

# Evaluating Virtual Reference from the Users' Perspective

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**SUMMARY.** This article discusses the evaluation of virtual reference services from the user perspective. It is one outcome of a long-term research project, The Library Visit Study, which has been conducted in three phases at the University of Western Ontario for more than a decade. These studies have identified the need for, and essential components of, reference interviews and good reference behaviors. The third phase of this research focuses on the factors that make a difference to the users' satisfaction with their virtual reference experience and whether these are the same or different from the ones we identified as important in face-to-face reference. An examination of user accounts of virtual reference transactions indicates that the reference interview has almost disappeared. Among the reasons identified for staff failure to conduct reference interviews in the virtual environment are: the nature of written vs. spoken interaction; the librarian's perceived need to respond quickly in this environment; and the rudimentary nature of the forms used in e-mail ref-

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erence. The article includes a list of behaviors that users identified as either helpful or unhelpful and concludes with some implications of the research for good virtual reference service. doi:10.1300/J120v46n95\_05 [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2006 by The Haworth Press, Inc. All rights reserved.]

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### INTRODUCTION

Since 1991, a group of researchers at the University of Western Ontario has been engaged in a long-term research project, the Library Visit Study, which examines what happens when users ask reference questions in libraries. This empirical study takes a user-centered, rather than a system- or staff-centered perspective, in order to examine user perceptions of their experiences with the reference transaction. In the first two phases of the Library Visit Study, we examined the reference transaction as it occurs face-to-face in the physical space of a public or academic library. Findings have been published in a number of articles<sup>1</sup> and a book entitled *Conducting the Reference Interview*.<sup>2</sup> In this previous work, we identified some commonly occurring problems in the face-to-face reference transaction and suggest some remedies. In the present paper, we report on some initial findings from phase 3 of the Library Visit Study, in which we focus on users' perceptions of the interview transaction in the virtual environment. In this latest phase, we are interested in identifying the key factors in the virtual reference transaction that make a difference to users and to their evaluation of the success of the transaction. We are especially interested in the role of technology and the changes that may have been introduced when the users' contacts with the library reference services are mediated through e-mail or chat services.

The library literature uses a variety of terms to refer to technologically-mediated reference, including virtual reference, digital reference, electronic reference, remote reference, and real-time reference, each one with its own definition. In using the term "virtual reference" here, we have used the definition provided in the guidelines for implementing

and maintaining virtual reference services developed by the ALA's Machine Assisted Reference Section (MARS) Committee:

Virtual Reference is reference service initiated electronically often in real-time, where patrons employ computers or other Internet technology to communicate with reference staff, without being physically present. Communication channels used frequently in virtual reference include chat, videoconferencing, Voice over IP, e-mail and instant messaging. While online sources are often utilized in provision of virtual reference, use of electronic sources in seeking answers is not of itself virtual reference. Virtual reference queries are often followed-up by telephone, fax, and regular e-mail, even though these modes of communication are not considered virtual.<sup>3</sup>

Throughout this paper, we use the term "virtual reference" as defined above. The term "chat" is used to refer to all real time, synchronous services, including instant messaging. The term "e-mail" refers to e-mail used for virtual reference purposes (i.e., to ask and answer reference questions). Other e-mail messages are identified as "regular e-mail."

### ***METHOD USED FOR THE STUDY***

The data analyzed in this paper were produced by students in consecutive offerings of an advanced course in reference and information services in the MLIS program at The University of Western Ontario and in one course of reference management at the University of Toronto. As an assignment for the course, students were asked to approach a virtual reference desk provided by a Canadian library and ask a question that interested them personally. They could choose to ask their question at either a university or a public library and were given the choice of using either e-mail or chat services. Students were required to choose different libraries. The completed assignments that students submitted included the following elements:

1. detailed step-by-step accounts of exactly what happened in the reference transaction after they asked their question.
2. reflections on their experience which summarized which aspects of the transaction they found helpful and which aspects they found unhelpful.

3. completed questionnaires asking for an evaluation of their experience as users of the reference service, including a question that asked about their “willingness to return.”
4. transcripts of the chat sessions or copies of the e-mail exchanged.

The written reports (elements 1 and 2) provide qualitative data on individual users' perceptions, while the questionnaires provide quantitative data that can be summarized. In addition, the copies of e-mails exchanged or transcripts of chat sessions provide an additional source of evidence not readily available for face-to-face transactions. Virtual reference has an innate advantage over face-to-face reference for researchers interested in a fine-grained and accurate record of what happens, step-by-step, during the transaction. With traditional reference, researchers must first laboriously tape-record and transcribe the exchange between user and librarian. In the case of virtual reference, an electronic record of the transaction is automatically generated and provides independent evidence of how well questions are negotiated and answered.

The findings reported in this paper are based on accounts, questionnaires, and transcripts submitted as the result of 85 visits undertaken between February and May 2005 to virtual reference desks at public and university libraries in Canada. Given the choice of visiting a chat service or of using an e-mail service, some students who had never used chat services and did not want to try it for a course assignment chose to visit reference services that offered the more familiar e-mail environment. Others who tried to use chat services were sometimes faced with university library restrictions on types of users; in many cases the libraries' Web sites noted that users needed to have some affiliation with the institution concerned. As it happened, unaffiliated users who tried to use these services were usually not questioned and did, in fact (in most cases) receive responses. However, some reported feeling uneasy in their role, such as one person who noted, “I was very uncomfortable with misleading the reference librarian; however, I continued the reference interview,” and another who worried that s/he would be challenged and “would be in some kind of trouble” for using the system. When restrictions were noted on the Web site, some users felt sufficiently discouraged that they veered off to another service. Of the 85 accounts of visits to virtual reference desk sites, 25 (29.4%) used chat services, while 60 (70.6%) used e-mail services. The types of libraries and services visited by the 85 users are identified in Table 1.

