

Question Negotiation in an Electronic Age

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prepared for the Digital Reference Research Symposium, August 2002

1 Definition & Brief History

Although it is generally agreed that reference work in libraries began in the second half of the 19th century, what came to be known as the “reference interview” arose somewhat later. The generally acknowledged first article on reference (Green 1876) omits any mention of discussion between patron and librarian (despite mention in the title of “personal relations” between them) in favor of a rapid-fire series of scenarios where the librarian magically produces just the right item or direction in response to each person’s request. It is difficult for the modern reader not to speculate on how many of Green’s patrons went away happy, and whether in fact any discussion or interview went on between them at all.

More than twenty years later, Woodruff (1897) speaks for perhaps the first time of what generations of reference librarians have experienced: “The famous dictum, ‘Speech was given to man to conceal thought,’ is often forcibly brought to mind by the ingenuity with which visitors of the reference-room succeed in hiding their desires behind their questions.”. She goes on to define the reference interview, without calling it that:

...the ability by skillful questioning, without appearance of curiosity or impertinence, to extract from the vaguest, most general requests, a clear idea of what the inquirer really needs. This faculty—a facility in reducing large, abstract demands to concrete terms...stands in the equipment of a reference librarian only second in importance to the complete mastery of his tools. (p. 67)

Early reference textbooks also stressed the difficulty but necessity of the interview. Wyer (1930) writes that its two most salient features are mind-reading and cross-examination. He quotes a 1922 article in echoing Woodruff: “You see they will choke to death and die with the secret in them rather than tell you what they want.” For one of the first times, he lays out what the necessary components of the interview are—what is desired, format, setting and history, how much is wanted, level of treatment from trivial to scholarly, when it is needed, and so on.

Charles Bunge, in his 1983 historical review, believes that Margaret Hutchins, in the next great reference textbook (1944), coins the phrase “reference interview” and indeed Wyer never calls it that. Her discussion of the interview describes the success of a reference encounter as depending on the proper relationship between the questioner, the librarian, the sources, and the question itself. “If any of these relationships is slighted the work becomes lopsided. If the personal relationships are neglected, although a *correct* answer to the question may be found, it may nevertheless be unsatisfactory to the inquirer.” (p. 21, emphasis in original).

What follows this is an era much more concerned with the communication aspects of the reference interview over its functionalism as a method of finding out an information need. The lodestone of much of that thinking is Robert Taylor’s seminal 1968 article, “Question-Negotiation and Information Seeking in Libraries”. There is much of interest in this paper, and I shall return to it shortly; for the time being, here is his definition of what he terms “a very subtle problem—how one person tries to find out what another person wants to know, when the latter cannot describe his need precisely.” (p. 179). Dervin and Dewdney (1986), in one of the other significantly influential papers on reference interviewing, use a similar formulation, saying that “query negotiation [is] determining what the inquirer really wants to know.” (p. 506).

White, in two articles, lays out frameworks for analyzing and evaluating reference interviews. In the first (1981), she describes four dimensions of the reference interview: structure, coherence, pace and length, and says that the librarian has two concerns, first, “obtaining information useful for carrying out specific

tasks”, namely identifying the information need and developing a search strategy. The second is “using interviewing techniques that have a positive effect on the user’s willingness to cooperate and thus an impact on the quality of the information he provides” (p. 374). This framework is carried forward in her second article on interview evaluation, where she says that a “good” reference interview is “organized to achieve a particular outcome, . . . coherent, . . . progresses toward its goals speedily,” and has two objectives, “identifying the information the client needs and gathering information to permit a successful search for that information” (p. 77).

