware or software issues) until about six years ago. The participants recorded their interactions according to these categories, and thus were likely influenced in reporting them as such in the self-reports.

In saying this, however, a general trend can be seen in directional versus instructional reporting. Instructional interactions tended to take more time, and in the self-reports, especially, the participants reported an average of 10 minutes per instructional interaction, as suggested by the following reports:

> One was a doctoral student who is researching the impact of boarding schools on Native American youth who I helped extensively in person and was able to find books as well as government documents, videos and oral histories. (Self Report, October 26, 2006).

> A student wanting to find books and articles on divorce and statistics for a composition assignment. This interaction took about 25 minutes as they did not know about searching for books in the online catalog, where to find books in the building, or how to search for articles in databases, how to check for full text access of articles or how to request materials. (Self Report, November 13, 2006).

> One student needed help locating information on an artist and a specific work by that artist (an assignment that seems to be happening now). It wasn't easy to find articles, though she needed at least one or two journal articles for her paper. We finally found a decent bibliography in [database], and she was happy to learn about this source and was planning to use it more. (Self Report, November 19, 2006).

It was in the instructional responses that the reference interview was conducted. In talking about another instructional interaction that took a lot of time one participant detailed what had occurred and then referred to the entire interaction as a reference interview:

> There were research questions that I did answer and assist with. Can remember specifically what they were even. There was a biology question by a freshman wanting to know how to find articles that she could understand: [topic] and also then how to get to the full text of those and how to print. So there was quite a bit of helping that I did with her. And the thing that stood out in that shift was that after I spent time with her and other people she came back after she completed her assignment and thanked me very much for help that she got during the reference interview. (Interview, October 26, 2006).

This participant voiced during the same interview what was implied by the others:

> When you're in the interview, in person or on the phone. Part of the assessment of evaluating what resources to draw on is evaluating the question. (Interview, October 26, 2006).

In other words, an important part of the interaction was the reference interview. The in-depth, instructional interaction was the place where the use of reference interview protocols was revealed the most.

Directional questions, on the other hand, ran the gamut from simple directions to assistance with setting access on a wireless laptop. One participant seemed to have a clearer distinction of what category a reference question would fit, not always using time as a defining factor:

> Of the others, one was a quick question about where the book was with faculty salaries; the rest were pretty much just directional. (Self Report, November 20, 2006).

In saying this, however, the following was probably the clearest definition of a directional question:

> Lots of where's the bathroom-type questions. (Self Report, November 14, 2006).

Librarians also tended to record their printing/copying interactions as directional.

In saying this, however, directional questions could transition to more in-depth questions. Even a directional question would become more demanding of time, as seen from the following interactions:

> Somebody from out of town, never used the library before, just how to really do or how to request materials, what part of our services works. Spent a little time kind of going over that with him. That took, maybe, 10 minutes. Couple of -- few directional or quick answer questions, otherwise it was pretty slow. (Interview, October 25, 2006).

> Trying to move the quick questions through, however running into people who are identifying as directionals, but then sneaking real reference questions into the mix. (Self Report, November 27, 2006).

Phone Interactions

The second major medium of interaction for the librarians was through the telephone. As noted above, the reference desk has two lines and an 800 number that calls directly to one of two phones located at the desk. Librarians managed the phone traffic together with the face-to-face and digital reference traffic. Indeed, two of the participants noted that phone and digital reference sometimes overlap, with the interaction beginning in one medium and either concluding or being supported in another. For example, a digital reference interaction was recalled as being similar to a phone interaction from earlier in the same day:

> The woman called and she asked some questions about [topic] and the timeframe when it was established and the controversies that were going on. I didn't really have any information and [department] was closed at the time that she called. She was calling from ___, and she wanted to get newspaper information from that time, so I talked to her about using her own news bank collections and she pointed out that there's, you know, there's not that much that goes back that far in their collection. So, I said, well, [department] is going to be the place where you need to work. And so we discussed to some extent. So I was also familiar with that one when her question came in in the evening. (Interview, October 25, 2006).

Also, a phone interaction in which the user was experiencing technical difficulties was ultimately concluded via email:

> I had a phone call from someone having difficulty getting the pdf files from [database] to open. I couldn't tell how she was trying to connect, but I was able to get them opened at the desk. So I saved copies and emailed them to her directly. (Self Report, November 13, 2006).

In most instances the librarians reported phone interactions in less detail than face-to-face interactions. The Best Practices document in Appendix D states that all interactions, regardless of the medium, should be treated equally. In the case of the phone service, however, librarians were observed placing calls on hold or allowing the phone to ring through to voice mail if they were engaged in another (usually face-to-face) interaction. In the case of one face-to-face interaction the ringing phone was observed to make the user uncomfortable and she told the librarian to "Go ahead and answer that." The librarian did so, promptly put the call on hold, and then concluded the interaction with the in-person user and got back to the phone user almost immediately.

Follow up with voice mail was not always immediate. It was observed that voice mail played a strong part for some librarians in establishing themselves at the reference desk at the beginning of a shift. They would sit at the desk after relieving the previous person and immediately pick up the phone and dial voice mail. It was obvious that they were doing this because they would use the phone's keys extensively at first, pausing to write if there was a waiting voice mail. One participant noted this process in an interview:

> I always check for phone messages first but when I hit the digital reference questions that's kind of what I focused on in the first 20-25 minutes I think. (Interview, October 25, 2006).

In saying this, however, staff at times found themselves playing catch up with voice mail:

> There were two voicemails I took, both of which were left in the early afternoon yesterday, but which no one yesterday dealt with. (Self Report, November 9, 2006).

Overall, phone traffic varied, but could be categorized similar to the face-to-face interactions. In most instances the participants reported phone traffic as being "slow," "light," "moderate," or "normal." Unfortunately, phone interactions are logged through the same tally sheet as face-to-face interactions, so it is difficult to get an overall sense of what was normal. However, there was an overall sense of variety, as documented in this self-report:

> Phone traffic started slow but got moderately busy with a long phone conversation with an instructor 1. A retired professor wanted to talk to our gifts person as he had journals to donate so I transferred the call. 2. a phone call about requesting materials status questions so transferred. 3. Phone call asking for [librarian] 4. Phone call from an instructor who had several journals she wanted to know if they were scholarly in nature, described how to search in [database] to find out more info on journals. One journal, she wanted to know more about where to search for it so I described how to search in journals to find the database that indexes it. One journal had the same title so we talked about using volume number in the citation to find out the journal since she was working from a student's citation. (Self Report, November 6, 2006).

And, in another report, the following interactions were documented:

> Phone traffic was steady: 1. A referral 2. Community College student called and wanted help on finding articles. 3. A Library staff person called and asked where [database] is, told her how to find it 4. student wanting to find articles in [journals]. 5. Community College student wanted to know if she can use her wireless lap top here 6. Another Community College student wanted to know how she could save her citations, told her about emailing citations to herself in certain databases or the save feature 7. phone referral. (Self Report, November 13, 2006).

Two separate reports referred to having only one call in each shift:

> I had a person call from [city] who needed to know about a service, how to do it and all. (Self Report, October 25, 2006).

> I think I only had one phone question, which was about how to check out books when the person came in. (Self Report, October 31, 2006).

During an interview, one participant noted that the users on the other end of the phone were distance students:

> Usually the phone conversations are from distance students, and I did get one distance student who called and wanted to know how to find articles, so I had to go into that. And she was working on her computer at the same time. (Interview, October 25, 2006).

As the phones themselves do not have caller IDs it was at first difficult to know how the librarians were making such designations. It was observed that the phone had single rings for incoming calls from campus-based users and double rings for those off campus. In saying this, however, it should be further noted that these off campus users could be locally located. In many instances, however, it became obvious that the user had identified their location in some way, either by explicitly stating it or saying something that allowed the librarian to infer it. The following are examples of either a direct mention of a location or an implication of a distance location:

> I had a person call from [city] who needed to know about a service, how to do it and all. (Self Report, October 25, 2006).
>
> I went through and found a resource that we had but it was a print resource in the building. And I read through some of it out loud to them and said, "One option is you could request [online delivery] to get a scanned copy for you." And they said, "I really need it today." (Interview, October 26, 2006).

In the first instance the participant reported the name of city 200 miles from the university. In the second the text suggests that the user had a relatively immediate deadline but could not easily come to the library.

Directional versus Instructional

As noted, these interactions were recorded in the same tally sheet used in face-to-face interactions. Once again, however, it can be seen that an emphasis was placed on the time spent in the interaction with the phone user. In many instances, as can be seen from the reports above, the reference desk acted as a call center, where many calls were transferred to other staff or library departments. It should be noted in passing that the reference desk was not the only “call center” point in this library, with the circulation department, the library administration office, and other service points also receiving such calls. Such referrals were usually quick and easily coded as directional responses.

> There was an implied difference in question types by talking about time spent:
>
> Aside from that, there were a few phone calls which weren't too long or involved, and otherwise it was just the usual - maybe a bit slower than average (holiday starting?). (Self Report, October 31, 2006).

The in depth interactions were those that demanded a significant amount of more time than a simple directional call. During a report on phone traffic, a long interaction with a distance student was discussed in these terms:

> Phone call traffic was medium and included a range of questions including in depth ones such as an online education student with questions on finding scholarly research content on ___, an instructor off campus with a question. The phone question took quite awhile because they wanted to know how to get to the full text. (Self Report, October 25, 2006).

Further, these in depth questions usually ended up being so due to their being more involved. As can be seen in the above quote, the user wanted assistance in accessing full text. There were reports on similar interactions, with users needing assistance in accessing articles online, or with user issues with online access. In most of these instances the phone interaction involved them going through the steps of the process of access with the user following along on the other end of their phone:

> A student wanting to know how to find articles on [topic], so talked her through how to search [database], limiting to journal articles, then combining keywords with the word AND. (Self Report, November 19, 2006).

Where the user may not have had immediate online access, the staff usually concluded the phone interaction by promising to send something along via email. One such interaction was closed by emailing the documents the user needed directly to her personal email account.

Digital Reference Interactions

Digital reference interactions formed the third of the three major media for interactions at the reference desk under study. Users submitted questions to the reference desk via an online web form. This form generated an automatic email to an email account for the reference desk and also posted the same information to an MS Access database. The email account was accessed using the Eudora email reader that was loaded on the computers at the reference desk. It was observed that these computers would signal the librarians when an email had been received, thus starting the response process of the interaction. The librarians followed a hyperlink in the email to a web-based interface to the MS Access database, where they then created and sent an answer. This answer interface also provided the librarians with the text of the canned response forms. Just prior to the beginning of this study a new feature was added to this interface that allowed the librarians to see where on the library's web site the user was when he or she clicked on the link to the digital reference service.

It should be noted here that librarians at this library referred to their digital reference service as Ask A Librarian, a term commonly used to refer to such services. Lankes (1998), for example, coined the catchall phrase AskA to refer to digital reference and other online question services such as Ask Jeeves and Google Answers. The term never really caught on in library literature but entered the vernacular of library practice. In the context of this study, most of the other statewide university and community college libraries used a variation of Ask A Librarian to refer to their digital reference services.

Appendix E is the guidelines for librarians to follow when working with digital reference queries at the study site. Throughout the document there is a lot of emphasis on getting the user some sort of answer or at least an appropriate referral. The rhetoric of the document is centered on the process of the service, on ensuring an answer has been sent and received. There is also a clear statement that librarians should treat digital reference with the same level of customer service as any other form of reference interaction. Two internal reports on the digital reference service suggested that the librarians are making great efforts in this direction. For example, they were reported to turn around 70% of the questions received in less than one hour. In other words, librarians responded to most digital reference questions during their shifts at the reference desk. I observed, however, that part of the ritual of the shift changes were discussions about the digital reference service. At times the librarian leaving would inform the arriving person of any outstanding Ask A Librarian questions. A few times it was also noted that if the outgoing librarian was in the midst of a digital reference interaction that person usually stayed to finish it.

The types of questions received are relatively similar to those received in person or via the phone. The following are some typically reported interactions. The first three were reported on the same day:

> Follow-up email from earlier user wanting to get a copy of [department policy] so forwarded it. (Self Report, November 19, 2006).
>
> A student wanting to know how to find books and articles concerning [topic], so described how to find books and articles. (Self Report, November 19, 2006).
>
> A student wanting to find journal articles on [topic], so described how to find articles on this topic. (Self Report, November 19, 2006).