TABLE 1. Type of Library and Service Visited

	University	Public	Total
Chat	16	9	25
E-mail	29	31	60
Total	45	40	85

### **REVIEW OF THE LITERATURE**

Bernie Sloan's online "Digital Reference Service Bibliography"<sup>4</sup> demonstrates the recent rapid growth in the literature on virtual reference. In this respect, the literature mirrors what is happening in libraries as virtual reference moves from being the province of a handful of early adopters to being a commonly-offered service, especially in academic libraries. As with the literature reporting any new phenomena, initially the published work on virtual reference focussed on describing the nature of the service, its prevalence, and its inflections in particular local settings. Most of the studies have been case studies of virtual reference services offered at individual libraries, usually academic libraries. Typically librarians who have pioneered a new service in their library setting report what challenges they faced and what they learned in the process of introducing the pilot service. Often data are provided on the nature of the technology used, the staff training required to mount the service, the promotion of the new service, the frequency of use of the virtual reference service, typical questions asked, and some preliminary indications of who the users are and their evaluation of the service they received. Data types that are easy to gather routinely have been the most frequently reported, e.g., the IP addresses of the users (in-library vs. off campus), peak periods of use, the duration of the sessions, or the numbers of sessions per week.

Although the evaluation of reference service in general has a long and rich literature, the evaluation of virtual reference is just beginning. In particular, there has been very little research that focuses explicitly on the evaluation of virtual reference from the users' perspective. The published literature has largely depended on in-house data captured in user logs and on surveys of users within a single library. Predictably the bulk of the attention has been paid to academic libraries, since, with some notable exceptions, public libraries have been somewhat slower to introduce virtual reference service.<sup>5</sup> Various easy-to-obtain surrogates

for user satisfaction have been reported, such as response time as a measure of delays in getting service or the duration of the interaction as an indicator of the amount of service provided. Response times for e-mail services are usually described in terms of how long the patron must wait to hear back from an e-mailed question. With a chat service that is open and sufficiently staffed, the response time is synchronous, but chat transactions can be analyzed in terms of how long the user waits in a holding queue and how long the reference transaction lasts. In one collaborative consortium, Sloan found that “63% of users waited fewer than 30 seconds before being contacted by a librarian, and 73.5% were contacted in one minute or less.”<sup>6</sup> Most authors note that using chat is more time-consuming for librarians than are in-person transactions. Time spent using chat services can vary widely. Kibbee, Ward, and Ma report an average of 9.8 minutes, but the time ranged from 40 seconds to 58.5 minutes,<sup>7</sup> and in a pilot study of chat reference quality, White, Abels, and Kaske reported that chat transactions ranged from 3 minutes to 29 minutes, with an average of 12 minutes.<sup>8</sup> Joanne Smyth reported that sessions averaged 13 minutes.<sup>9</sup> Sloan found that the median was 13 minutes, 11 seconds, and that only 12% of transactions lasted less than five minutes.<sup>10</sup> The type of questions asked can affect transaction time. When they classified questions as university-oriented vs. library-oriented, Curtis and Greene found that the former averaged 9.37 minutes, while the latter averaged 12.08 minutes.<sup>11</sup>

Apart from the analysis of transaction logs, most of the evaluative literature has been based on surveys of users. Case studies describing and evaluating the virtual reference service offered by a particular academic library often include a section on users’ perceptions of services provided, sometime in comparison with face-to-face reference service or with telephone service. Most of what has been reported has come from Web-based surveys of a particular system that typically ask such questions as: Who are you? How did you find out about our service? How easy did you find the software to use? How satisfied were you with the service provided? What other kinds of our Library reference services have you used recently or ever? Typically the data come from responses to online questionnaires that pop up at the end of a chat session. The perhaps predictable result is that people who go to the trouble of answering the survey indicate high levels of user satisfaction. For example, Ruppel and Fagan report the data derived from a short survey and also a long survey on an instant messaging (IM) service offered at the Southern Illinois University Carbondale academic library. The short survey appeared immediately after users disconnected from the IM service and

produced 340 completed surveys from an undisclosed number of transactions. Ruppel and Fagan note that users were “overwhelmingly positive”: “Of [the 340 respondents] 82% said IM reference is a ‘very’ good method of getting help, while 7% said it was a fairly good method of getting help.” Answers received were judged to be “very” helpful by 82% and 12% said the answers were “somewhat” helpful.<sup>12</sup> Similarly Marianne Foley reported that 45% of the 262 respondents to an online questionnaire on the IM reference service at the University of Buffalo reported being “very satisfied,” while 79% were “satisfied” or better. Summarizing a list of verbatim comments from users such as “easy, fast and cool,” she noted that the comments were “unexpectedly positive and very rewarding.”<sup>13</sup>

Other case studies of particular library services have produced similarly gratifying results, although quite possibly surveys that result in negative results are less likely to be reported by the library system offering the service. Reporting on chat reference at Carnegie Mellon University, Marsteller and Neuhaus noted that of almost 75% of respondents (58 out of 78) indicated that they had received the information they needed and almost 90% (69 out of 78 respondents) said that they would use the service again.<sup>14</sup> Likewise Kibbee, Ward, and Ma reported high satisfaction rates with the real-time reference service at the University of Illinois at Urbana Champaign, noting that the results were “gratifying”: “[n]early 90 per cent of the respondents reported the completeness of the answer to their question was very good or excellent. Nearly 85 per cent found the service easy to use and would use it again.”<sup>15</sup>

Rather than using pop-up questionnaires to evaluate chat reference, Corey Johnson sent e-mail questionnaires to students and faculty at two universities. He found that only one in ten were aware of the chat reference service, and only nine of the 276 respondents (of 976 randomly surveyed) had actually used the service. Using willingness to return as a satisfaction measure (see below), he found that only 1 of the 9 was willing to use the service again.<sup>16</sup> Johnson’s findings suggest that the method of disseminating the survey instrument can make a difference in findings. The typically high satisfaction rates recorded for pop-up surveys need to be taken with many grains of salt.