Two research papers of note provide more operational definitions of the reference interview. Lynch (1978) says that “[f]or the purpose of this study . . . dyadic communication units were considered as interviews only if the *librarian asked the patron* one or more questions” (p. 126), underscoring the communication foundation of her research. Ross and Nilsen (2000) operated as follows:

We counted a reference interview as having occurred if a clarifying question 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 counted not only well-formed open questions such as "What kind of information do you want on L. M. Montgomery/used computers/pine trees?" or "How much information do you want on this?" but also closed questions such as "Are you writing a paper on this topic?" (but not "Do you know how to use the catalog?"). We also counted responses that were not formally questions but that had the performance function of a question, such as repeating the key words of the user's statement and pausing strategically to encourage further elaboration (p. 150).

It is disheartening to report that Lynch found only 45 percent of reference transactions included an interview (336 of 751); Ross and Nilsen found 48% did (78 of 161), both based on what must be considered fairly meager and minimal definitions of interviews.

Taylor’s article is easily one of the most influential and cited works in the library literature, and contains much subtlety, nuance and depth of thought. His work is well known for the four levels of question formulation (visceral, conscious, formalized and compromised needs) and the five filters that librarians use to help understand information needs (determination of subject, objective and motivation, personal characteristics of inquirer, relationship of inquiry to file organization, anticipated or acceptable answers). These are, of course, of great importance and have rightly been adopted into thinking about reference work.

There are other aspects of this article, though, that I think too often are overlooked. Taylor places the reference process in the broader context of how the user tries to get his or her information need satisfied. His figure on page 181 shows that users have many options rather than and before approaching an information professional. They may choose to experiment or observe nature, ask a colleague, or search the literature. If they choose to search first or if the other approaches fail, they may either search their own information files, or approach a library. And library searching can either be self-help or with a librarian. Thus, a user who asks a reference librarian for help has potentially (and likely, given our knowledge of user behavior) been through several other attempts and approaches and not found satisfactory information. There are certainly some users for whom a reference librarian is a first or early method, but it is likely that for many, the librarian is a last-resort tactic.

Earlier, I quoted him on the central problem of reference interviewing, but of course he doesn’t refer to it that way. He prefers the phrase “question negotiation”. Many people who have been influenced by his work seem to think that he uses this phrase in place of “reference interview” but sees the two as nearly the same. I disagree, and would point out that for Taylor, “question negotiation” also includes the self-help use of the library (p. 179). I might even go farther, and suggest that the “question negotiation” process incorporates all of the potential paths he describes, including searching of personal files, asking friends, and so on.

In the current context, this schema can be extended even further. Certainly, searching the free Internet has provided users with another option, and the self-help library search can now take place anywhere a user can authenticate to licensed databases or search her library’s catalog remotely. It might even be that the Internet has taken on roles similar to those of friends or colleagues in Taylor’s original work, as a first-order option. A recent study from the Pew Internet and American Life Project (Kommers 2002), for example,

indicates that millions of Americans are using the Internet for major life decisions such as getting more education, changing careers, making a major purchase, helping a loved one through a serious illness, or making a major investment.

It is this broadened sense of “question negotiation” that I shall adopt for this paper.

While all of these definitions have served interesting purposes, they all seem to be lacking in specificity, especially as a framework for discussion of a research agenda. It is interesting to notice that apart from the White articles discussed above, there is virtually no discussion in the reference literature as to what makes reference interviews successful.

Based on the foregoing, I would propose the following as a tentative conceptual definition for question negotiation:

an interaction between a person with an information need and an information service; its purpose is to refine the information need so that it can be usefully responded to by the information service

2 State of the Art

One of the great difficulties in researching or studying the reference interview in the past has been its ephemeral nature. Since in the vast majority of cases, the interview took place in person or via the telephone, no objective record existed unless it was recorded or transcribed and even then one is left to wonder whether the recording process had material effects on the nature of the interview.

In the digital environment, such records exist and can be of great use in studying the reference interview. To date, however, very little has appeared in the research literature to describe the nature of these interviews. Abels' (1996) oft-cited article examined purely email interview exchanges, and a number of “how we do it” articles have appeared in the practitioner literature.