> That said, there were 3 email references items. 1 I forwarded to ___, since it thanked him personally for the "keys to the candy store." I can only assume ___'s usual thoughtful and helpful reference service was the underlying topic. Another wanted the name & contact of the person responsible for Acquisitions, which is not as simple as they no doubt expected it to be, given our organizational structure. I forwarded it. The last (actually the 1st) was about what to do after requesting articles from interlibrary loan. I informed her. (Self Report, November 27, 2006).

Appendix A is a list of the canned response forms that staff had available in the MS Access database. In another study, I led a team of librarians who reviewed these response forms and coded them as either a directional or instructional interaction. These categories were similar to those that emerged during this study for face-to-face and phone reference interactions (for more on this other study see Appendix G). In the instance of digital reference, however, these categorizations tend to be less about time and more about content. Indeed, it was obvious from my participants that they took their time over the digital reference interactions and that they were more willing to be interrupted by face-to-face or phone traffic. For example, in discussing a two hour shift, one participant referred to the time spent on five digital reference interactions, with an emphasis on two of them:

> That first one, by the time I ended up forwarding it, I probably -- it was probably 10 minutes, cause, you know, really that phone call to the other librarian, kind of helped me decide, you know, once you forward it, it's not— it doesn't take much time to actually do it. It's just kind of making sure that I'm not unnecessarily, you know, forwarding it. And the other one it would have been a real short one too. Today, maybe, 20 minutes for the 5. It's a ballpark. So I'd say right around half an hour of the 2 hours. (Interview, October 25, 2006).

Another provided a little more detail on why one particular response took longer than normal:

> And I know that one of them, I let sit for probably about four hours until the next person on, so I could confer with them. I already answered that one

> question, had given them the answer, but they replied back and said, "Thank you for your answer. It's great. However, I need you to explain more about this." And I know that I waited, and I let that one sit for probably about four hours before I answered it and it was because I wanted to confer with my colleague. (Interview, October 26, 2006).

The emphasis here is on "let sit," where actual working time on the response was not always reflected in the statistical turnaround time. Indeed, the process that the librarians engaged in when responding to digital reference questions actually led to the interaction taking more working time than if it had been a face-to-face or phone interaction.

The Process of Responding to Digital Reference Questions

As suggested above, part of the process of responding to digital reference questions was to be found within the context of the physical milieu of the reference desk itself. This context should be kept in mind as I here describe how the participants responded to questioning about how they worked within the digital reference service. The general approach to digital reference interactions was summed up by one participant as:

> Answer the specific inquiry, and then provide potentially more appropriate resources to answer the question. (Interview, December 6, 2006).

The digital reference process was further described as:

> A lot of times it's figuring out how to get – help someone as quickly as I can to – say a resource like this one that will help them. (Interview, October 25, 2006).

Evaluating

The process of responding to a digital reference query, however, can be summed up as evaluating, pre-searching, answering, and suggesting. In terms of evaluating, the participants focused first on the question in the Eudora email client.

The evaluation cues that might go into defining a response were discussed:

> Part of the assessment of evaluating what resources to draw on is evaluating the question. If they describe, I need this by a certain date, that would lend itself to what kind of resources I might suggest. If we don't have something then I wouldn't go into you could request something by looking at [database] if we don't have this book or this videotape for instance. So if they don't have a time parameter I would look at what's available right now to this person rather than having to request it, and what's available to this person – and you can't always tell but you look at the phone number, that's always something I look at, and also the user. Are they university affiliated or non-university? If they're university basically I can go into the resources that are available through [database], and I think that'll impact their getting to the full text, whether they're in the building or at home. If it's non-university I would not go through the steps of looking through databases, I may suggest websites, you know, resources that we have through our resources pages. (Interview, October 26, 2006).

It should be noted that the librarian was looking here at the university affiliation of the user, not at any other criteria. Indeed, none of the participants suggested or even implied that they had paid any attention to the name of the user, which might suggest gender or ethnicity, two things otherwise not documented in the digital reference records. Further, as noted above, the place of the user on the library's web pages was documented only in the answer interface, not in the Eudora email reader. One participant specifically addressed how the user's location was initially not part of the information used in preparing an answer:

> I look at it first in Eudora, which I don't think comes across with the original [location], so I'm looking just at the question, itself, and it's only when I get into, and I usually don't go into the database, until I'm ready to start a reply of some sort, so that's oftentimes, the first time I'll see where it came from. (Interview, December 6, 2006).

That location, however, might affect the response, as the same participant discussed earlier in the interview:

> I look at where it's originating from and it's from the journal list and if she's searching there, here you're not going to find much, because obviously, it's

> looking for journal titles and where it's not topics and I can tell that, whereas a lot of students wouldn't. (Interview, December 6, 2006).

The location and the user, therefore, are not initial informational cues the librarian had when preparing to respond to a digital reference query. Such cues are focused on the content of the question itself, where the librarian evaluated the information need of the user in order to develop the appropriate response:

> It's a lab assignment, so I'm already aware of the assignment. Can you help me find primary sources? You know, it's more background on the assignment. I have a pretty good sense of what it is that – the process that's going on, if not the actual intent. Photosynthesis – I mean, all the – I'm getting the prompts here that, because of my experience, I know what this is. (Interview, December 6, 2006).

Here, an assignment was recognized as one that librarians had dealt with in the past. This librarian's experience with the assignment clearly suggested some cues that defined the response. In another interaction, the assignment also offered cues to an experienced librarian:

> It's a – it's a very broad question. It indicates that perhaps it's not a university user, perhaps. If not, it's probably not a traditional university user. I could see this being a community college or a – or a community user. I don't know. Clearly – maybe an alumni. I think that this would maybe indicate to me that it's an alumni. Reader's Guide to Periodical Literature, have access online? Where are magazines located? So yeah. There's a number of questions here that go beyond the question of "I'm looking for resource materials on [topic]." The person asked specific questions. The first part of it is a statement. They're not asking a question. The specific questions to the – this are does the Library have the Reader's Guide to Periodical Literature? (Interview, December 6, 2006).

The content of a question would also be deconstructed for cues in how to respond, beginning first by looking at some of the keywords the user supplied, as in the following:

> They're using terminology that's sort of higher level terminology and that – I mean, I'm not – off the top of my head, I'm not positive what they mean by

> [phrase], but it sounds like it's probably a subject term from an area, or that they're digging for some specific idea.
>
> Sounds like they're probably – they – it's medical or psychological. So [database] might have been a place where – you know, where you could find something about it. It sounds like they're looking for something in the healing professions, probably, and that what they're finding is, you know, more research studies on the causes [topic] rather than on working with people who are in that condition. (Interview, December 12, 2006).

The approach to a digital reference question was summarized in the following two descriptions of interactions:

> I guess what I do first when I'm approaching it is I kind of try to pick out the elements of what the question might be. What the student's actual need might be. They're talking about being in a junior level writing class, which indicates a little bit about what level of research they need to do, what level of writing they should be doing. (Interview, December 12, 2006).

> Sometimes you start off, read a question, you think "Oh, I can do this and this and this for this person" and by the time you're done, with part of it, especially double checking and tracking it down, then you're tired and you just kind of go "Maybe this is all they need" rather than saying "Here's other ways" 'cause without going and finding out what terms did you use and I might also have, I don't know that I did, forwarded it on just to see if they might be of additional help, not to say they'll take care of it, but at least the help, I would just kind of, you know, since she had something, I wanted to get back to her. I would think I would want to get back to her at least with what she's already got, how to actually find it, how to get those actual articles. (Interview, December 6, 2006).

Such evaluation of the question also led to some assumptions that the librarian made of the user. For example, issues an online user might be confronted with defined one major assumption in providing assistance. This comes directly from the guidelines in Appendix F, which tell the librarians to assume the user is a distance user. These guidelines can be seen in practice in the following interaction:

> "I've accessed the abstracts only, not the full text. Can you help me find the full articles?" I have an empathy for the online user, that I bring to my work at the desk that it's not always seamless. They don't see the "check for full text journal", so I think that's a bias that I bring that I make, I am sure, include that in my answer, so that's why I go to the stationary and its there.

> (Interview, December 8, 2006).

Indeed, such an empathetic reaction was very much a part of the online interactions with all the participants:

> "Please help" I think my first thought there is what the person really wants right now, is how do I get these articles, not I'm not concerned about the searching at this point, it's like this is what I need, now. (Interview, December 6, 2006).

Empathy was reflected in a sense of the user's perceived difficulties in meeting the requirements of the assignment:

> [Topic] is very broad, and the question as it's worded is probably – the question is how they got it in the assignment. So it's a very tricky assignment to do. (Interview, December 6, 2006).

Finally, the content of the question can also be contextualized with the overall reference environment and traffic to help define an empathic response to the user:

> I probably assumed that they needed this stuff pretty quickly for stuff to turn in, and that they didn't have a lot of leisure time. And that's kind of borne out a little bit by the amount of traffic on the desk and the – you know, people coming in asking for books. So that probably influenced me to some extent. Like this person needs answers. They don't need to be informed that they can take another two weeks to do this, because they probably have pressure of – the pressure of time on them. So I wanted them to be able to find some stuff on their topic. (Interview, December 12, 2006).

Other cues that led to assumptions tended to focus on access issues. For example, if the user noted that he or she needed articles, the participants generally informed them on how to access such articles online or how to request them if they were not available online.

Pre-searching

This leads to the second part of the response process, that of pre-searching. All of the participants noted that if the query were research related they ran the query through a library database or some other information resource before crafting a response. This is what I label as pre-searching, which was initially constructed with the user-proffered terminology or by substituting library or database terminology. During virtually every shift that I observed, the librarian was at work in library databases even when there were no face-to-face or phone interactions. These librarians then usually opened the digital reference service response interface and worked within it for a time. These observations, therefore, suggest this idea of pre-searching. However, the participants themselves addressed pre-searching in no uncertain terms.

In dealing with a user asking for help in accessing a specific journal article online, one librarian first checked first to see if it was possible:

> Without getting back to the person, I went in and tried to find them and tried to say "Okay, is this really available?" (Interview, December 6, 2006).

While this may seem to be a commonsense approach to responding to an online question wherein it is not possible to engage in a synchronous conversation, all of the participants did this even with more complicated requests. In describing in depth the thinking that went into a response, a reason why pre-searching was done was suggested by one participant:

> I think the main thing that I contributed to this search is that I went off the top of my head to the usual source. Then I did scan the other databases and found one that looked like it was more directly on target for the topic. So I would have looked in that and seen whether or not I could find information in it there that I expected. And I'm sure that I did. So that was kind of a little bit of work that I put into it.
>
> And then, of course, I did find a keyword or a – you know, a term. A subject term, rather. I – that would be pulling up information for them on this topic. (Interview, December 12, 2006).

In other words "Is this really available?" could be a reasonable answer to the why of pre-searching. Participants discussed this:

> I usually try to do, before I do that, try to do some of my own searching, just to see, you know, sometimes it works, sometimes it doesn't. (Interview, December 6, 2006).

Or:

> I had done some searching ahead of time and I figured out a couple of the concepts. I still kept it as a keyword search, rather than saying "go to advanced, go to subject" that gets a little confusing, but sometimes what I'll do is since I found the terms is I find those as descriptors and I often just try them as keywords and say okay, it'll still bring up some seemingly good material doing that so that it keeps it a real simple search for the user to do. (Interview, December 6, 2006).

Sometimes, too, pre-searching was conducted in order to allow the librarian to get a better sense of the question—a process reminiscent of the reference interview. One particularly difficult query was helped with some pre-searching:

> I would do a search and look for the keywords and it's a concept that took me a little bit of time. I was thinking about "What do they mean by this term? Is it this meaning, or that? That's kind of the thinking when I got this question. It could have also meant this too. So, this term was the glitch for me. (Interview, December 8, 2006).

For all participants the pre-searching was also indicative of some issues they each had with the digital reference service. For example, all had issues with the ease by which it was possible to refer a question to another without trying to answer it. For the librarians this was a very basic part of reference services in general:

> If this person walked up to the desk, I think I've always tried to say "I should be able to handle at least the basics of any kind of question". Sometimes you could tell right off the bat its incredibly complex, I'm forwarding this on. (Interview, December 6, 2006).

It is reflective of how all the librarians interpreted the ideal of treating the online user equally to the face-to-face user:

> I try not to refer unless I have to. I think that there are some that I just automatically do and those would be ___ questions, interlibrary loan questions

> and a lot of times circulation questions. And I think they're easy outs for us to do it. I think it's probably most appropriate for the amount of time, effort and thought that I would put into it, the end result, I think they're going to get the right answer from the person I've referred it to. (Interview, October 26, 2006).