A number of investigators have been interested in teasing out the differences that users experience between using traditional reference and using virtual reference service. In order to compare users’ perceptions of their experience with the physical reference desk and the virtual reference desk, Ruppel and Fagan distributed a 15-question survey to students enrolled in six sections of a library skills course that enrolls from

30-40 students per section. The 52 respondents who returned the survey evaluated both the virtual reference and the physical reference services in terms of their perceived advantages and disadvantages. Respondents for the most part were very positive about the chat (IM) service, claiming that they liked its speed, convenience, and anonymity. Advantages of the traditional reference desk singled out by users were the “personal touch” received and the direct help provided—e.g., “it’s always nice to talk and see a real person” and “[librarians] could actually help you locate a specific book on the shelf.” When asked why they usually do not ask for help at traditional library help desks, the responses were similar to those long reported in the literature: 29% noted that staff “did not look like they want to help or they look too busy,” 23% said they felt stupid for not knowing already, 17% did not want to bother going to the library building, and 10% did not think the person at the desk would know the answer. An interesting reason for not using the physical reference desk that was identified by 23% of respondents is that they did not want to get up from the computer, presumably for fear of losing their place.<sup>17</sup> Other studies show that many of the questions come from on-campus locations and even from patrons who are sitting at workstations near the physical reference desk.<sup>18</sup>

Surveys, though useful in some respects, nevertheless have familiar limitations. The data from pop-up surveys do not reflect users who have disappeared during the electronic transaction or who couldn’t connect to it in the first place. Most users in fact do not fill out the surveys. Of 600 sessions analyzed by Kibbee, Ward, and Ma, only 130 provided completed questionnaires.<sup>19</sup> Only 20% of data logs examined by Marsteller and Neuhaus contained completed questionnaires.<sup>20</sup> The satisfaction information in the Saskatchewan Libraries 2003 evaluation of its virtual reference project notes that the 39 feedback messages received account for only 6% of users.<sup>21</sup> It is impossible to know whether or not there is some systematic difference between those who answer the survey and those who do not. Quite possibly unhappy or disgruntled users might be too irritated to fill in the questionnaires.

So far the literature evaluating virtual reference service mirrors the early phase of evaluation studies of traditional reference service. Typically libraries initially conducted studies with their own reference users and found them willing to report high levels of satisfaction on questionnaires. Then came studies based on unobtrusive observation, from which was derived the famous 55% rule.<sup>22</sup> Herson and McClure measured the accuracy of answers provided by libraries when surrogate users posed questions to which the right answer was known in advance.



This research indicated that reference librarians on average provide correct answers to only 55% of the questions they get. But what about digital reference? Does the 55% rule apply here as well?

While unobtrusive observation is often recommended as a method for evaluating virtual reference services in libraries, there have not yet been many studies published. Neil Kaske and Julie Arnold used unobtrusive observations to evaluate responses from a number of libraries.<sup>23</sup> Here students in a graduate course on reference asked test questions and measured success by the correctness of the answer provided and the inclusion of citations for the sources. Unlike the studies previously mentioned that evaluated virtual reference service in a single library setting where the investigators themselves worked, the study by Kaske and Arnold looks at multiple sites. It provides data on what happened when the test questions were asked in 36 libraries offering real-time reference services (six public libraries and thirty academic libraries). Twelve test questions were used such as “What was the population of Afghanistan in 2000 and what is their official language?” and “How many people died in automobile accidents each year in the past five years?” Each student tried to ask his or her assigned test question in chat sessions in 15 different libraries and also sent their question to the e-mail reference service of 15 libraries. In total, 180 chat sessions were attempted, including 47 cases where the session was not completed, usually because the service wasn’t available. Of the 133 completed chat transactions, correct answers were provided almost 55% of the time. Correspondingly, 180 e-mail sessions were attempted. Of the 107 completed e-mail sessions, correct answers were provided 60% of the time. This left 73 e-mail reference questions that were not answered for various reasons, including ineligibility of the user for service and “no e-mail reference available.” Once we eliminate from calculation those queries sent to libraries that don’t purport to offer virtual reference service, it seems that the 55% rule still holds, where success is measured by correctness of answer provided.

Another unobtrusive research method involves using records of transactions. Chat transcripts provide an easily accessible research resource for a single library or a consortium wishing to evaluate its virtual reference service. Other researchers use transcripts kept by Tutor.com or other chat software providers. For example, White, Abels, and Agresta reported at the 2004 Virtual Reference Desk conference on a study in which 400 chat transcripts provided by Tutor.com were evaluated using content analysis and then compared with 179 chat sessions conducted by students using questions derived from the 400 transcripts.<sup>24</sup> Using

questionnaires, the students reported on their search experiences, judging questions, answers and interviews. On the basis of these evaluations, White, Abels, and Agresta found that “the better the chat interview, the better the response to the question.”<sup>25</sup> Just as chat transcripts can be used for evaluation, copies of e-mails can also be evaluated, though there have been even fewer studies of e-mail transactions.

The use of chat transcripts does raise privacy concerns. Confidentiality needs to be ensured, a requirement made more difficult by the USA Patriot Act. In David Lankes’ 2004 work, *The Virtual Reference Experience*, lawyer Glen Bencivengo urges librarians to keep records for only a short time, evaluate them quickly, and destroy all transcripts.<sup>26</sup> Librarians should also ensure that chat software providers, such as LSSI (Tutor.com), are not keeping transcripts unless they are fully anonymized.

In evaluation of face-to-face reference service, the next step after unobtrusive observation and success measured by correctness of the answer was a series of studies that focussed on the experiences of real users. These studies investigated what happens when users ask questions that matter to them personally and evaluate the answers provided in terms of their own needs. Joan Durrance pointed out that there is more to providing an adequate answer than can be measured by the simple test of correctness or accuracy. She therefore proposed and tested a new indicator: the user’s willingness to return to the same staff member at a later time. In her study of 266 reference interviews in academic, special, and public libraries, Durrance found that a user’s willingness (or unwillingness) to return was significantly related to eleven interpersonal and search skill variables. She found that users were “far more forgiving when library staff members had weak interviewing skills or gave inaccurate answers than they were if the staff member made them feel uncomfortable, showed no interest, or appeared to be judgmental about the question.”<sup>27</sup> Durrance’s research together with that of Marie Radford<sup>28</sup> and the reports of the first two phases of the Library Visit Study<sup>29</sup> provide some evidence about the factors that influence the user’s willingness to return in the traditional face-to-face setting.

But what about the factors important to users in the virtual reference environment? Phase 3 of the Library Visit Study is an attempt to begin to address this question. To study virtual reference from the users’ perspective, we have adapted the research method previously used in the Library Visit Study to investigate the face-to-face reference transaction.