To determine what the state of the art is in digital reference interviewing, we turn to a series of studies (Janes, Carter and Memmott 1999, Janes 2001) that have examined the web sites of public and academic libraries to determine the nature and characteristics of digital reference services. These studies are being replicated at present, and there is now preliminary data from a new study of the same 352 public library web sites; more complete results will be presented in the near future.

The salient results of these studies are presented in the table below.

	5/1999	3/2000	5/2002
	150 academic libraries	352 public libraries	352 public libraries
libraries with digital reference services	44.7%	12.8%	35.7%
provide email addresses for question submission	42% (28 of 67)	56% (37 of 64)	56% (82 of 147)
provide a simple form for question submission	55% (37 of 67)	38% (24 of 64)	5% (7 of 147)
provide a detailed form for question submission	10% (7 of 67)	25% (16 of 64)	48% (71 of 147)
use call center software for question submission	0	0	21% (31 of 147)
use instant messaging for question submission	0	0	0.7% (1 of 147)
use chat for question submission	0	0	0
provides an explanation of examples of when/why to choose different types of contact methods	not asked	not asked	20% (29 of 147)

A number of intriguing findings emerge from this table. The proportion of public libraries offering services has risen sharply, almost tripling in a two year time frame, but is still lower than the proportion of academic libraries in 1999. The methods of question submission have also changed in interesting ways. The percentage of libraries providing email addresses is roughly comparable to what has been observed in the past. The percentage of those offering detailed forms, however (anything more than the simple form questions) has doubled, largely at the expense of the very bare-bones, simple forms. In addition, the number of libraries offering real-time (chat, instant messaging, call center software based) services now exceeds 20%, and a similar number provide a page summarizing their services and give guidance as to which might be more appropriate.

A further examination of the web forms yields this list of the most frequently observed questions asked on web forms. (Nearly all forms asked for name and email address.)

phone number	53
affiliation	22
street/ mailing address	19
fax number	17
deadline	14
sources already consulted	10
subject area	8
preferred info delivery method	6
school assignment?	6

A number of other questions were asked, but none more than 5 times. It is interesting to note omissions here—the rationale or motivation behind the query, one of the main reasons for doing a reference interview, was asked on only 3 forms, as was the preferred answer type (factual, sources, etc.), and the number of items or amount of information desired was asked only once. Most of the frequently asked questions, then, are functional and personal (name, email address, phone number and so on), rather than based on the nature of the query itself. These questions serve more as a profiling activity than an interview aimed specifically on refining the nature of the query.

Only very cursory examination has been made of the web pages describing and presenting chat-based services. The following are subjective observations, and more substantial analysis of these pages may well yield more sophisticated and trustworthy conclusions. However, I offer these as glimpses into what those pages say and do:

- a handful of the live services provide web forms to ask the initial set of questions; these are usually very few in number and the boxes in which users can type their questions are almost always very small, which would tend to encourage people to type relatively little
- a number of these pages describe technological requirements to use the service but also include restrictions, warnings and barriers (Macintosh computers can't be used, what to do if the service freezes, etc.)
- several of the services described in some detail who (i.e., a librarian) would be responding to the users' question; not often seen in other digital reference environments
- somewhat more mention is made here about privacy and confidentiality policies than in other digital reference environments
- almost all specified the hours their services are available, and some also described the process by which the question would be responded to

Of course, we have no idea what the interviews look like in those services, based on this analysis, as we looked only at their web presences and did not ask questions or interview librarians.

Another source of potentially revealing evidence about the reference interview in the digital environment is comments made by librarians. The DIG_REF listserv, maintained by the Virtual Reference Desk project, is probably the best-known and most widely trafficked listserv in this area. While a comprehensive survey of the DIG_REF discussions on the interview is beyond the scope of this paper, (and

would be a fascinating and worthwhile venue for further research endeavors), a discussion thread from October of 2001 seemed to encapsulate many of the issues of recent concern to reference librarians about the nature of the reference interview and how it's changing. A posting by Bernie Sloan on October 22, 2001 began the discussion by asking the following: "I'm looking for practitioners' perspectives on how the reference interview is affected by the medium it's conducted in...From your experience, how does the digital reference interview differ from the traditional face-to-face reference interview in the library?"