Answering

With the pre-searching done the librarians used the digital reference service response interface to answer the query. In this interface all of the canned response forms were available for the librarians to choose from. The librarians consistently referred to these forms as "stationary" in reference to how these forms were originally developed in the Eudora email client. Appendix A is a list of the titles of these forms. They contained text to direct the user to the most appropriate place to access resources or contact another library service. For example, in many of the canned response forms was text on how to log into library licensed databases through the university proxy server. The text notes that the user must have a campus email username and password and that the user should have both to hand.

All of the participants discussed these response forms in a slightly negative tone, as noted here in three interview responses:

> It's a little stilted language. It has the form letter appeal to it rather than you know that it's a real person answering this question, so somewhere in there, I kind of like to get that across in some way. (Interview, December 6, 2006).

> The template, half of the stuff is – it's too much for many of the questions. (Interview, December 6, 2006).

> When I first started answering questions for students online, I would write all my own responses from the top. And obviously, there was a lot of labor and a lot of restatement and reiteration, and that's what the stationery's designed to help people avoid. But I do feel like, if you write your own responses, you're putting something into it that's not there in a piece of stationery. (Interview, December 12, 2006).

In saying this, however, the participants all saw the value of using the forms to maintain a relatively consistent voice and providing consistent directions to access university licensed resources:

> I try to use that stuff as much as possible because it's kind of standardized, and my assumption is that people are getting a similar level of service if you use that and you try to fill in all the spaces that they've got in the stationery. (Interview, December 12, 2006).

The use of the canned response was further framed in terms of a common decision by all reference desk staff:

> I think probably I filled in the blanks using the appropriate subject keywords, that kind of stuff, but half of the form I probably did not even consider and just left in there. So I didn't sit there and go, "Oh, this person may not want to know whether it's peer reviewed. This person may not want to know about library services." I used the form as is, and probably only about half of it is appropriate. But you know, we [the reference staff] made a judgment call. This is the [information] that needs to be included. And so I didn't delete it. (Interview, December 6, 2006).

For all of the participants it was important to know that the user was affiliated with the university. Knowing this would allow them to suggest university licensed resources in the response. In most instances, the users were university affiliated and could thus access some of the licensed resources. Those that were not were usually referred to freely available online resources. The user was asked in the initial web form that they complete online to identify whether or not they are affiliated with the university. This affiliation helps the staff in their pre-searching decisions and then on their choice of answer form. This was described, with the emphasis on the choice of form:

> First step that I would do is look at what is the available stationary to answer the question in a customized manner? They know how to search for articles; they just want to know how to get to the full text. So, the find journals stationary has some of this answered, so I would customize. So it’s looking at

> the existing stationary and assessing how would I customize it to get to the answer that they want, which is getting to the full text. The second part of what's contained in that stationary that is a helpful key is knowing if they are an NAU user or not. (Interview, December 8, 2006).

In other words, the forms were usable no matter the affiliation of the user. There would be some customization of the form depending on that status:

> Are they university or non-university? If they're university basically I can go into the resources that are available through [database], and I think that'll impact their getting to the full text, whether they're in the building or at home. If it's non-university I would not go through the steps of looking through databases, I may suggest websites. (Interview, October 26, 2006).

As is implied above, however, this was not the only reason why a response might be customized. The following discussion of a user inquiry about journal articles shows some of the details of the thinking that went into the selection and customization of the canned response form after doing some initial pre-searching:

> I did a search in [database] and then, after I did the search, came back and looked at the stationary, and I did the same strategy, I would do it now, too, as browse resources, select [area], and go to [database]. I may even say at the beginning of the email "I suggest you start searching in [database] because of the advantage that it does have peer review results, if that's important to you," which it is. (Interview, December 8, 2006).

Also, some assumptions about the assignment set parameters on customizing the response form, as was noted in this interaction:

> I would have lightly modified it to say, go to [database]. And I may have included another database, but I may have just put one, since it's a 100 level. I would just modify the stationery slightly as it stands and do a fill in the blank. (Interview, December 6, 2006).

Generally, then, based on the cues in the question and on some assumptions that they make, the librarians chose a canned response form and customized it to meet what they perceived to be the needs of the user. Indeed, all the participants edited the response form for each answer, as discussed here:

> I chose the one at the bottom of the list, pretty much. And then just set about editing. I know it pretty well but I always edit it. Try to make it a little more personal, you know, like they'd know I'm -- somebody's actually sitting there typing a message back to them. And just kind of get in there and, you know, sometimes you just be encouraging when you're doing that. (Interview, October 25, 2006).

Reasons for this editing tended to vary depending on the question being asked:

> I'd look at our templates and our stationary partly as if we set up things that we could say and I always go through and say, with this question, I don't need this and I delete it. I don't need that, I'm gonna delete it. Kind of need this but I need to reword it to reflect more of the individual's situation. (Interview, December 6, 2006).

However, even simple referrals were somewhat problematic for the participants, in that referrals could be an easy way to avoid engaging with the user's needs. Some of the participants were blunter in their assessment of the referral response forms:

> I kinda made a decision to myself when we really got started with Ask the Librarian to do this referral as seldom as possible, without giving them a little bit more, a little something and try to give them something and maybe additionally, refer them on. (Interview, December 6, 2006).

> Clearly, stationary makes that a little bit easier. I think some of the stationary and some of the processes that we have in referral are set up to pass the buck. (Interview, October 26, 2006).

There was a clear sense from all of the participants that the responses they craft are learner and learning centered. As these issues with the canned responses suggest, the participants each had differing comfort levels with using the response forms as available. All customized them in ways to best meet the needs of the user, but further, all customized their responses to inform the user that it was not a generic librarian but a person writing to them, as discussed here:

> It has the form letter appeal to it rather than you know that it's a real person answering this question, so somewhere in there, I kind of like to get that

> across in some way. I don't always do it, but I'll even go and just change one word in the stationary just because I don't like it. (Interview, December 6, 2006).

Editing or customizing the canned responses also gave the librarians the opportunity to acknowledge the expertise the user brought to the interaction. All of the participants saw it as important to meet the user on the user's own terms. In many instances their responses acknowledged the user's own language or key terms and suggested how successful such usage might be. But mostly the participants did not leave it at that point. Depending on what they had read into the question, participants would add something to the response that took the user's own expertise to the next level. One participant, for example, answered one question directly as asked, but also saw a need to provide the user with more:

> I answered the question clearly. And I think gave directions on how to get there. And indicate the reference desk. So I answered that question fairly thoroughly. And then I went on to say, "however", and give them a better alternative, if they were so interested. (Interview, December 6, 2006).

This was seen as an issue of valuing the user's expertise:

> I think I probably wanted to acknowledge the patron's – the knowledge that they had. So not negate them. Yet at the same time, direct them to the more appropriate resources. I think I clearly could have just gone in and said, "Where you want to go is – thanks for inquiring. To locate articles, go to…." I could have utilized the stationery that way as it was written, and I think the end result would have been the same for the patron, for the most part. They would have gone to the database, got the articles, and been set.
>
> But rather than do that, I didn't want to negate them, so I answered their questions, gave them a little background. Kind of indicated that there was probably an alternative way to do it. However, if they did want to do it the way that they had originally came in, they would have been able to. (Interview, December 6, 2006).

Another participant spoke in a similar fashion. Here the librarian was reviewing an answer sent to a user that applauded the user's keyword search strategy but then suggested a way in which the recommended database might provide more focused results by using quotations around the keywords:

> I acknowledge that they've done that and then secondly, the comment about the quotes, because they may not pick up on the quotes, but it might be something to suggest. (Interview, December 8, 2006).

Suggesting

This form of customization of the response speaks to the latter step in the process of responding to a digital reference query. In most of the non-procedural responses (see Appendix A) the participants saw a need to instruct to some level. In Chapters One and Two I mentioned a study in which I led a team of researchers to examine the level of customization of the response in a digital reference service that used canned response forms. That study found a significant level of customization occurring in those forms the research team designated as having some instructional component or intent (see Appendix G). A similar categorization of Procedural versus Instructional interaction was applied to the list of response forms in Appendix A. Comparing the word counts of the base response form to the actual response itself for all the interactions recorded in the digital reference service in the present study, I found a similar significant change in the instructional forms over the procedural forms. In other words, the present service saw the instructional responses edited more than the procedural responses.

This was in keeping with the findings from the interviews. In examining the responses for which they were each responsible for, the participants were asked to talk about some of the thinking that went into what they included and excluded in their responses (Appendix B). For example, one participant reviewed a question that had asked for scholarly resources on a very current topic and discussed it as follows:

> I guess one other thing that goes through my mind, though this is not a new issue, is just because it's such a hot thing. Probably not going to find anything scholarly on recent issues, just on like over the years, just the different things, but if it's scholarly, it's probably not going to be some of the stuff that really relates to what happened this last year.
>
> I would tell that person, email him back and hit him about that, but it's just in my mind I think about that so that there's stuff out there, but it might be a little dated if they're hoping to tie it into you know, the [topic], this last year and stuff like that, they're not going to find much but that directly related to the current situation. (Interview, December 6, 2006).

Participants also could not resist suggesting to a user a way to develop her research strategy more completely:

> If that's not there, then click "check for full text journals" and that would have been a very abbreviated, concise answer, but I think it doesn't perhaps take them through the other helpful information. So that's why I didn't answer it really concisely in just a couple of sentences. It was more within the context of the searching the articles, opening them up to the possibility of knowing about other databases that they could find articles in. (Interview, December 8, 2006).

One participant, however, did resist lecturing a student whose words suggested a less than balanced approach to research:

> You know, I might have said something about, you know, you want to present a balanced point of view. You know, I might have added something about [topic]. You know, for looking up [topic], this is how you could do it. And I probably should have done that. And it did – it appears that I did not, so I probably was a little bit irritated and working on suppressing my irritation and probably didn't give the student the full benefit of my expertise in this area. (Interview, December 12, 2006).

In a sense, the lack of synchronous conversation with the user forced the librarians into making some of these suggestions. The same participant who had resisted the lecture was particular on this point:

> I just keep going back to the need to discuss this question with the student. So this would be one where if I had been there when it came in and if I had had a chance to say, you know – to respond to them and do a back and forth and try

> to ask some more questions, because I'm – I keep having this sense that I don't know what it is that they really need, and that they do have some pretty specific goals, but I'm not clear what they are. So if there was a way to go back and forth with the student, yeah, that would be great. (Interview, December 12, 2006).

For another participant, being unable to converse with the student meant asking and answering some pointed self-questions and from there deciding on a strategy:

> What I was uncertain about is okay, you found some, is this what you need? Are you really saying, "I've got these, but I need more?" He or she is not saying that. But I think the main thing is figuring out where it's from, because I can't help until I actually get a journal title and get a citation to find out what direct access do we have and what would we have to request and so forth. (Interview, December 6, 2006).

Further, participants mentioned discussing the questions with colleagues as another way to either interpret the question or affirm the direction taken with the answer. These forms of questioning or replacing the synchronous conversation (or the reference interview) would lead to the suggestions made in the final response.

Participant Feedback

As noted in Chapter Three, my participants reviewed their interview transcripts. I also shared an early draft of this chapter with the participants and asked for their feedback. In particular, I was curious to note whether or not this chapter effectively described their experiences in references services. All said that the chapter is "accurate" in its representations, especially in "bringing all the competing issues into play, and recreating both the external and internal experiences" (Personal Communication, February 9, 2007). One participant, however, felt that the chapter did not discuss other activities the librarians are normally responsible for. As noted when discussing a normal shift, each member of the reference department staff contributes less than 25% of their weekly time to the reference desk. However, the study was specifically focused on reference services as provided through the library's main reference desk. Other reference activities, including library instruction and student research consultations, while important, are not considered here.

Another participant emphasized the point that it is hard to define what is typical anymore and thus questions the ability to generalize:

> I think that overall I would stand by the idea that I don't know what is typical anymore, so generalizations might be hard to extrapolate out, however that may be based on the individual. I bring a history of experience to the desk that will be different from each of the participants. It may be that the old timers have to die off a bit and younger librarians with similar educational and online experiences emerge before you can get a broad reference experience. (Personal Communication, February 5, 2007).

In other words, there is a transition in reference services that is partly driven by how the library supports the online learning environment.

The interplay of the different reference environments described here, however, also opened the eyes of the participants. There was surprise expressed at how the chapter details the reference experience, revealing to one participant "the amount of stress that one can experience in this work:"

> Having a parade of 5 users come up to you during a shift and ask precisely the same question about free printing (or anything else), having an assignment that requires you to provide the same information to a number of people, being asked to "do something" about MySpace being down or "them" hacking into "your" computer... being Office Supply Central... juggling people coming at you through 3 separate but allegedly equal channels - it's just a lot of demands on one's mental flexibility. It's easy to let things become an irritant, and to forget that for each user, it's just the one question, or the one interaction. (Personal Communication, February 14, 2007).