### **WILLINGNESS TO RETURN**

Throughout the Library Visit research project we have used Joan Durrance's "willingness to return" indicator as a user-centered measure for evaluating reference service. After completing their virtual library visit, students filled out a questionnaire which included the question: "Given the nature of this interaction, if you had the option, would you return to this digital reference site again with another question?" They were given the option of saying, "Yes," "No," or "Not Sure." Transactions were counted as successful where the users said "Yes" and were counted as unsuccessful where the users said "No" or "Not Sure." Table 2 compares the success rates of phases 1 and 2 with those reported in the 85 questionnaires submitted to date for phase 3, success being defined as a "Yes" response to the question on willingness to return to the same service in the future.

The numbers of virtual library visits reported here are too low to be able to make any generalizable claims about differences in success rates between public and academic libraries. These preliminary findings do suggest, however, that the success rate for virtual reference as a whole is similar to the success rate for face-to-face reference, which has consistently been in the area of 55% to 65% in almost every study that has used unobtrusive observational methods. We had anticipated that the users in phase 3 might be harder to please than the novice users in phases 1 and 2, who had not yet been introduced to reference interviewing skills and in some cases had no idea of what to expect from a reference transaction. Familiar as they were with traditional reference, however, many phase 3 users were novices in the area of virtual reference and were using the service for the first time. Many were pleasantly surprised at the

TABLE 2. Success Rates, Phases 1, 2 and 3: *Would You Be Willing to Return?*

Phase/Type of Library	No. of Library Visits	% Reporting Yes
<b>Phases 1 &amp; 2 face-to-face visits combined:</b>		
Public libraries	182	61%
University libraries	79	75%
Total: Public & university libraries	261	65%
<b>Phase 3 virtual visits</b>		
Public libraries	40	62.5%
University libraries	45	55.5%
Total: Public & university libraries	85	59%

service they received such as this user of e-mail reference: "I could not believe the amount of authoritative sources that the e-mail contained. I was floored. I thought to myself, now that is the kind of information provider that I want to be."

Of the 25 virtual library visits to chat reference services, 17 users (68%) declared themselves willing to return. In comparison, 33 of the 60 users who used e-mail service (55%) declared themselves willing to return. The numbers of users are too low for us to claim any significant differences in satisfaction rate between chat and e-mail in this report. However, it does seem, from the student-users' accounts, that they found the chat experience more intense, possibly because of the novelty of the technology involved. Unless they had had previous experience with chat or instant messaging, users tended to find the chat process quite intimidating. One user commented, "I had butterflies in my stomach when a reference librarian was available . . . I felt relief when the session was over." Some users became enthusiastic about chat reference, as one said, "Ultimately I found the experience to be very positive and easily accessible; I did not find that the reference interview had limitations because it was virtual and not face to face."

### ***WHAT THE USERS TOLD US***

In phases 1 and 2 of the Library Visit Study, when we analysed the face-to-face library visits in which users reported unsuccessful transactions (declaring themselves either unwilling to return or unsure), it turned out that most of the difficulties could be reduced to a small number of problems. These problems have been reported elsewhere<sup>30</sup> but can be briefly summarized as follows. Before they had even asked their reference question, some users reported barriers in the physical environment, including lack of signage, lack of ways to identify the reference librarians, physical barriers such as high desks, and unwelcoming body language on the part of staff. A frequently reported problem with the reference transaction itself was the tendency of the librarian to accept the user's initial question at face value and to bypass the reference interview. In the 261 face-to-face library visits, the staff member conducted a reference interview only half the time. Secondly the librarian often failed to let the user know what s/he was doing, and so users made observations like, "I had no idea where she was going or why, and it made me feel quite uncomfortable to just follow her, without knowing why." Two additional problems noted were the unmonitored referral,

which occurred in 37% of cases and the failure to follow up, which occurred in 64% of cases. In the unmonitored referral, the staff member refers the user to a source, either inside or outside the library, but does not take any steps to check whether or not the source actually contains a helpful answer. Typically the user asks for information and is given a piece of paper listing some call numbers. When the user went to the shelf looking for the books, it often happened that the books were missing or, if found, did not contain the necessary information. A way to give the user a second chance of finding helpful sources is for the librarian to ask a follow-up question, "If you don't find what you are looking for in these books, come back and we can try something else." The literature on reference interviews has long noted that asking a follow-up question is the "single most important" behavior in the reference transaction.<sup>31</sup> However, in the 261 face-to-face reference transactions, staff members chose to ask a follow-up question only about one third of the time.

In phase 3 of the Library Visit study, we are interested in knowing whether the factors that make a difference to the users' satisfaction with their experience with virtual reference are the same or different from the ones we identified as important in face-to-face reference. We examined the Library Visit accounts, focusing on the differences between the successful transactions (where the user was willing to return) and the unsuccessful transactions. The following are features of the virtual reference service that users identified as being helpful as well as features they found unhelpful.

#### ***FEATURES OF THE VIRTUAL REFERENCE SERVICE THAT HELPED***

- The chat interface is easy to navigate to and from the home page. [Chat]
- I appreciated the [personal] greeting. It acknowledged me as opposed to only concentrating on the question I asked. [E-mail]
- The friendliness of the response was nice to read. The librarian addressed the e-mail with my name and wrote in the first person. [E-mail]
- As soon as I submitted my question, I received a notice thanking me for my question and informing me that a librarian would be with me soon. This reassured me. [Chat]

- [The librarian] gathered sufficient information about my need in order to answer the question. [Chat]
- What I liked most about the e-mail is that there was time to reflect. I could think about my question and write it out clearly and the librarian had time to read it over and think critically about it. [E-mail]
- If the librarian is friendly and patient, many patrons will feel that they have had a successful reference transaction even if they do not get the answer they are looking for.
- The response time was fantastic [3 hours]. [E-mail]
- I realized that digital reference is similar to in person reference in that much of my satisfaction was determined by my assessment of how well I had been treated, as much as by my reaction to the answer I received. [Chat]

***FEATURES OF THE VIRTUAL REFERENCE SERVICE  
THAT WERE UNHELPFUL:  
CHAT***

***Barriers in the Environment***

- The service was not advertised on the library homepage.
- The technology didn't work.
- There was no guidance on the Webpage about who could use the service, what kinds of questions it was intended to answer, or how soon I could expect a response.