A large number of responses were posted over the next several days. Among the points of discussion of interest here are:

on asynchronous (email, Web form based) interviewing:

- loss of nonverbal clues (tone of voice, eye contact, etc.)
- the disappearing questioner, someone who never responds when asked for clarification
 - one person reported receiving more responses when clarifying questions were presented with some information, or a guess as to what the original question was about, as opposed to simply questions probing the information need alone
- the longer time needed for an interview using repeated email exchanges, and the additional strain on staff time that implied
- the creation of a permanent record and ability to track reference performance
- lack of feedback on whether responses were correct, appropriate, satisfactory
- the opportunity for both user and librarian to think through the question and response, to let the question "percolate" as the librarian works on it
- the importance and role of a form as a simulation of the reference interview, as well as commentary on the perception of reluctance of some users to filling out forms
- the ability to clarify questions received via email or form on the phone

on synchronous (chat, call center software) interviewing:

- the "probe query"; users ask an initial simple, vague query, and upon receiving a response then proceed to ask much more detailed questions
- ability to make educated guesses, based on grammar, syntax, email address, time query was sent, on what an initial vague query might really be
- people using chat are in a hurry and won't want to fill out a form
- chat is better at back-and-forth of an interview and thus there will be more interaction, but also that little of a traditional reference interview might go on because of perceived time pressures
- chat places more of an onus on the patron to make their need clear quickly and to make clear that responses aren't what they want
- dead time is a problem; perceived need to stay active with user to keep them online and interested
- chat can be difficult for users if they're not familiar with the medium
- can be helpful to estimate the time a response will take to let users know what to expect
- chat sessions aren't necessarily quick—estimates of average time from 10-20 minutes, some as long as 45 minutes or more, also discussion of a "virtual line" which can form if too many chat requests come in simultaneously
- "you can't chat the way you talk"
- students may have very different views of the written word than librarians (on punctuation, spelling, etc.), which affects chat behavior
- both parties may be somewhat disoriented because of the novelty of the communication mechanism

3 Issues and Challenges

Based on the foregoing, several challenges emerge as central to a greater understanding of the development of techniques to efficiently and effectively identify and refine users' information needs.

One of the most heartening results discussed above is the *acceptance of detailed web forms* to solicit queries. Nearly half of services now use forms which ask anything more than the most basic of questions, and it would appear that the practice is increasing. This has taken place in the context of multiple discussions on listservs and at conferences about the value of using detailed forms as well as frustration at the difficulty of conducting reference interviews via email and synchronous methods. It would seem that using forms that asked for more and more detailed information is being embraced as an option, at least among the public library community in the United States.

At the same time, we have seen in the last two years the *growth of synchronous services* using chat, instant messaging, and especially call-center software. Much of the discussion around digital reference services has combined the two, probably incorrectly. It seems more likely that synchronous and asynchronous services will use substantially different methods to help users to articulate their information needs. (Indeed, this leads to the intriguing conjecture that telephone-based and face-to-face library reference services should have been thinking about using different techniques over the last several decades.) If this contention is correct, while the measures of success are likely the same, services may well require different means to achieve success in the question negotiation process. It appears that so far, librarians have been attempting to replicate or “automate” the traditional reference interview. This could be counterproductive at the very least, time consuming to be sure, and impossible at worst, leading away from more creative and effective solutions.

Time is often discussed. Concerns about keeping chat users occupied while searching. Concerns about the often lengthy time required to conduct an email interview. Pleasure about the extra time available to construct a response to a question that comes in from a form with a two- or three-day deadline specified by the questioner. Apparently there are tradeoffs at work between speed of response, quality of response, along with other factors like continuity of interaction, the inclinations and preferences of both user and responder, and so on. To be sure, there are users who demand immediate responses to complex questions and libraries and librarians who require long periods of time to respond to simple, factual questions. Both are likely to be disappointed. However, a greater range of options is emerging for both, which one would presume could lead to greater satisfaction and performance.