Description of Themes

An overall sense of the roles of the participants in reference services emerges from the data described above. These roles should be considered in the context of a highly complex and dynamic customer service environment that demands ever increasing levels of competency in information skills, hardware and software trouble-shooting abilities, people skills, and triage. Each of these are then further mitigated through the medium in which the librarian interacts with the user, and thus requires an understanding of how face-to-face, phone, and digital interaction can change the dynamic. The data thus suggests themes that describe the various roles of the reference librarian. These roles are discussed below with an emphasis on how they are evident in digital reference services.

I have labeled these four themes as Customer Service, The Teacher, The Neutral Facilitator and The Professional. In the practices reflected here, librarians are more likely to emphasize change, looking to the ever-changing world of information, access to information, and ways of facilitating such access to define their roles. If there is a theme that emerges as the major one it is Customer Service. As can be seen from the descriptions above, the librarians in this study kept the user at the fore of any service decisions they made.

Customer Service

The participants have all inferred that the role of the librarian has changed as the information environment has changed. User expectations of the librarian are generally defined by the types of content or services the library provides. Such an emerging role, however, is grounded in a very old paradigm of librarianship, that of customer service. Katz (2002), for example, notes that customer service is among the most pleasurable aspects of reference librarianship (p. 15). All of the participants in this study were focused on the customer. My observations noted that librarians were constantly assisting users with, among many other issues, printing issues, computer problems, wireless connectivity, and software usage—all not generally considered traditional librarian roles. For example, one participant implied that even some of the content of the library's web site—in this case, providing access to citation guides—suggests a writing tutor role for librarians. Indeed, the same participant later admittedly romanticized the traditional role of the reference librarian:

> I would like to think of reference being how it was maybe when I first came into it, when there was a sense of it being calmer, more academic, interacting, really finding the right knowledge, the right information for the right reason, but I think that that's a—if that ever existed and I suspect it didn't; it was a calmer, more romanticized version—I think most people just want a quick answer which they can put in their paper regardless of, as long as it gets by the faculty member it's okay. So, I'd like to make it more of a romanticized version, but I don't think it necessarily—it might be that just giving them a quick answer is what they want. I think it lends itself very well to the online environment with that because we're free of having to ask follow-up questions, read body language, get a sense of why they're there, having any sense of that. I think the online environment gives us a safe out for giving in-depth assistance. (Interview, December 6, 2006).

In other words, a major theme that emerges from the data is that the participants saw themselves in a customer service role that cedes control to the user. Such a focus is manifestly implied by the reference interview, and can certainly be seen in the interactions here described. Participants mentioned the need to interact with the user in terms of the reference interview, but with an emerging learner- and learning-centeredness as opposed to librarian-centeredness.

Regarding the online environment specifically, the participants also saw more options available to help the user. For example, in studying a digital reference question, one participant discussed some of the thinking that might go into a decision to send along citations to a digital reference user. This was not quite an effort to give the user everything that she wanted, but to try to help the user to effectively refine and thus control her own research. The thinking is framed in terms of a face-to-face interaction:

> That's kind of interesting, though, the last part where it says "Please help" with all those exclamation points, it was – I tried to interpret that, as well, kind of like on the one hand on the surface, it's like this person is getting along okay, but at least in terms of doing searching and finding and citations, they're doing okay.
>
> They're finding some good, what to me appeared to be reasonable articles, and then "Please help" I think my first thought there is what the person really wants right now, is how do I get these articles, not I'm not concerned about the searching at this point, it's like this is what I need, now. 'Cause if the person was standing in front of me, I would say "If you can get these and read them, then go back and search some more, but by reading these, you're going to start getting a better sense of how applicable are they and some terminology that you may not have come to, but through these articles, you'll start picking and they may start referring to theories or other concepts that you may not have considered when you're doing the original searching. (Interview, December 6, 2006).

The participants also discussed the lengths taken in digital reference to avoid a referral. Further, participants discussed the issue of ease of referral, and how it could be potentially a disservice. Even when it was acknowledged that the referral was appropriate, it was usually in terms of aiding the user, as discussed in the following three separate cases:

> Somebody in the field probably is a little, you know, can look at those terms and go, "This is what that means," and I'd go, "I don't know what that means." (Interview, October 25, 2006).

> Some of the terminology used by the person asking the question was kind of on, you know, a more technical level of, you know, not a [subject] class. I figured this is getting -- and I started thinking right away this looks more like a [subject] program rather than just a general question, so that's kind of why I contacted somebody. (Interview, October 25, 2006).

> He wanted someone to really devote attention to him and being at the

> reference desk and having a lot of things going on, I did know this because I had talked to him and then I got his email, and so I knew what he wanted, which was a period of time when he could really sit and explore his topic with someone who knew how to do that type of research. And I haven't done as much [subject] research as I have in some other fields, so I'm not as good at it as some people are. (Interview, October 25, 2006).

In the latter case the librarian referred the user based on two overriding concerns—an awareness of lack of expertise sufficient to assist the user; and, an awareness of the milieu that would not give the user the attention that he needed.

Another dimension of the customer service librarian is the length the librarian will go to assist the customer. This was especially evident in the descriptions of the challenges of interactions that were due to the changing printing environment. This was one aspect of my participants role that was not anticipated by me in preparing for this study. As noted, the transition occurred just before the start of the study period and it impacted virtually every shift. The participants' self-reports, for example, gave them an opportunity to vent about printing. However, as the following sampling of comments from the self-reports reveals, much of the venting was rhetorically empathetic to the user; in other words, the users' frustrations with the printing environment became the librarians' frustrations:

> One big printer mishap that I had to direct the patron to Circulation while handling the phone call. (Self Report, October 26, 2006).
>
> Very frustrated patrons because printer station 1 was either not receiving and producing jobs, or was very slow. (Self Report, October 30, 2006).
>
> One of the printers went crazy, shooting out about a ream or so of paper before it was stopped. (Self Report, October 31, 2006).
>
> Printing problem of spewed out pages that had nothing on them. (Self Report, November 17, 2006).

Here, too, can be seen another aspect of the customer service role: the empathy shown by the participants to the users. The printing environment impacted the face-to-face service significantly. After an initial transition period I observed that the librarians had learned to recognize the signs of issues or problems, such as the queues in the copying/printing room. Such awareness was also evident in the other media, including those that come with being an online learner:

> As an online past user at ____ , when I was in graduate school, that really helped having a seamless access, and not having it really is frustrating when you're not in the building, so I think making sure the answer was all inclusive, perhaps than just answering it, you click on the PDF or HTML full text link. (Interview, December 8, 2006).

All of the participants clearly stayed focused on such issues, in part driven by the philosophy of online access that underpins all of the services at this library. However, the empathy with the user was seen in other areas too. For example, the librarians all stayed informed of student assignments or current research needs. One of the major parts of the normal reference shift was the debriefing when the outgoing librarian would detail what was going on. This awareness also fed into the other media, where the librarian might be cued into a certain response based on it.

The Teacher

The role of the librarian has always involved some form of teaching. Whole books are devoted to the trademark pedagogy of librarianship, that of bibliographic or library instruction (see, for example, Clayton, 2006; Martin, 1995). The reference interview itself pre-supposes a need to teach. This therefore leads to another theme evident in the data, that of The Teacher. This is directly connected to the role of Customer Service. The librarians in this study constantly found ways to instruct their users. This seemed easier to do face-to-face:

> If the person were standing in front of me, I would say “If you can get these and read them, then go back and search some more, but by reading these, you’re going to start getting a better sense of how applicable are they and some terminology that you may not have come to, but through these articles, you’ll start picking and they may start referring to theories or other concepts that you may not have considered when you’re doing the original searching. (Interview, December 6, 2006).

In the online environment, however, this may not always be possible. The Teacher role therefore can conflict with the Customer Service role, as suggested by this participant:

> I try to go to a resource I think would be appropriate and do the searching myself so that when I do respond to the user I'm sending them something that they're going get something out of. It may not always be all that they could get or maybe the best, depending on how detailed a subject and ignorant I might be, you know, if it's medicine or something like that. (Interview, October 25, 2006).

At times, as noted in the discussion on digital reference interactions, there was a deliberate moment where the librarian would turn around and offer the online user some form of instruction in their research process or search terms. But there were many teachable moments in the librarian to learner interactions that could have occurred at any time and via any medium. For example, a simple phone call asking about types of journals can become a question about searching:

> Phone call from an instructor who had several journals she wanted to know if they were scholarly in nature, described how to search in Ulrich’s to find out more info on journals. One journal, information management, she wanted to know more about where to search for it so I described how to search in journals to find the database that indexes it. One journal had the same title so we talked about using volume number in the citation to find out the journal since she was working from a student's citation. (Self Report, November 6, 2006).

In another interaction, a student walked away knowing about a new resource that would help her with future research. In saying this, however, it was also implied in the following examples that librarians partner extensively with the student in getting to the point of recommending that resource:

> One student needed help locating information on an artist and a specific work by that artist (an assignment that seems to be happening now). It wasn't easy to find articles, though she needed at least one or two journal articles for her paper. We finally found a decent bibliography in [database], and she was happy to learn about this source and was planning to use it more. (Self Report, November 16, 2006).

> One student asked how to search for a primary source, peer reviewed article on [topic] so I worked extensively with her for 20 minutes, going through how to find [database], how to limit to peer reviewed articles, how to use search strategies using the Boolean word "and" between concepts. She wanted to know how to find the full text article as well so I showed her strategies. She found several articles on [topic] so she then focused on those terms within the concept of [new topic]. (Self Report, November 30, 2006).

Much of these interactions with learners were not consciously classified as teaching per se in the heat of the moment. In saying this, however, many times a teaching interaction was strongly implied, as in this instance:

> Usually the phone conversations are from distance students, and I did get one distance student who called and wanted to know how to find articles, so I had to go into that. And she was working on her computer at the same time. (Interview, October 25, 2006).

In other words, the user was online while also on the phone with the librarian, and thus the interaction became one in which the librarian instructed the user on how to find articles over the phone. Sometimes teaching was actually the intent of the librarian:

> I talked to them about the descriptors. I added that little thing about descriptors for that article because it was like, okay. I don't know what you want, but maybe you will see something that strikes you, and then you can come up with that. I added a little paragraph here about thinking carefully about what the focus is. (Interview, December 12, 2006).

Most of the time, however, the teaching involved re-direction, clearly documenting substitution, or, as suggested above, suggesting strategies or other ways of doing the research:

> I suspect that what I would do is indicate that while we did have [resource], it might not be the best resource to use, but there are online databases, such as [database], that were – that were similar in nature to [resource], but more comprehensive and easier to search. (Interview, December 6, 2006).

The Neutral Facilitator

More evident in the data, perhaps, than The Teacher is a role more closely aligned to learning interactions as defined in Chapter Two. However, it was not always clear that the librarians in this study were stepping outside of the Customer Service and Teacher roles to become The Neutral Facilitator. I see this role in part being defined by the sense of neutrality the participants tried to bring to their interactions with users. As seen in Chapter Two, such neutrality is ingrained in the profession, which also suggests the last theme of The Professional, discussed more below. Certainly, participants in this study had difficulty at times divorcing themselves from their own thoughts and emotions about the question that interfered with providing an effective response. One participant referred to an online interaction in which the student had asked a very loaded question about a current political topic that was obviously an area of concern for the librarian:

> I might have commented somewhat about [the user's terms]. You know, I might have said something about, you know, you want to present a balanced point of view. You know, for looking up [topic], this is how you could do it. And I probably should have done that. And it did – it appears that I did not, so I probably was a little bit irritated and working on suppressing my irritation and probably didn't give the student the full benefit of my expertise in this area. (Interview, December 12, 2006).

In other words, the librarian here deliberately fell back on a more neutral role of facilitator of access to information.

At times, the participants saw themselves in such a role, perhaps seeing this neutral stance as a balance to the gate-keeping function of librarianship that could get in the way of more effective customer service and teaching. Such neutrality may be seen in the strong emphasis placed on the expertise of the user, where the librarian would acknowledge the user's own words to develop a search strategy. Where those words worked, the librarian shared an effective strategy that used them; where they failed they would suggest other ways or terms to use, usually in the context of the best resources or databases that would assist the student. In this latter instance some teaching might occur. In both instances, facilitating user access was important. This involved an interaction in which the librarian gave the user a piece of information directly rather than instructing the user on how to find it:

> The value of giving them the citation was saying "You know, there's not much on your topic, but there is on this part of your topic, but it may not be what you want, so you may consider broadening it." And giving a citation title means that it also gives them a little information they could go and find it, if they wanted to look at that one and sometimes, that's a value I found if there's not much written on it. They'll all have one article that might help with on that topic. (Interview, December 8, 2006).