***Lack of Acknowledgment and Inclusion***

- There were lag times when I was not sure if I had been disconnected.
- At times I was not sure if the librarian was still there.
- This comment [from the librarian] was followed by almost ten minutes of virtual silence. This confused me because it made me wonder if my session was over.
- I waited and waited for a response. In reality it was only four or five minutes but it felt like longer. I was thinking, "Did the librarian forget about me? Something as short as 'Still looking' would have reassured me."

- [The librarian] just started pushing pages at me. He did not explain what he was doing.

### ***Unmonitored Referral***

- [After being told to browse the stacks under a particular call number range], I thought to myself about my location. I was chatting on the Internet, why is the librarian asking me to come to the library?
- [After being told that it might work to search Google again, using particular terms], I felt that [the librarian] was going to turn me loose on my own and stop helping me.

### ***Bypassing the Reference Interview***

- Many of the files I was forwarded were not at all useful. Had the librarian paused to ask me a little bit more about my question and what I was looking for, this could have been avoided.
- He seemed obsessed with the phrase [in the original question] and did not try other words. I felt rather helpless at this point.

### ***Faulty Assumptions and Communication Accidents***

- The librarian's response [advice to look at a book in the library's collection] indicated to me that s/he thought I was within traveling distance to the library.
- As I was looking at the page, I had a real sense that I should let the librarian go. I felt so flustered with the page in front of me that although I was only half way down the page and wasn't sure if it had what I wanted, I said, "This is great. Thank you very much." Just to let the librarian go.

### ***No Follow Up***

- I started to reply with thanks. Before I finished typing, however, a message came on the screen reading "Got to go. Someone else is waiting." I was stunned by the abruptness of this termination. I felt rude for not even thanking the person, then annoyed that the librarian hadn't even waited for a reply or made even a token attempt at a follow-up statement.

**FEATURES OF THE VIRTUAL REFERENCE SERVICE  
THAT WERE UNHELPFUL:  
E-MAIL**

***Barriers in the Environment***

- On the main library page, I could find no mention of virtual reference at all.
- Libraries need to make the digital reference a more welcoming experience.
- Once I clicked “Ask a Librarian,” all that appeared was a list of librarians and their corresponding subject specialty. This makes it a little daunting to users who have to determine under which subject their question might be categorized. There were no forms to complete.
- The library site freezes on dial-up loading, has information cluttered everywhere, and has far too many menus.
- I clicked on the Submit Query button but instead of seeing a copy of the reference question I had composed, I was presented with eight lines of error message that all began with the word “WARNING” in bold type. I filled the form a second time and received the same error results . . . The most frustrating part of the experience was not knowing if my form had been received by anyone at [the university].

***Lack of Acknowledgment and Inclusion***

- It was frustrating not to receive any indication that my question was accepted and someone was working on my question.

***Unmonitored Referral***

- The response did not actually contain a direct answer to my question. Instead, the response gave me URLs to recommended sites. In the event, however, these sites proved useless to me in search of the information I was seeking.
- Since I was asking something factual, I was surprised to see that my question was not answered but instead I was given a couple of links to sites.



***Bypassing the Reference Interview***

- The e-mail form used is not conducive to replacing the reference interview. The form isn't detailed enough. The only information that is gained is whether the patron is above or below grade six, their city, and their question.

***Faulty Assumptions and Communication Accidents***

- The librarian assumed I was in an area that had a local academic library.

***Other***

- The digital reference service [of the academic library] does not provide reference in the true sense of the term. There is no effort to answer elaborate academic questions that would require time or extensive research.
- After this experience, I think quality is a far better attribute than speed, especially if it means getting a better response.

***The Disappearing Reference Interview***

The most striking difference between face-to-face reference and virtual reference, as reported in Table 3, is in the area of the reference interview. At physical reference desks, library staff members conducted a reference interview only about half the time. At the virtual reference desk, the reference interview almost disappears, occurring in only 17 accounts of the 85 completed transactions. In the face-to-face transaction, we counted it as a reference interview if the staff member asked at least one question intended to find out more about the user's information need. We used a generous definition, counting any clarifying ques-

TABLE 3. Frequency of Occurrence of the Reference Interview

	Phases 1 & 2 261 face-to-face visits	Phase 3 85 virtual visits
Reference Interview occurred	51% (n = 132/261)	20% (n = 17/85)

tion that was asked at any time during the entire transaction by any staff member, including on a second attempt when the user started over with a second librarian. We also counted responses that were not formally questions but had the performative function of a question, such as repeating the keywords of the user's statement and pausing strategically to encourage further elaboration.<sup>27</sup>

To be counted as a reference interview in e-mail or chat accounts, the transaction had to include either some sort of question to clarify the information need, either on a form or as part of an e-mail or chat exchange with the user (see Table 4). Just as in the face-to-face interview, we did not count as a clarifying question, "Do you know how to use the catalogue?" so in the e-mail and chat context we did not count, "Do you know how to search the Internet?"

Of the eleven interviews recorded for chat transactions, ten took place during chat sessions in university libraries, and only one occurred in a public library. Conversely, of the six interviews conducted with patrons who used e-mail, all occurred in public libraries. In only three of these did the librarian attempt to elicit more information than was initially provided. The remaining three were counted as including a reference interview only because users were required to fill in a good form that served to substitute for an interview. Those responding to e-mail reference in university libraries apparently believed that their users expressed their information needs precisely and completely in their initial e-mail queries.

Were so few interviews conducted because users of virtual reference services are able to formulate an initial question that completely and clearly communicates their real information need? If so, they must differ substantially from face-to-face users who, we know, often initially ask for something general when they really want something quite specific or they ask for something specific when their real information need

TABLE 4. Comparing Frequency of Chat and E-Mail Reference Interviews by Type of Library

	Public Libraries	University Libraries	Total Transactions that Included an Interview
Chat	1 of 9	10 of 16	11 of 25 (44%)
E-mail	6 of 31	0 of 29	6 of 60 (10%)
Total	7 of 40	10 of 45	17 of 85 (20%)

is more general.<sup>33</sup> They may say, “Can you give me information on transportation?” when actually they want pictures of steam engines. We found the same pattern of vaguely formulated initial questions in chat reference sessions. For example, one user of chat reference asked for information on Crohn’s disease. The transaction went like this:

User: Hi, I’m looking for information on Crohn’s disease and I’m not sure where to start.