Among the new challenges to traditional library reference practice is the phenomenon of the *disappearing questioner*, which has manifested itself in both the asynchronous and synchronous domains. Users who do not respond to emails for clarification and those who prematurely end or evaporate from chat-based sessions fall into this category. In the familiar world of reference libraries, if a user hangs up the phone or leaves the library, it’s usually not difficult to know what has happened and likely why, based on tone of voice, body language, and a variety of other clues. In the digital world, such clues are gone, and thus in general it is more difficult to know why a response is not forthcoming. Has the user found the response in some other way? Has their deadline passed? Are they simply no longer interested? The librarian is left to wonder, and more to the point, is left in a quandary about what to do next. Should she continue to send emails asking clarifying questions? Should she send a few suggested sources and hope she’s on the right track? Should she simply stop herself, assuming that if the user doesn’t care any more, her job is finished? This is an unsettling position for a professional to find herself in, and one that will take careful thought as librarians evolve practice in this area.

On another front is a set of issues generated from *increasing consortial and cooperative efforts*. Our research is indicating that somewhat more than one-fifth of public libraries are currently involved in some sort of consortial service, either at a local, statewide, or broader level, and the QuestionPoint service (formerly the Collaborative Digital Reference Service) continues to grow and add members. While there is much to be learned in general about cross-institutional services, from a question-negotiation perspective, it raises the question of the *transportability of the interview*. To save the time and effort of the user, it would of course be best to engage in a single interview, so any information services working on a query after that might have to rely on the initial interview, but under what circumstances would it be appropriate to re-engage the user to get further or more detailed information? And if an “interview” is to be passed from one service to another, there are questions of confidentiality, privacy, and the standards (technological and professional) by which it could be distributed and received.

The information world is a very different place in 2002 than it was even a few years previously, in so many ways. In this area in particular, it is possible for people to find information more quickly and easily than ever before, using tools that are new to them, drawing on sources of information unavailable or even nonexistent not so very long ago. People now have many more and wider options for “question negotiation”, in the broadest Tayloresque sense. Consulting an information professional continues to be one of them, and in fact, such professionals can now be much more accessible via these technologies as well.

At this time of great opportunity, however, there appears to be a vein of skepticism in the library community about the feasibility and practice of doing the work they are accustomed to in this evolving information world. In many ways, they are attempting to fit their familiar practice to this new world, and often finding it inadequate or lacking, frustrating, difficult, or unrewarding. There is a great deal to be learned, and important questions to be asked, to assist in developing useful and effective ways to help understand and satisfy individual information needs.

4 Recommendations for Research

There is much we do not know in this area, both because of the introduction of new technologies and new uses for those technologies, but also because of the relative paucity of research on the reference interview from the literature of library and information science to date. Therefore, the need for a serious and comprehensive research agenda is great, as is the opportunity to use the results of such research to make substantial progress in providing assistance both to the users of information services and those who design and staff them.

Among the important questions for research and development are:

- What is the current state of practice in electronic question negotiation, in both synchronous and asynchronous modes?
 - What interview questions are typically designed into library electronic reference forms and services?
 - Do these questions differ from those that are asked of library patrons at reference desks?
 - What new, unique or interactive features are libraries using in digital reference?
 - How are libraries defining to users what they can expect from digital reference services?
- Who is best served by digital reference services, and by which methods of interaction?
 - Who is currently using these services?
 - What are their information needs?
 - Why did they choose the method of interaction (web, email, chat, etc.) they did?
 - What are their expectations of the information service and of the method of interaction?
 - What is the nature of the connection between the user and the service, as perceived by the user? By the service provider?
 - What factors affect how people select and approach an information service?
- What are the best indicators and measures of success of the reference interview?
- What makes a reference interview successful?
- What is the role of non-verbal information? How important is it, in what situations? What parallels exist or can be created in email, web form, and chat environments?
- Is there a relationship between the method of interaction and the success of that interaction?