In other words, the user was given a citation to an article. Implied here, however, was a further teachable moment, wherein the user can then follow the information provided by the article to try another search strategy.

The facilitation role was most clearly evident in the participants' use of the referral function in the digital reference service. As previously noted, this was used with some reluctance. But when used the librarians clearly saw themselves in this facilitator role, drawing on the user's expectations to create a connection between the user and the appropriate unit or expert, as can be seen in the following interactions:

> But I really think that the student needs to sit down with someone and talk their topic through, and work with someone one on one. And I hope that I tried to give them some information about that as well. (Interview, December 12, 2006).

> Somebody in the field probably is a little, you know, can look at those terms and go, "This is what that means," and I'd go, "I don't know what that means." (Interview, October 25, 2006).

There was a recognition that the overall role of the reference librarian is as a generalist. This clearly plays to the facilitator role, as it is a self-perception that acknowledges that the librarian is not the expert in all things:

> If this person walked up to the desk, I think I've always tried to say "I should be able to handle at least the basics of any kind of question". Sometimes you could tell right off the bat its incredibly complex, I'm forwarding this on to somebody. (Interview, December 6, 2006).

The Professional

Throughout this study there was an implication of professionalism, in part defined by the choice of participants that hold a terminal degree in library science—the library profession itself defines a library professional as one who holds this terminal degree. This study did not examine how that degree might affect the participants' outlook or perceptions of their roles, but the data does at least imply that orthodox library practices such as the reference interview are known and acknowledged by the participants. In saying this, I must acknowledge that my random observations were, at times, of staff that did not hold the terminal degree.

As professionals, however, the participants were aware of the practices and philosophies that defined practice at this particular reference desk, especially those that noted the best practices expected of librarians of reference services in their library. For example, the librarians all saw themselves as part of a bigger unit, where even choices about how to use a canned response form in the digital service are not only defined by their own sense of what is needed but also by the overall philosophy of the unit:

> Many of these, I use the template as it is because we decided on it. The template, half of the stuff is – it's too much for many of the questions. So I think probably I filled in the blanks using the appropriate subject keywords, that kind of stuff, but half of the form I probably did not even consider and just left in there. So I didn't sit there and go, "Oh, this person may not want to know whether it's peer reviewed. This person may not want to know about library services." I used the form as is, and probably only about half of it is appropriate. But you know, we made a judgment call. This is the thing that needs to be included. And so I didn't delete it. (Interview, December 6, 2006).

These practices and philosophies are reflected in the documents of this unit (see Appendices D through F) that are informed by the modernist paradigm of librarianship and are especially reminiscent of the reference interview dogma. In saying this, however, none of the participants blindly followed these documents.

A major part of the service at this institution was defined by the university's focus on distributed learning initiatives. The library's strategic plan speaks strongly of its support of these programs. Priority was placed on the use of technology to deliver library support to distance learners. For all of the participants there was a very strong awareness of the role technology has come to play in reference services and how it forces them as professionals to rethink, or even reflect on, their practices. For example, participants note how reference services have been impacted by the use of technology and how it is necessary to re-think how to provide service:

> If they're at a terminal it's another thing. You go and kind of help them and maybe look over their shoulder and help them through it. [In digital reference] you're having to send back an answer and hope it works without knowing. It's easier and much more – I don't like to, I'd rather not waste their time. I'd rather give them an answer right now. But on something like this I just felt like, you know, I might just show my ignorance too much there and

> they may not get the help they really need if I deal with it, you know? (Interview, October 25, 2006).

The dogma of the reference interview does not always concur with this idea of "giving them an answer right now." Interacting with an online user, however, may require just that. Further, while it may seem that the three media of interactions described here are separate, they sometimes are not. For example, one participant described an interaction that began on the phone and concluded by email. Email was seen here as a way to further enhance the interaction that may not have been possible in a traditional iteration of reference services that does not have the digital component to it:

> And what was of real value is we combined technologies. He called, we talked, and then we worked together in looking at resources, and then I said, "Well, let's look together and see what's available. I will look and see if I can refer to you some search strategies via email. What's your email, and then I'll send you some ideas and an article if I can find one, just so you get an article on your topic that you're looking for and how I found it." And so that worked really well 'cause I realized it was taking 30 minutes – and I don't usually talk on the phone very long. (Interview, October 26, 2006).

Technology is not static either. It can change and can offer newer ways of interacting with the user:

> I think what's notable in thinking about technology and answering questions using technology is to stay open to different tools of technology that help customize our interactions with users and, for instance, using and variety of tools. That we continue using the online environment, like, through Ask a Librarian. It could be another form, though. It could be chat or instant messaging or even virtual conferencing. (Interview, October 26, 2006).

In saying this, however, the participants also spoke to the typicality of digital reference interactions when compared to face-to-face and phone reference. Indeed, all spoke to how the two most frequent interactions involve finding online journal articles or referring the user to another unit:

> I would say that finding journal articles and finding the full text, searching for the articles, number one, then finding the journals and the whole text are fairly common questions that we get online. (Interview, December 8, 2006).
>
> Related to research, or related to other things, where I really want to ask somebody before I answer because it could go to, say, another unit. (Interview, October 25, 2006).
>
> The general experience that I have had with email reference is someone will want to know how to find a journal article. That's by far the most—and they'll say, "This is my topic and I need to know how to find material on this." (Interview, October 25, 2006).

One participant, however, had a slightly more difficult time in describing what is typical, suggesting that the technological environments are shifting that sense:

> I don't know what's typical anymore.
>
> I had a couple [of questions] that were, I think, not indicative of the normal questions that we get. Primarily dealing with citation guides to the point that I don't know that—I had answered them, but I—I don't know that—I believe that they wanted me to answer them more fully as in how a writing lab or instructor would use it. (Interview, December 6, 2006).

The idea of typicality also spoke to another component of the Professional, experience and expertise. For example, one participant drew on prior knowledge of a particular assignment to help develop the appropriate response for the user:

> It's a generic assignment that I've been familiar with for probably close to ___ years. I've answered that question a hundred times, if not more. So it's – I fully suspect that next year I'll answer that question a hundred times again. (Interview, December 6, 2006).

Through such experiences, too, the librarian develops an expertise beyond that of a specialist. As much of the comments on referrals suggests, there is a level of general knowledge and expertise that each librarian expects both of themselves and their colleagues. In part, I believe, this explains some of the antipathy to the referral canned answer form.

Brief Summary of Findings

This chapter has described the setting of reference services at one academic library. Service was categorized according to the medium in which it was delivered, face-to-face, phone, or digital reference. Face-to-face interactions impacted the other two in that the participants tended to deal with the user at hand first. In saying this, however, all of the participants effectively practiced triage across all three media. The milieu of the reference desk itself tended to impact the other services too, with printing and other technological issues at times driving how the participants viewed their shifts. Further, in all media the participants and others were clearly categorizing their interactions as either directionally oriented or with instructional intent.

The digital reference service itself was described, with the process of responding to the questions within the digital reference environment revealing four major steps: evaluating the question for content and direction; pre-searching resources in search of appropriate recommendations to make; crafting a response that generally customized one or more of a series of canned response forms; and, suggesting further strategies for the user should the librarian see the need.

Finally, four themes emerged from the data that suggests differing roles for librarians: Customer Service, The Teacher, The Neutral Facilitator, and The Professional.

CHAPTER FIVE

FINDINGS AND CONCLUSIONS

Introduction

The purpose of this study was to describe the role of librarians in digital reference services. The stories of four participants from a busy academic library's reference services were described in Chapter Four. A mixed-method approach was used in which the participants reported on their actions and were interviewed about those actions. I also randomly observed the activity at the reference desk as it was important to place the digital services in the context of the overall reference services provided. Indeed, as the findings clearly show, the integrated nature of this reference service, with face-to-face, phone, and digital services all provided through the same service point, means that each component of the service impacts the others.

The study was informed by a critical theory research paradigm that suggests that the role of the librarian could be both hegemonic and representative of a role that privileges the librarian over the user. It was argued in Chapter Two that this role is fully realized in the dogmatic practice of reference librarians, that of the reference interview. In part, therefore, the study further described the place of the reference interview in digital reference services. Results of the findings, however, suggest a revised interpretation of the role of reference librarians in online learning environments.

This chapter, therefore, will interpret the findings presented in Chapter Four and answer the research questions of the study. The chapter will first examine some of the findings from the study in terms of critical theory. It will then summarize the literature review and its two major arguments on the reference interview and online learning. The research questions will then be answered in this context. Following this will be a discussion of a new theory of digital reference services that is suggested by the data: reference interaction as opposed to reference interview. Finally, the chapter will conclude with a discussion of the study's limitations and some suggestions for further research on reference interaction.

A Critical Theory Reading of the Findings

It was suggested in Chapter One that the reference interview could be considered a metanarrative of reference services. The findings would further support this suggestion. The service under study is relatively unique in how all forms or media of reference are combined at one service point. As said, this integration means each form of the service impacts the other. However, the service is also very structured, in that there are a number of documents defining best practices for librarians providing these services (see Appendices D through F). These documents are informed by the protocols of the reference interview.

Chapter Two discusses the procedural components of the reference interview and suggests that it is latently patriarchal in intent. In other words, while librarians outwardly have the goal of eliciting the information need of the user, the process of the reference interview serves to devalue the prior knowledge and experience the user brings to the interaction. In many ways the reference interview is defined by the social epistemology concept of substitutivity, or Frege's (2001 [1892]) mediated reference theory that considers how substitution of synonyms may not seriously impact truth. This further leads to a false sense of objectivity in how knowledge is organized. The reference interview therefore becomes one of interpretation, where both the user's words and the substituted words of organized knowledge are brought together.

In Chapter Four all of the participants discuss how they evaluate questions and look for cues that suggest a strategy to answer the question. From this, I suggest a process of responding to digital reference questions that is very reminiscent of the reference interview, without the synchronous communication of the interview. The participants generally follow a process of evaluating, pre-searching, answering, and suggesting in a digital reference interaction. As can be seen from Chapter Four this process is heavily driven by the first two steps, when the librarian is engaging in reading the question in terms of substitutivity. This is the interpretative function of the librarian that privileges the librarian-defined organization of knowledge.

The reference interview is designed to mediate between organized knowledge and user knowledge, but specifically emphasizes a neutral role for the librarian in that mediation. Self-described progressive librarians such as Jensen (2004) and Good (2006/7) challenge such a neutral stance as the worst form of moral relativism. They recommend that librarians take a stance in their interactions with users that would benefit both. As the following participant quote illustrates, this can be quite difficult:

> You know, the – I always get wrapped up in political discussions, and so that's a button right there, as a political – it's a political topic. Politicized. (Interview, December 12, 2006).

This librarian fell back both on the self-perceived neutrality of the librarian as well as on the self-imposed role of neutral facilitator versus teacher:

> You know, how do you fit that kind of stuff into the library inquiry, and where does your job end and the instructor's job start? And trying to be sensitive to that, because you never know what the instructor has said to them. They may have had quite a bit of discussion with their teacher about these topics, and you don't want to step on the teacher's toes. (Interview, December 12, 2006).

In spite of these concerns, however, the teacher role did emerge in the findings. I labeled the last step in the process of responding to digital reference as suggesting. It is a deliberately vague term that at its strongest refers to instructing. As such, this may seem somewhat dissonant with the contention that there is a privileging of the librarian in the interaction with the user. Substitutivity, however, is still framed in terms of a nineteenth century, Western hegemony, where terminology such as Native Americans is re-worded as Indians of North America. Further, in the post-modern information age, it privileges information that has been indexed in these terms over that which has not, such as non-Western research or non-English language research that has only been indexed by an Internet search engine.

Elmborg (2006) has suggested the beginnings of a critical literacy that can be seen in the practices of this study's participants. He suggests that users need to explore beyond the terms they either have learned or which the library will teach them. Information itself is a changing paradigm and it is worth exposing users to these new information sources or organizing terms. My participants rarely went beyond recommending the library's licensed resources, in part due to the cues of the user. In saying this, however, they made suggestions of how to reframe some searches in terms of the databases. More often than not they also took the users terms and, after pre-searching with those same terms, shared how successful using them might be. The further suggestions were just that, an appended teaching moment where the librarian made an effort to explain the substitutions necessary to use an organized resource. I noted in Chapter Four that such moments evidence the teacher role. This role, however, still evidences the practices of the reference interview.