Librarian: Crohn’s disease? From a patient’s perspective, or in the medical literature?

U: From a patient’s perspective.

L: [www.cfa.org](http://www.cfa.org) is the US Crohn’s organization. You could start there for basic info and coping info. [www.ccfc.ca](http://www.ccfc.ca) is the same type of thing for Canada.

[item sent: the academic library’s Gateway]

Now in terms of journal articles and scholarly information that will help you, I recommend the PUBmed database—it’s like MEDLINE except that MEDLINE is the one for doctors and medical students.

[item sent: electronic resources]

So if we look at the health sciences journal sources page . . .

[item sent: EBSCO host]

Is there a specific question you had about the disease or are you just browsing?

U: I just found out a friend has the disease and I would like to learn a little about it.

L: Then I recommend the national organizations—they can provide you with the initial information and point you to further resources too.

[item sent: Crohn’s and Colitis Foundation of Canada]

There you go. Does that answer your question for now?

This transaction, which included both a reference interview and a follow-up question, was rated as a highly successful transaction by the user who said s/he would be willing to return to this digital reference site with another question. However, even in this case, the user felt that the

reference process would have been more effective if the librarian had done more to clarify the question at the outset: "I think that she could have asked what I needed the information for earlier in the transaction. That would have eliminated the need to search the medical databases . . . the librarian should not assume the users' need. It will only waste the time of the librarian and the patron if you give them inappropriate information."

Another user of chat reference who asked about an ancient Chinese battle tactic called "wall of fire" was not interviewed but instead was sent a barrage of files. The user's comment was: "Many of the files I was forwarded were not at all useful. Had the librarian paused to ask me a little bit more about my question and what I was looking for, this could have been avoided . . . In the end, the one thing that this experience emphasized most for me was the need to ensure that a proper reference interview is conducted over an online medium since, without the physical presence of both participants, communication problems can develop very quickly." Surprised not to be interviewed, several users explained the sparseness of communication in terms of the cumbersome process of having to type everything. One person noted, "I believe that . . . having to type in real time while working a potentially busy Reference/Info desk, militates against an involved interview process. It's as if, as reference librarian, the tendency is to say, 'Let's get to it; there's no time for small talk . . .'"

For whatever the reason, it is apparent that in the virtual environment the reference interview or its equivalent is almost an endangered species. It could be argued that in the case of e-mail reference, questions on the form did the work that would be done in the face-to-face transaction by the reference interview. But is this the case? Unfortunately not often. In some cases, the interface consisted of an icon on the library's home page labeled "Ask-a-Librarian" and a regular e-mail mail-to form. One user who experienced this rudimentary interface, commented, "When I clicked on the link, as it was not clear what sort of 'asking' was involved, I was surprised to have a Netscape e-mail window pop up. There was no guidance on the Webpage about who could use the service, what kinds of questions it was intended to answer, or how soon I could expect a response."

Typically the only structure on the form was an instruction along the lines of, "Submit your question" or "Your question(s) or comment(s)," sometimes with the additional comment, "To help us answer your question, please be as specific as possible." But as one user put it, "A well-designed e-mail form is more than simply a box to put text in and a

button to send the text . . . Such a form is far more likely than a simple ‘What’s your name and what’s your question?’ form to create a reference interview that is welcoming to the user and helpful to the librarian.” Another user commented that the public library e-mail reference form that s/he encountered in the virtual library visit was “extremely simple and did not prompt the user into giving detailed information.” This user concluded that “the e-form does not allow for a reference interview to take place.” The particular form being criticized said, “Enter your question into the box below. Provide as much detail as possible.” The request for detail is certainly better than just a bare “Enter your question here” but is still problematic. Many users simply don’t know *what kinds* of detail librarians need or find useful. As Joseph Janes points out in *Introduction to Reference Work in the Digital Age*, simple forms that limit themselves to a “Your question” box “solicit very little information and perhaps even dictate sketchy inquiries from users.” He argues persuasively, “If we truly want to take advantage of our collective experience in reference practice, perhaps it would be best to invest forms with what we know about questions that really help in determining what a person wants to know.”<sup>34</sup>

And what do we know from a sustained body of research on the face-to-face reference transaction? We know that, in comparison with answering the initial question at face value, that the librarian saves time in the long run by asking open questions or sense-making questions such as, “What aspect of X would you like to find out about?” or “What sort of information about X would help you most?” or “How do you plan to use this information.”<sup>35</sup> The best forms among those encountered by the student-users in our study were like the one used by the Internet Public Library that has been refined in the crucible of answering over 50,000 questions through an e-mail reference service. This form imitates the turn-taking of the face-to-face reference interview by providing a number of questions that give users the opportunity to refine their question in a structured way. The Internet Public Library form incorporates, among other things, a series of three open questions deliberately chosen to elicit the type of information the librarian needs to know: “Please tell us your question,” “How will you use this information?” and “Sources consulted.” Janes explains, “I like to think of it as scaffolding the inquiry; giving the user a level of support in framing and expressing their need.”<sup>36</sup>

The vast majority of e-mail reference forms currently available do not succeed in providing this scaffolding for users. The rationale for impoverished forms seems to be that users expect things to be quick in the

electronic environment—that they should be able to type in a few keywords and get an answer at the click of a button. The problem is that, if this approach was going to work, the answer would already have been found in Google, since typically users of virtual reference service have already tried and failed to answer the question on their own. We are certainly not advocating long, complex forms containing numerous closed questions. We *do* argue that the reference interview is an indispensable part of the reference transaction that needs to be part of every reference transaction, whether face-to-face or virtual. In e-mail service, the reference interview needs to be incorporated into the form as a series of questions (as is done so effectively on the Internet Public Library form).

### **THE LOW BANDWIDTH PROBLEM**

In the face-to-face Library Visit, users sometimes acknowledged that they got a helpful answer but still said they would not be willing to return because the staff member seemed uninterested in their question or impatient or appeared to be trying to get rid of them. Similarly in the virtual environment, the quality of the communicative exchange sometimes trumped the quality of the information exchange when it came to the users' evaluation of their experience. Just as users in the face-to-face transaction say that the body language of the staff member is very important to their feelings about the transaction, so in the virtual reference transaction many users commented on what they perceived to be the tone of the written exchange. One person said, "I was surprised that the tone of the e-mail made such a difference to me." Another wrote, "I feel the . . . librarian should avoid short answers because they can be construed as sharp and cold answers to the patron."

Here is one example of many we could have chosen that illustrates how users interpret small clues in the written exchange to form impressions, quite possibly erroneous ones, about the intentions, coolness, and lack of friendliness of the staff member. One e-mail reference user asked, "I'm wondering if you can tell me the names of some award-winning First Nations writers from British Columbia?" Within half an hour, the user received an e-mail from a staff member saying she was unable to find this information on any of the awards Websites and had forwarded the question to a subject expert. The user said, "I was impressed that the response was so quick, and found her reply polite, if not exactly friendly, and helpful . . . I appreciated being kept informed of the status of my question and being referred to an expert." On the morning of the

first working day after the question was sent, the expert responded with the sentence: "Eden Robinson's *Monkey beach* is the most notable B.C. native to win an award." On the questionnaire, the user responded to the question, "To what extent would you say that the digital librarian was friendly or pleasant?" by giving the librarian a 2 on a 7-point scale where 1 is "not at all friendly" and 7 is "very friendly." In the written account, the user explained, "I appreciated this bit of information, but found the brevity of the e-mail made it feel cold in spite of the fact that she greeted me by name and signed it with her first name. Her grammar was wrong, and there was a typo (beach instead of Beach in the title), which spoke to me of carelessness and impatience. I would have liked it had she shared her sources. I got the feeling that this was a fact that she knew off the top of her head and she had not done any research . . . Quite honestly, I went from being very impressed with the service at my first reply to feeling like I was wasting someone's time and questioning whether I would use this service again at the second reply."

These kinds of communication accidents happen because written messages are low bandwidth, stripping away the nonverbal cues of nodding and smiling and encouraging tone of voice. Users can interpret apparently innocuous statements as negative or critical. For example, a library staff member responded to a request for information with the statement, "There should be some information on ancient Chinese war tactics." Probably the librarian intended the comment as encouraging, but the user commented, "I got the impression that the librarian was slightly exasperated with me, since the phrase 'there *should* be some' seemed to suggest the material was there, I just hadn't bothered looking for it. This put me slightly on the defensive." A number of users thought that the library staff sounded annoyed or irritated in circumstances when, had the same statement been spoken, they probably would not have come to a negative interpretation. One user commented, "The face-to-face interview makes sense. It was hard for them to know exactly what I wanted and it was hard for me to tell them. In fact I wanted them to try and read my mind a little bit."

The importance of the "relational dimension" of the virtual reference transaction has been confirmed in a study by Marie Radford, presented at the Virtual Reference Desk Conference 2003. Radford analyzed 44 award winning chat transcripts submitted to the LSSI Model Virtual Reference Transaction Prize honoring Samuel S. Green.<sup>37</sup> She argues that in the virtual reference environment staff should take special steps to compensate for the lack of non-verbal cues.

### ***IN CONCLUSION, SOME TIPS***

#### ***Do's and Don'ts for All Virtual Reference Services***

- Make sure the technology works, and check it frequently.
- Do provide an automatic response assuring users that their question has been received.
- Be sure that the library's home page indicates that the service is available. The service site should be no more than two clicks away from the home page. Let users know what kinds of questions that can be answered, with examples.
- Don't assume that the user is local and can easily come to the library for additional help or to look at a particular reference tool or print product. Expect questions from people who are far away (even if you indicate that the service is limited to those who are in some way affiliated with your institution).
- Do transfer good reference behaviors from the physical reference desk environment to the virtual environment.
- Don't assume that a reference interview is not needed.
- Pay attention to the relational dimensions of the transaction with users.
- Check URLs that are forwarded . . . do the sites answer the user's question?
- Do ask follow-up questions.

#### ***Do's and Don'ts Specific to E-Mail Reference***

- Do provide a form that the user can fill in (an example of a good form is the one used by the Internet Public Library at [www.ipl.org](http://www.ipl.org)).
- Do indicate time by which an answer can be expected.
- Do address the user by name and sign your message with your name.
- Do remember that words can sometimes sound cold and unfriendly when you don't mean them to be. Take special steps to make your message friendly.
- Do send an answer to the question in your first reply, but ask if this is what the patron is looking for (e.g., "Does this answer your question?"). Encourage the user to contact you again if the information you provide is not helpful.



### *Do's and Don'ts Specific to Chat Reference*

- Do indicate the hours when the service is staffed.
- Do take time to clarify the question. Don't feel that speed is more important than quality.
- Do let the user know what you are doing with a quick note such as, "still working on your question."
- When pushing pages, explain what the user is to do with them.
- If the transaction is going on for a long time, reassure the patron that this is okay.

### NOTES

1. Patricia Dewdney and Catherine Sheldrick Ross, (1994), "Flying a Light Aircraft: Reference Service Evaluation from a User's Viewpoint," *RQ* 34 (2): 217-30; Catherine Sheldrick Ross and Patricia Dewdney, (1994), "Best Practices: An Analysis of the Best (and Worst) in Fifty-two Public Library Reference Transactions," *Public Libraries* 33 (5): 261-66; Catherine Sheldrick Ross and Patricia Dewdney, (1998), "Negative Closure: Strategies and Counter-Strategies in the Reference Transaction," *Reference & User Services Quarterly* 38, 2: 151-63; Catherine Sheldrick Ross and Kirsti Nilsen, (2000), "Has the Internet Changed Anything in Reference? The Library Visit Study Phase 2," *Reference and User Services Quarterly* 40 (2): 147-155; Nilsen, Kirsti (2004). The Library Visit Study: User Experiences at the Virtual Reference Desk. *Information Research* 9 (2). Paper 171. Retrieved 9 January 2005 from <http://InformationR.net/ir/9-2/paper171.html>; Kirsti Nilsen (2006). "Comparing Users' Perspectives of In-Person and Virtual Reference," *New Library World* 107 (3/4) forthcoming.

2. Catherine Sheldrick Ross, Kirsti Nilsen and Patricia Dewdney, (2002), *Conducting the Reference Interview: A How-To-Do-It Manual for Librarians* (New York: Neal Schuman; London: Facet).