In saying this, however, from a critical theory perspective, there is a sense in this study that the reference interview is evolving to something new and more inclusive. The reference interview is still firmly a part of the practice of all the participants, and this may be due to the privileging of licensed and organized information resources such as the library catalog and an online database such as Academic Search Premier. Whereas substitutivity argues for a more structured search involving subject headings and descriptors, the development of online resources that can encourage key word searching has begun to change the paradigm of information searching and retrieval. Admittedly, online keyword searching has been in libraries since the advent of the online library catalog. The recent merging of key word searching to the full texts of articles and books has opened up a more chaotic sense of information that privileges a more naturalistic approach to terminology. This naturalistic approach is certainly evident in the participants' use of the user's own language when they begin to craft a response to a digital reference query.

Summary of Literature Review

The literature of library science has lacked a strong engagement with distributed learning theory. As such, the literature on digital reference services remains focused on the reference interview metanarrative. Much of the literature discusses how to transition traditional reference services to the online environment in such a way as to maintain the reference interview. This suggests for many writers synchronous solutions to digital reference services, such as chat or instant messaging. Where the literature does engage more critically with the reference interview metanarrative, there is a sense that asynchronous solutions may be just as effective.

Chapter Two argues for a close engagement between this literature on digital reference and that of distributed learning theory. Tu (2002), for example, noted a user preference for email in online learning environments. For these users, social presence was more important and this was best represented through email. This did not rule out interaction, as that was further operationalized in four variables: pleasant, immediate, responsive, and comfortable. As noted in Chapter Two, immediacy here has both synchronous and asynchronous dimensions that are not much different from a user perspective. Indeed, Tu suggests that responsiveness is the most important variable in defining social presence for the user.

Distributed learning theory further defines interaction in terms of the learner. The learner is free to “influence, direct, and determine decisions related to the educational process” (Baynton, 1992, p.18). These actions are framed within the interactions defined by Moore (1989; 1990; 1991; 1993) and others (Gunawardena & McIsaac, 2003) as learner to learner, learner to instructor, learner to content, and learner to instructional interface. Chapter Two argues for the librarian’s place in these dimensions of interaction.

Summary of Findings in Relation to Research Questions

How Do Librarians Respond To Digital Reference Service Questions?

The integration of the digital reference service into the services provided at the library's reference desk clearly influences how the librarians respond to the questions that come through this service. The user interface to the service is an online web form that produces an email to the reference desk. At the reference desk librarians read the email through the Eudora email client. This email also contains a link to a web based response form that provides the staff with all of the canned response forms.

In the case of the digital reference service, librarians first evaluate the email in the Eudora client. Cues in the question suggest certain resources that the librarian may or may not recommend to the user. If the user is affiliated with the university the librarian tends to privilege the licensed resources the library provides access to. This also suggests which canned response form the librarian will use when he or she clicks into the response interface. The librarian also evaluates the question in terms of key words for a potential search strategy. Before starting to craft an answer the librarian accesses some databases or Internet sites to pre-search by key word, usually those suggested by the user. A successful search will be communicated to the user; an unsuccessful search usually entails some further searching as the librarian tries different terms.

Following this the librarian is ready to answer the question and begins this by clicking on the link to the response interface in the Eudora client. This interface pulls up the question and a blank answer form, with links to all of the canned response forms. New to the question section is a text version of a hyperlink that tells the librarian where the user was when he or she clicked into the digital reference question form on the library's web site. This link may or may not suggest a further refinement of the response the librarian is working on. Usually it may suggest to the librarian some different recommendations. However, it was not crucial to the response.

The librarian usually chooses one of the answer forms and, based on the pre-search, edits the form to reflect a successful search strategy. The participants in this study were not overly enamored of the canned response forms, finding them constraining, cumbersome, and overly detailed. They would, therefore, delete content from these forms. Where they added content it was usually to instruct the user specifically in relation to the question asked. Most would add some further content that suggested other avenues of research, such as a refined search strategy or new key words to try. Such suggestions were usually based on the pre-searching.

What influences the time it takes to respond?

Essentially, librarians are juggling the digital service with the face-to-face and phone services. While all three media are supposed to be equally attended to, the face-to-face interaction is usually attended to first. Thus, at times, librarians may not immediately respond to the question as they are busy with other users or other activities. The face-to-face interactions, for example, can draw the librarian away from the reference desk where the digital service is hosted on one or two computers. As this service desk is staffed by only one person at any given shift, time away from the desk means that it is essentially un-staffed. Librarians can be assisting users with something as simple as a printing issue or a formatting question in Microsoft Word.

However, they could also be working with a user in a more in-depth question involving a complicated research project. Further, they could even have left the reference area, escorting a user to book stacks on another floor.

Internal reports suggest that the digital reference service tends to turn around its responses within an hour of receiving the questions. For the most part this service still meets this turnaround time. Factors that might influence longer turnaround include the level of face-to-face and phone traffic. However, findings in this study also report that librarians may deliberately delay a response in the interests of consulting a colleague. A strong sense of customer service leads to an intent of always providing the user with the best possible answer, even if that sometimes means not providing the user with an immediate answer.

What is happening in the process of responding to "Ask A Librarian" queries?

The process of responding to a digital reference question has already been addressed. It is worth noting, however, that something else is happening in this process. The participants all spoke to reflection on the question. This is already seen in the ideas of evaluation and pre-searching, but is further documented in the questions the participants are asking as they look at the question. At times these questions move beyond simple evaluation of the content to more specific issues about serving the user appropriately.

For example, referrals are, on the surface, quite simple to do and usually do not involve much evaluation and certainly no pre-searching. In saying this, most of the participants did some up front checking before making a referral. When the content of the question did not automatically suggest a referral there is still some second guessing that goes into the ultimate decision to refer. One participant was particularly concerned at what was thought to be an inappropriate referral, thinking that the referral itself lacked some content that would have at least got the user started on some research. All the participants saw a referral as a potential time waster for the user. Once an interaction is referred further interaction is no longer considered specifically the responsibility of the digital reference service.

What Affects The Type Of Response Provided By Librarians To Digital Reference Questions?

The simplest answer to this question is the reference desk milieu. The integration of face-to-face, phone, and digital reference all have an impact on each other, especially if the former two are quite busy as they can then impact the level of service for the latter. This can further impact the type of response. For example, a digital reference question might not be given a lot of thought if the librarian is constantly being distracted or drawn away from it. The example of a librarian allowing a question to wait for a few hours on a weekend day may be extreme, but in the instances where the turnaround time tended towards the top end of an hour it was usually because of the traffic at the reference desk or the issues in the reference room.

In such instances the question does not always receive a focused answer. Referrals again illustrate this more generally. All of the participants implied that the referral canned response forms were too easy to use, and at times were used when the other points of service became overwhelming. At times, too, they were used when the librarian recognized a lack of expertise on their own part to provide an adequate response.

Further, one participant drew attention to how a question might engage a librarian positively or negatively and thus lead to the type of response. Generally, however, the types of responses fell into the categories used for face-to-face and phone reference, that is instructional and directional. The participants generally gave the question a good try, and usually expressed some sort of regret or reluctance to refer it. This is also seen in the overarching category of Customer Service. The types of questions they generally engaged in and worked in depth on were those that had some specific content related query or where the user had cued the librarian that there was an issue with access or such. Many of these questions had a strong instructional intent to them.

What are the types of questions being asked, and how do they influence the response?

The instructional and directional categories mentioned are generally the types of questions being asked. More so, however, these two categories would specifically fall into content searching or referrals respectively. Much has already been said of the latter. The former, however, were typically stated in the form of a query about a specific topic, and the user may cue the librarian that they needed certain types of resources, such as books or journal articles. These questions have specific canned response forms already available that provide the user with much of the direction needed to access the recommended resources. These types of questions generally triggered the process steps discussed previously: evaluation, pre-search, answer, and suggest.

Further, however, these were also the most problematic in how the response forms were seen and used. Perhaps this is a case of familiarity breeding contempt, but all of the participants saw these forms as having too much detail. This suggests that they saw the detail as getting in the way of the content of the answer. In other words, in terms of distributed learning theory, the design of the canned responses, or their structure, was getting in the way of the dialogue the participants were having with the user. Moore (1989; 1990; 1991; 1993) suggests that dialogue is a dimensional complement to structure in the development of effective online learning interactions but suggests that dialogue is the more important of the two.

Certainly, the participants in this study would concur. The forms were developed by the reference department based on internal studies of the digital reference service. They were informed by a general sense of providing the user with some essential information to facilitate their access to resources. Yet all the participants criticized them, especially in terms of too much content and detail. At one level the participants are intuitively seeing the canned response forms as overly structured and thus as barriers to effective interaction. In saying this, however, a sense of professional obligation also meant that all of the participants still used the canned response forms even in the face of their own reluctance.

One final note should be made about cues and influences. Specifically, all four participants noted that they were not cued by names, the only identifier that could suggest sex or ethnicity. Indeed, such information is separated completely from the question in the web-based answer form. It is located in a row at the top of a web page that is dominated by two boxes, one with the text of the question and the other blank waiting for an answer to be crafted. When this top row is consulted it is usually for one of two reasons: to confirm the user's university affiliation or to consult the optional phone number for an area code. The former will let the librarian know whether or not to recommend licensed or free resources; the latter will inform the librarian whether or not the user is local.

How do librarians weight quality or quickness of response in responding to digital reference questions?

Quickness was never an issue among the participants of this digital reference service. As has already been noted, some questions were allowed to wait in order for the librarian to consult others. Quality was the defining concept here. In all cases the librarians weighted quality over quickness, seeing the latter as sometimes detrimental to the quality of the final response. Indeed, I think that this is the overall issue behind participants' problems with the canned response forms. To paraphrase one participant, these forms had value in standardizing the response and in noting the procedural aspects of accessing resources. Yet they were also seen as an easy out to crafting a response more in keeping with the question. It could be inferred that the canned response forms were seen as diluting the quality of the answer and the work put into the answer, and thus the level of service given to the user/customer.

The four step process to responding to a digital reference query outlined previously also emphasizes quality over quickness. The actual answering of the question is late in that process—the first two steps usually took place before the librarian even accessed the answer system.

How is a digital reference interaction initiated?

The digital reference service studied here was a user driven and user focused service. Chapter Four mentioned that the user's location on the library's web site when accessing the service is recorded in the web-based answer system. Also, participants were particular in referring to one specific library database on the library's web site that was a cue of a user getting lost. This speaks to the ubiquity of the service on the library's web site as important. The user initiates an interaction if and when there is an issue or a query about the research process or some specific library service. These latter questions usually generate referrals. The former usually trigger the process of responding to a digital reference question documented in Chapter Four and discussed above in this Chapter.

However, in keeping with the concept of interaction defined in Chapter Two it is also important to note that when the response process is triggered there is an effort, not always successful, on the part of the librarian to move beyond the reference interview. This may be driven by a medium built on asynchronous email communication. Also, however, I would suggest that it is based on an intuitive sense of the balance needed between structure and dialogue in the reference interaction.

A Theory of Reference Interaction

What is suggested by these findings is that my theory of reference dialogue versus the reference interview (Doherty, 2006) does not quite describe the digital reference interactions documented in Chapter Four. However, the findings are in keeping with the concept of interaction as discussed in Chapter Two. The findings thus suggest a revised version of my theory, in that the role of the librarian in digital reference services is less about a dialogue and more about interaction. Thus, replacing the reference interview would be the reference interaction.

This theory owes much to the definition of e-learning communities Tu and Corry (2002) developed. Such communities, as noted in Chapter Two, emphasize interaction as defined by Moore (1989; 1990; 1991; 1993) and others (Gunawardena & McIsaac, 2003). Moore emphasizes interaction as something more than a two way dialogue. As can be seen in Chapter Four, much of the interactions between the librarians and users are not two-way. The reference interview has been seen by many as promoting a two-way dialogue, but my theory of reference dialogue took the inherent privileging of the librarian's role out of the interaction. Digital reference services, however, especially in asynchronous form, rarely involve a two-way conversation. This has led to much of the recent conversations in library literature on the efficacy of synchronous technologies to virtually emulate that two-way conversation, and thus the reference interview.

Reference Interaction, however, is more than this. It acknowledges the critical issues of the reference interview and the privileged place of the librarian in it. It suggests a more learner-centered approach that allows the librarian to step outside of the moral relativism of their neutral facilitator role. The role of the librarian, therefore, becomes more that of a guide and teacher in an ever-changing information environment, one who can navigate the social epistemological bounds of the organization of information to guide the student to their information needs. As noted previously, there are some typical steps involved in a digital reference interaction:

evaluating the question; pre-searching; answering; and suggesting new strategies. It should be noted, however, that the participants in this study did not apply these steps so dogmatically. In other words, while these steps can be seen in many of the interactions described in this study, they are not exclusive to all reference interactions. What is, however, is a sense of learner-control, specifically the definition in Chapter Two, that of learners making their own decisions concerning the paths, flow, and events of instruction (Williams, 1996).

Further, it should be noted that these steps hark back to the steps Hutchins (1944) used when first labeling the reference interview: time required by the interview proper; clarification of the question; ascertaining of the reader's needs; and, the results of the interview. They do not quite align, thus suggesting that the reference interaction is an evolution of the reference interview as opposed to a replacement.

Limitations

It should be re-emphasized that a major limitation of this study is my own personal involvement with the digital reference service studied here. Any research study is not without bias, and, as the preface documents, my own particular bias is towards a critical theory interpretation of the data. Chapter Four, however, focused on the participants' words as opposed to mine. It should be noted that these descriptions do not conclusively support my previously published theory of reference dialogue. As this chapter notes, the findings support more of a reference interaction, which is in keeping with the literature and with an evolution in practice.

In saying this, another limitation of this study is the sample size. There are only four participants in the study. Observations were made randomly of all reference desk staff but only four provided the self-reports and were interviewed. It should be noted that an interpretive study does not draw any generalizable conclusions. Yet with a larger sample size, or even one that stepped outside of the bounds I set on this one, would have yielded more data for further comparison and analysis. For example, drawing in staff without a library science degree might have suggested findings in respect to how librarians are socialized to particular practices such as the reference interview in library school and further informed the theme of the professional librarian.

The limited population from which to draw the sample was also a limitation. This was a group of librarians at a medium sized academic library, and thus did not draw on the experiences of librarians at public, special, or school libraries. The experiences of librarians at larger or smaller academic institutions may also differ. The small population imposed stricter confidentiality limits on this study. A larger sample may have allowed some more exploration of work experience, academic credentials, or other issues that may impact the role of the participants in providing reference services. However, to even identify the number of years of professional practice that a participant may have post-library school would allow for easy identification of this participant.

Another limitation to the study may relate to the case study methodology that informed it. Results may be biased by a variety of factors, including individual circumstances and experiences, the environmental factors, or even personality of the participants. This was somewhat mitigated by the multiple methods employed, including the two interviews, member checking, and observations. Certainly, the self-reports could be seen as problematic in that the participants may have felt uncomfortable in reporting certain things. Participants did have an opportunity to review and comment on the findings.

Finally, the time frame of the study was limiting. The study took place over a six week period in what is documented as a very busy period in internal reports. The time frame both presented a broader picture of the activities at the reference desk and a somewhat limited snapshot. It suggests that the study should be performed over multiple semesters, perhaps even including summer sessions that internal documents suggest involve less face-to-face traffic. It would allow examination of how the various times would impact the digital reference service, and perhaps allow for more data to compare when examining how librarians facilitate the digital interactions.

Suggestions for Further Research

The aforementioned limitations do suggest some further research. Particularly important to these findings is to understand the canonical place of the reference interview in reference philosophy and practice. The reference interview itself has been thoroughly documented in library literature. There is an assumption of effectiveness to much of this work but some critics question its validity. A meta-analysis would reveal a collective sense of this literature. Also, as previously suggested, it would be worth comparing attitudes of staff without a library degree to those with a degree regarding the reference interview. It may be worth comparing data from library school curricula that could note if and where the reference interview is taught.

This study also suggests a research agenda in library science that would draw on the social learning theories of educational research. Tu's theories of social presence are an interesting starting place. As noted in Chapter Two he discusses three dimensions of social presence in online learning environments: social context, online communication and interactivity, and online privacy (2002). Until technology can resolve some of the issues his study identifies, many users will still depend on asynchronous forms of communication. Thus synchronous solutions to digital reference services are tangential to a focus on interaction.

Finally, Chapter Four describes four different roles librarians have in reference services. It is interesting to note that these roles are not always distinct from one another; indeed, at times they are in direct contradiction. The participants may or may not have recognized this as there is nothing in my data to suggest either way. But there is a definite sense of the reflection-in-action so important to critical pedagogy (Carr & Kemmis, 1986, p. 33; Freire, 1993, p. 79). Therefore, it would be worth researching this sense of librarian self-awareness in reference interactions further.

Conclusion

The role of the librarian in this particular digital reference service is a varied one. All of my participants were very aware of their place in this service and how the online learning environment itself impacted reference services. Each had clearly moved beyond or were beginning to move beyond the reference interview. Only one participant discussed the reference interview, and this in very general terms. All, however, were focused on using the structural components of the digital service in a way that would develop the learning independence of the user. Built into this is a sense of asynchronous dialogue that works together with the structure of the digital environment in a continuum to minimize an instinctual sense of transactional distance between the librarian and the user.

The role of the librarian in digital reference services, therefore, is one of a facilitator of an effective customer service interaction. Effective here does not imply successful, but rather refers to an interaction where control of learning has been ceded by the teacher to the student. With just such a focus of ceding control the participants in this study have moved beyond the orthodox reference interview where control of learning is firmly within the grasp of the librarian. The interactions described in Chapter Four, however, show an effort on the part of the participants to cede this control while also maintaining or describing how the user can seek or realize librarian support to aide their learning. As such, therefore, the reference interview has evolved into a reference interaction in online or digital learning environments. Further, this interaction is not only informed by traditional reference practices in face-to-face and phone reference services, but has caused those practices to evolve, too, into an interaction as opposed to an interview.

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APPENDICES

Appendix A: Answer Form Titles

Answer Forms-	Instructional	Procedural
Generic*	x	x
Circulation Referral		x
Book and Media Renewal		x
Database Problems		x
DDS Referral		x
DDS Renewal		x
Course Support Referral		x
Request Material		x
Electronic Reserves		x
SCA Referral		x
Search Books	x	
Search Peer-reviewed Art.	x	
Search Periodicals	x	
Search Videos (General)		x
Search Videos (Specific)	x	
SCA Hours		x
SCA Policy Information		x
SCA Digital Archives Copy Information		x
Course Reserves Referral		x
Media Services Referral		x
Team Referral		x
Unit Referral		x
Schedule Media		x
WebFeat Find Articles	x	
Search Articles WebFeat Advanced	x	
Search Articles Browse Resources	x	
Totals:	8	19

Appendix B: Interview Questions

PHASE ONE

1. Can you describe your shift today' at the reference desk?
    a. Can you describe your shift yesterday?
2. How many Ask A Librarian questions did you respond to during these shifts? What would you consider to be the percentage of time spent in these Ask A Librarian tasks?
3. Describe an Ask A Librarian reference transaction you had today.
    a. Describe an Ask A Librarian reference transaction you had yesterday.
    b. Would you describe these transactions as typical? Why? Why not?
4. What process did you follow when responding to these Ask A Librarian questions?
5. Think about the last time you referred a question to another staff person or team. Tell me about the interaction.
    a. Why did you decide to refer the question?
    b. How typical was that from other referrals?

PHASE TWO

The first step will be to describe the question and answer, including details of the date and time of the interactions, as well as what was observed during the interaction.

6. As I read the question to you, can you describe for me some of your initial reactions to the question?
    a. Would you describe this as an easy or a hard question?
    b. Would you refer the question?
    c. How much time would you expect to work on the answer?
    d. What resources would you use to answer the question?
    e. Generally, what sort of answer would you give?
7. As I read your answer to you, can you describe for me some of your initial thoughts?
    a. Would you describe this as an effective answer?
    b. On reflection, is there anything you would do differently?

[This will address some thoughts the answer raises with the researcher]

NORTHERN ARIZONA UNIVERSITY

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INFORMED CONSENT DOCUMENT FOR ADULTS

Project Title The Role of the Librarian in Online Reference Services

Dear Participant,

You are being asked to participate in a project conducted through Northern Arizona University. The University requires that you give your signed agreement to participate in this project.

The investigator will explain to you in detail: (a) the purpose of the project, (b) the procedures or protocols to be used, (c) how your personal information will be kept confidential, and (d) the potential benefits and possible risks of participation.

You may ask him/her any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

Then, if you decide to participate in the project, please sign on the last page of this form in the presence of the person who explained the project to you. A copy of this form will be given to you for you to keep.

1. Project Purpose and Description:

The purpose of this study is to describe the role of librarians in responding to online reference queries. It is an attempt to describe the processes and actions taken by librarians and library staff in an increasingly important part of their daily reference service activities.

2. Explanation of Procedures or Protocols:

You will be observed during your daily activities at the reference desk over a six week period. The researcher will document and analyze the transcripts of your online reference (Ask A Librarian) activities. You will also be asked to complete a short (no more than two minutes) reflection at the end of each reference desk shift. Further, you will be interviewed twice; the first interview seeks to uncover what informs the librarians in their online reference activities. The second interview will follow up on the results of the first, and further analyze a representative online interaction.

These interviews will be recorded and then transcribed. You will be given an opportunity to review the transcripts for accuracy, verification, and qualification.

3. Confidentiality:

Your confidentiality of participants will be maintained as follows: all reported data will have no identifying information. Also, rather than using pseudonyms, you will be referred to in the study as Participant A, Participant B, or so on[*]. No other data, such as gender or age, will be reported. All identifying information will be kept off site by the researcher and will be destroyed on completion of the study. This will also apply to recorded interviews, which will also be conducted off site. These interviews will also be transcribed and you will be given an opportunity to review the transcripts and suggest edits, including edits that they feel will preserve their confidentiality.

The observations will be conducted randomly of all reference desk staff in order to better mask you as a participant.

4. Benefits:

It should be noted here that you will not be compensated in any tanglible way. However, it is intended that this project will allow you an opportunity to explore professional issues in a safe, reflective environment and thus add to your individual professional growth and development. The contribution of such a project is long overdue in library literature, where there has been no exploration of the role of librarians in using technology.

It should be noted that this study is not intended to be an evaluation of the quality of the service provided but more of an intent to discover the roles of the staff and how those roles impact and are impacted by the technology used.

5. Risks:

This project falls under the minimal risk defintion of the NAU Institutional Review Board. In other words, it encompasses the degree of harm you would normally expect to encounter in routine activities of daily life.

[*] Note that in the final study the Participants were not referenced at all by any pseudonym. This not only enhanced confidentiality but also served to maintain the focus on their collective experiences as opposed to individual experiences.

6. Refusal/Withdrawal:

(a) Refusal to participate in this study will have no effect on any present or future services or benefits that I may be entitled to from the University.

(b) Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty.

(c) I understand that it is not possible to identify all potential risks in an experimental procedure.

- ________________________________ Date ________________
  Signature of Participant
- Printed Name ____

- ________________________________ Date ________________
  Signature of Research Representative
- Printed Name **John J. Doherty**

There is a dated approval stamp on this consent form (below). The stamp indicates that this project has been reviewed and approved by the Northern Arizona University Institutional Review Board (IRB) for the Protection of Human Subjects in Research. Contact the Human Research Protections Administrator at 928-523-4340 if you have any questions about: (1) the conduct of the project, or (2) your rights as a research participant, or (3) a research-related injury. Any other questions about the conduct of this research project should be directed to:

Principal Investigator(s) **John J. Doherty**
University or Business Address **PO Box 6022, Flagstaff, AZ 86011-6022**
Business Phone/E-mail **928/523-8569, John.Doherty@nau.edu**

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Sponsoring Department/Institute/Organization
NAU College of Education, Department of Teaching and Learning, Curriculum and Instruction

Appendix D: Best Practices – Service Desk Transactions

Internal Document Used with Permission

1. Practice triage when possible. When helping a user and there is a line of other users, acknowledge their presence and see if you can help with a "quick" question. If the question will be more involved, tell the user that you will help them after your current transaction. Call for back-up assistance if available.

2. When alone, rely on triage since you cannot call for back up assistance

3. Use MSN messenger during work hours to call for help.

4. When not on desk, make a habit of walking in front of the desk to help when the desk is busy. If you are late for a meeting and see that the desk is busy, you may be able to go to the desk and call for back-up assistance.

5. For a long in-person or Ask a Librarian reference transaction, try to refer user to appropriate team if you feel the topic requires more time and/or expertise than you can provide – please use your own judgment – help the user if you feel they would be best served. If you would like to complete the transaction, call for back-up so other users can be assisted. You may answer an in-depth Ask a Librarian transaction but also forward to the team if you are not sure of the answer or if you feel the team should be aware of the request.

6. Typically, do not answer the phone when helping a user at the desk – consider the phone call a second user standing in line.