3. American Library Association, (2004). "Guidelines for Implementing and Maintaining Virtual Reference Services." 2004. Prepared by the Digital Reference Guidelines Ad Hoc Committee of the Machine-Assisted Reference Section, Reference and User Services Association. Chicago: ALA. Retrieved 22 December 2005 from <http://www.ala.org/ala/rusa/rusaprotocols/referenceguide/virtrefguidelines.htm>.

4. Bernie Sloan, (2004), "Digital Reference Service Bibliography," Last updated 20 September 2004. Retrieved 224 December 2005 from <http://people.lis.uiuc.edu/~b-sloan/digiref.html>.

5. See for example the "Registry of Real Time Digital Reference Services" which illustrates numbers of services in different types of libraries as of March 2003. Retrieved 22 December, 2005 from <http://www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm>. More recently several state and province-wide collaborative virtual reference systems have been established that include public libraries.

6. Bernie Sloan, (2001), "Ready for Reference: Academic Libraries Offer Live Web-Based Reference: Evaluating System Use," Retrieved 22 December 2005 from <http://www.lis.uiuc.edu/~b-sloan/r4r.final.htm>.
7. Jo Kibbee, David Ward and Wei Ma, (2002), "Virtual Service Real Data: Results of a Pilot Study," *Reference Services Review* 30 (1): 25-36.
8. Marilyn Domas White, Eileen G. Abels, and Neal Kaske (2003), "Evaluation of Chat Reference Service Quality: Pilot Study," *D-Lib Magazine* 9 (2), 14 p. Retrieved 22 December 2005 from <http://www.dlib.org/dlib/february03/white/02white.html>.
9. Joanne Smyth, (2003), "Virtual Reference Transcript Analysis: A Few Models," *Searcher* 11 (3): 26-30.
10. Sloan, (2001).
11. Donnelly Curtis and Araby Green, (2004), "A University-Wide Library-Based Chat Service," *Reference Services Review* 32 (3): 220-233.
12. Marie Ruppel and Jody Condit Fagan, (2002), "Instant Messaging Reference: Users' Evaluation of Library Chat," *Reference Services Review* 30 (3): 183-197.
13. Marianne Foley, (2002), "Instant Messaging Reference in an Academic Library: A Case Study," *College and Research Libraries* 63 (1), 36-45.
14. Matt Marsteller and Paul Neuhaus, (2001), "The Chat Reference Experience at Carnegie Mellon University," Presentation at the American Library Association Annual Conference, 2001. Retrieved 22 December 2005 from [http://www.contrib.andrew.cmu.edu/~matthewm/ALA\\_2001\\_chat.html](http://www.contrib.andrew.cmu.edu/~matthewm/ALA_2001_chat.html).
15. Kibbee, Ward and Ma, (2002), p. 34.
16. Corey Johnson (2004), "Online Chat Reference: Survey Results from Affiliates of Two Universities," *Reference and User Services Quarterly* 43 (3): 237-247.
17. Ruppel and Fagan, (2002), p. 190.
18. For example, see Foley, (2002), p. 144.
19. Kibbee, Ward and Ma, (2002), p. 34.
20. Marsteller and Neuhaus, (2001).
21. Saskatchewan Libraries. (2003). "Saskatchewan Libraries: Ask Us! Pilot Project Evaluation." Retrieved 24 January 2004 from <http://www.lib.sk.ca/staff/virtref/askusreport.html>.
22. Peter Herson and Charles R. McClure, (1986), "Unobtrusive Reference Testing: the 55 Percent Rule," *Library Journal* 111 (April 15): 37-41; Kenneth D. Crews, (1988), "The Accuracy of Reference Service: Variables for Research and Implementation," *Library and Information Science Research* 10, no. 3 (July): 331-355.
23. Neal Kaske and Julie Arnold, (2002), "An Unobtrusive Evaluation of Online Real Time Library Reference Services," Library Research Round Table, American Library Association, Annual Conference, Atlanta, Georgia, June 15, 2002. Retrieved 24 January 2004 from <http://www.lib.umd.edu/groups/digref/LRRT.html>.
24. White, Marilyn Domas, Eileen G. Abels, and Jennifer Agresta, (2004), "Relationship between Interaction Characteristics and Answer Quality in Chat Reference Service," 6th Annual Virtual Reference Desk Conference, Cincinnati, Ohio, [PowerPoint presentation], Retrieved 22 December 2005 from <http://www.vrd2004.org/proceedings/presentation.cfm?PID=376>.
25. White, Abels, and Agresta, slide 21.
26. Bencivengo, Glen, (2004), "A Lawyer's View of Privacy, Surveillance, and the USA Patriot Act," Chapter 12 in David Lankes et al., (eds.), *The Virtual Reference Experience: Integrating Theory and Practice*, 235-257 (New York: Neal Schuman), 251.

27. Joan C. Durrance, (1989), "Reference Success: Does the 55% Rule Tell the Whole Story?" *Library Journal* 114 (April 15): 31-36.
28. Marie L. Radford, (1999), *The Reference Encounter: Interpersonal Communication in the Academic Library* (Chicago: Association of College and Research Libraries).
29. Dewdney and Ross, (1994); Ross and Dewdney, (1994), (1998); Ross and Nilsen, (2000).
30. Dewdney and Ross, (1994); Ross and Dewdney, (1994), (1998); Ross and Nilsen, (2000); Ross, Nilsen and Dewdney (2002); Nilsen (2004); Nilsen (2006).
31. Ralph Gers, and Lillie J. Seward, (1985). "Improving Reference Performance: Results of a Statewide Study," *Library Journal* 110 (8), 32-35.
32. See Ross and Nilsen, (2000).
33. Ross, Nilsen and Dewdney, 2002.
34. Joseph Janes, (2003), *Introduction to Reference Work in the Digital Age* (New York: Neal-Schuman), p. 56.
35. Ross, Nilsen, and Dewdney, (2002).
36. Janes, (2003), p. 60.
37. Marie L. Radford, (2003), "In Synch? Evaluating Chat Reference Transcripts," Virtual Reference Desk Conference 2003, San Antonio, Texas. Retrieved 24 January 2004 from <http://www.vrd2003.org/proceedings/presentations.cfm?PID=231>.

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