7. Even though there is a 24 hour turnaround time for Ask a Librarian, this service should receive equivalent service as if the user were in the building. If you find that you have multiple Ask a Librarians to answer, try to call for back-up assistance. If you cannot answer an AAL question during your desk hour, either hand the question off to the next staff or you can forward the question to yourself to answer at your desk.

8. Walk around reference area whenever possible.

9. Ask circulation students to help walk person to stacks for hard to find materials if busy and unable to leave desk. Determine that more than one circulation student is available at the circulation service desk. One can either call the circulation desk or walk over to the desk to ask for assistance. You can also tell circulation that you will be away from the desk but will be back momentarily.

10. If helping a user on a mechanical problem, keep them updated of your progress if you get busy with another user on another transaction.

11. If you are working with a user away from the desk, watch the desk for other users. If there are others waiting, excuse yourself from your current transaction and go to the desk to call for back-up assistance if available. If there is no back-up assistance available, tell users waiting that you will return when done with your current transaction.

12. If you are not certain of an answer to a question, feel free to consult with a colleague for assistance. If a colleague is not available, refer user to team for additional assistance.

13. Provide an update on reference transactions or potential problems to the next person who is scheduled on the desk after you.

Other Points to Consider:

- Get out from behind the desk and offer to assist users at workstations.
- Go with users to sources (print, electronic) to which you refer them.
- Look and be approachable and ready to offer assistance.
- Remember that it is easy for users, especially undergraduates, to be intimidated by us and the size of the library.
- Make helpful referrals. Call ahead when appropriate.
- Acknowledge those who are waiting for service.
- Ask questions to make sure you understand the user's needs.
- Encourage users to return if additional assistance is needed.

Updated 4/9/04

Appendix E: Digital Reference Question Types Defined

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Question Type	**Standard**	**Example**
After Hours ___ Computer Requests	Requiring ___ support after their hours	I need help recovering my file.
Articles	Any research related to finding articles	I need to find fluoride articles (even though I referred this person to a course page I still counted it as an "articles" question)
Books	Any research related to finding books	I am looking for a book titled, Decameron.
Articles/Books	Any research related to finding books and articles	I need information on the economic impact that AIDS has had on Sub-saharan Africa (used both books and articles to answer this). I also used websites and government information but it was dominated by books and articles so I choose this as its category.
Campus Information	Information on campus services or locations	Where is the bookstore
Computer Applications	Microsoft Office software applications and other software such as webct or other programs	Can you help me format my paper on MS Word?
Computer Availability	Any question related to available computers	Where are more computers?
Copy Card - Add money/purchase	Questions relating to adding money or purchasing cards	How can I add money to this card?
Copy Card/Reader - troubleshooting	Questions regarding the card having mechanical difficulties	My copy card is stuck
Copying/Printing	General questions that relate to a copying	How do I print?
Databases	Relating to licensed resources	How do I find the linguistics database? Or, this

		database won't open
Directional	Relating to general questions on locations or basic information on a service	Where is a phone I can use
Docs	Relating to online or printed government materials	I need to find Ronald Reagan's papers
Journals	Relating to online or printed journals	I am trying to find this journal in the library
Locating Media	Relating to media materials or media services	I am looking for videos on speech disorders such as stuttering
Mechanical	Assistance with hardware	The printer is jammed
Recommending Materials	Suggest resources to library	I would like to suggest the library buy this book
Referral	Referring to unit, team, individual, outside source, location	Use this when you refer to another unit, team or individual
Requesting Materials	Relating to Interlibrary Loan services and help with form	I need to find out the status of my interlibrary loan request
Reserves	Relating to course reserves online and reserves materials.	My teacher told me that they have this assigned reading on electronic reserve
SCA Information	Relating to special collections or information	What is the oldest residence hall on campus?
Software/Hardware Request	Relating to availability of software or hardware	Do your computers have zip drives?
Vista - Faculty	Refer faculty to support for Learning Management System related questions	I don't know anything about this ___ stuff - how do I get started?

Vista - Students	Refer students to help desk for ___ questions	I can't get any of my files in Vista to work
Websites	Relating to questions that can be answered by a website(s) or a question on websites	I am trying to find health statistics on a certain country (much of this information will be on the web)
Others	Anything not included in existing question types.	Where is your lost and found?

Appendix F: Digital Reference Guidelines – Ask a Librarian Service

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Note that this document has been edited to maintain confidentiality

- Check the service at the beginning and sometime during the shift. Check voicemail at the beginning of the shift.
- If you are unable to complete or answer a digital reference question that arrived during your shift, notify the next person on the reference desk. If this occurs during the evening, leave a note for the librarian opening in the morning. If you are working on a question after your shift, let the next person on the desk know that you will be completing that question off the desk. Another option is to contact another reference person to come to the desk while either you or that person can answer a question.
- When answering a question, use or customize the required elements of the appropriate stationery [canned response]. Answers should contain minimum relevant elements – proxy information, step-by-step instructions to get to resource, example databases, basic search strategy with key words, contact information if referral, relevant additional sources of information (web sites, books), instructional links and greetings/salutations. All of these are within the stationery.
- Assume user is off-campus and provide proxy information in email. Do not link directly to licensed resources.
- If you are not able to understand a patron's question, call the patron if his/her phone number is available. Reference personnel should also be encouraged to check with a colleague (if available) to see if he/she may be able to decipher the question. If no patron phone number is available, provide a possible answer or two based on your stated assumptions.
- For research questions, use appropriate stationery but also provide examples of search terms and help with search strategy as you would an in-person patron.

Referrals:

- Make sure to select the unit or team in the Referral drop down box when referring a question.
- Choose the "Referral" question type when referring a question.
- Consultations and instruction requests should be sent to the appropriate team.
- Refer appropriate questions to resource teams or library units. You will not have to send the unit a separate email – make sure to send original request to department and not an individual.
- Use stationery for answering basic questions on renewals, requesting materials, and using e-reserves. If a question would normally be answered at the reference desk as a walk-in, try to answer it at the reference desk rather than refer it.
- Reference staff should feel free to contact a team if uncomfortable with

answering a specific question. Contact the team or team member by phone to collaborate with you on a question or when referring the original requester to the team, make sure to fill out the “referred to” field so the original request will be sent to the team. Another approach may be to provide a basic answer to the patron and also refer the question to the appropriate team for any necessary follow-up information.

Proofread email for grammar and spelling before sending it to a patron.

- Feedback from patrons will be sent to the digital reference email account only. On-duty reference desk staff will be responsible for answering the follow-up questions unless the individual who answered the original question contacts the reference desk to say they will follow-up with the question and for the reference desk staff to delete the question from the inbox.

- Make sure to choose question type when answering questions.

- Remember to place your university email account user name when answering questions. Do not place user names in this field as this may muddy the data.

Technical – if email bounces back, check email for complete email address and also check the university directory. Do not spend too much time looking for correct email. Refer to ___ for all other problems. You can refer problem transactions to the digital reference group through database or in the email client.

- When necessary, use the "reply" function within the digital reference service database if you need to rewrite a question to a patron. You can use the "edit" function in the database to write in the correct email information to resubmit to patron or if you need to add to a transaction.
- We are not going to fill out request forms for users who have set their email filters so that they will not accept messages without prior approval. If the user is university user, simply look up their university email address and send the email there or give them a call. If they are not a university user and did not provide a phone number, just make a note in the answer, "returned due to spam filter".

General – keep in mind that in-person and email service levels should be equivalent.

Appendix G: Why the customized response matters

The following is excerpted from the paper "Why the customized response matters: Instructional intent in online reference services" by J.J. Doherty, T.M. Adams, R.S. Evans, and M. Portree.

The operational definition of instructional interaction for this study is the level of customized content. In a procedural response, it is expected that there will be less customized content. In other words, there will be more dependence on the base answer form and its pre-prepared content to answer the question. Based on an understanding and agreement of transactional distance theory, one would expect to see the structure of the base answer form be adapted in a way that initiates a dialogue in which expertise is neither assumed nor given. In other words, more customized content suggests more instructional interaction in socio-cultural terms.

Each of the answers from the October and November 2005 period and the October and November 2004 period were analyzed and coded in terms of how much the content differs in percentage word count from that of the standard answer form used. Differences in word count, therefore, implies greater customization; Instructional Intent responses would be more customized than Procedural responses. This suggests the use and analysis of descriptive statistics, especially mean and median scores of the customized content and the average level of customization in procedural responses compared to that in instructional responses. Further, an independent samples t-test was performed to statistically compare the mean scores of customized content for Instructional versus Procedural. The theory developed above suggests that there would be statistically significant higher expected customization in instructional responses than in non-instructional responses, thus validating this operational definition.

Statistical Analysis

Table 1 reports the descriptive statistics, including the range of percentage difference of the word counts of Instructional responses (N = 589) versus Procedural responses (N = 510). A quick review shows the Instructional responses with a range of 2103% difference (Minimum -239%, Maximum 1864%); while the Procedural responses have a range of 678% (Minimum -58%, Maximum 620%). A negative percentage change indicates that the response had words edited out or replaced; a positive percentage change indicates that the response was edited or words were added. Table 2 converts these results to Mean scores. These results suggest that Instructional Intent responses are more customized than the Procedural responses is correct.

Table 1: Descriptive Statistics (SPSS 14.0 Output)

PercentDiff

IorP	Mean	N	Minimum	Maximum	Range	Skewness
Instructional	47.10	589	-239	1864	2103	4.780
Procedural	31.99	510	-58	620	678	3.720
Total	40.09	1099	-239	1864	2103	5.469

Table 2: Mean Scores (SPSS 14.0 Output)

	IorP	N		Std. Deviation	Std. Error
PercentDiff	Instructional	589	47.10	132.966	5.479
	Procedural	510	31.99	61.989	2.745

An Independent Samples t-test was performed to test the significance of the effect of the choice of an Instructional Intent form or a Procedural form on the amount of customization of the final response. We used an a priori alpha value of 0.05 to test for significance. A Levene's Test for Homogeneity of Variance notes that equal variances cannot be assumed [F = 55.777, p = .000]. Instructional-Intent forms were significantly more customized (M = 47.10, *SD* = 132.966) than Procedural forms (M = 32.06, *SD*= 62.031), t (858.440) = 1.645, p = .014, d = .084.

Appendix H: Glossary of Terms Used

Asynchronous	Also seen as asynchronous conferencing. In communication, the term relates to the non-correspondence of time. In other words, the one party in any given communication is separated from the other by time. Email is a form of online asynchronous communication. Other examples include online bulletin boards, discussion forums, or Internet newsgroups.
"Ask A Librarian"	A general term used to refer to a library's digital reference service. See, for example, Lankes (1998).
Classified Staff	An employee category used at the University under study. Others include Administrator, Faculty, Service Professional, and Academic Professional. The latter are all professional librarians. Positions held by classified staff generally do not require terminal degrees.
Computer Mediated Communication (CMC)	In the context of distributed learning theories, this is defined as communication that occurs via computer-mediated formats (for example, instant messages, email, chat) between two or more individuals.
Digital Reference Services	Digital reference service refers to the library reference services that are conducted online. The reference transaction, in other words, is a computer-mediated communication. Also can be referred to as online reference service or Ask A Librarian.
eLearning	This is a recently adopted form of Electronic Learning or E-Learning. It generally refers to computer-enhanced learning. However, it can also include the use technologies such as MP3 players in the classroom. It commonly refers to web-based teaching materials, web sites, discussion boards, email, blogs, wikis, text chat, online learning management systems such as Blackboard or Sakai, and more.
Information Scientists	Generally, a synonym for librarians, but may also refer to professionals in the information field that is increasingly including disciplines other than library science.
Librarian	At the University studied here, the librarians hold terminal degrees and Academic Professional rank. Generally these degrees are Masters of Library Science from an American Library Association accredited program.

Online Learning Environment	More generally referred to as a Virtual Learning Environment. This refers to systems that integrate and manage computer-based learning. Other terms are Computer Assisted Instruction, Computer Based Training, Web Based Training, and Learning Management Systems.
Reference Interview	A structured conversation between a librarian and a library user. This usually occurs at the reference desk. The librarian responds to the user's initial explanation of an information need by attempting to clarify that need. The librarian then directs the user to appropriate information resources. For more, see Chapter Two.
Reference Services	The task of providing assistance to library users in finding information, answering questions, and otherwise fulfilling users' information needs. Can include library instruction, in-depth research assistance, and other forms of user help.
Synchronous	This refers to the perception of real-time communication online. In library and information science, it specifically describes text chat technologies. It has been extended to audio/video conferencing or instant messaging systems.