Allow me to digress for a moment. Nearly all of the preceding discussion has come from the traditions of library and information science. Beyond the familiar notions of the reference interview and question negotiation, however, lies another approach, which deserves some exploration.

Although technology is obviously an important aspect of this discussion, to this point it has been seen primarily as a communications medium, using networked means to solicit and respond to user queries and so on. It might be worthwhile, however, to think about how the process of question negotiation, again broadly understood, might otherwise be supported by technological means. This leads to a new research question:

- In what ways could question negotiation be selectively or even fully automated?

Selective or partial automation has been an area of some discussion within the digital reference world, but without much impact. Several ideas have been raised. A service could take initial queries from a web form, chat box or email message, and provide the results of quick and dirty automatic preliminary searches using one or more search engines or directories. If those results yield a satisfactory response, the process need go no further; if not, the service could proceed to attempt to satisfy the user's need in its normal way, although with the knowledge of the failed searches. This idea could also be implemented using lists of frequently asked questions or a stored database of previously asked and answered questions to broaden its scope and potential power.

The one area of selective automation that has been implemented is a routing function, one of the centerpieces of the QuestionPoint service. The designers of this service are continuing to develop and refine algorithms for sending a query to a particular service based on its subject matter and the collection and service strengths of members but also deadline, load, geography and a variety of other factors. This work is ongoing and while there have been some early difficulties, it seems to hold promise as an important and necessary feature of any large-scale cooperative service.

Full automation is an intriguing concept, very much in the tradition of artificial intelligence and expert systems work, and indeed, people have discussed "automating the reference process" for many years (see, for example, Richardson (1995), Alberico & Micco (1990), McCrank (1993)). This line of thought seems to have peaked around 1990 and is little discussed today. However, a look at work from a different orientation might be instructive.

Kwok, Etzioni and Weld (2001) describe MULDER, which they describe as "the first general-purpose, fully-automated question-answering system available on the web". It was designed to answer what they call factual questions, and what librarians would likely call ready-reference questions, such as "Who was the first American in space?" or "What is the second-tallest mountain in the world?". While an extensive discussion of the system is beyond the scope of this paper, the architecture is briefly describes as follows:

An automated QA system based on a document collection typically has three main components. The first is a retrieval engine that sits on top of the document collection and handles retrieval requests. In the context of web, this is a search engine that indexes web pages. The second is a query formulation mechanism that translates natural-language questions into queries for the IR engine in order to retrieve relevant documents from the collection, i.e., documents that can potentially answer the question. The third component, answer extraction, analyses these documents and extracts answers from them.

In testing their system, they used questions from the TREC-8 text retrieval competition, and compared their system with the performance of Google and AskJeeves, finding that MULDER outperformed them both in terms of recall and "user effort" (actually a word distance metric) to achieve given levels of recall, and thus shows promise for implementation and use in a real setting.

Their work draws heavily from linguistics and natural language processing, computing science and some information retrieval. Sadly, although it was funded by a Digital Library Initiative grant originally entitled "Automatic Reference Librarians for the World Wide Web", no citations to or recognition of research or professional literature from librarianship appears in either this paper or the original proposal.

To be sure, the same can be said of the vast majority of library literature as well. One is left to speculate how much the validity and thus the usefulness of these research and development strains would increase if they took place with a greater mutual awareness and cooperation. It is difficult to imagine that

there would not be ideas and findings of value if they were known, shared, and developed together. Cooperation between these vibrant and complementary communities of research and practice could be among the most important ways to advance our knowledge and activity.

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Acknowledgements

Many thanks to Lorri Mon, who has provided invaluable assistance and has conducted the research study discussed in section 2. The results of that research will be published under her name. Thanks also to the subscribers to DIG_REF, specifically the people who participated in the reference interview thread last October, in particular Sara Weissman at the Morris County Library, Camilla Baker at Canisius College Library, Pauline Lynch of AskERIC and Patricia Memmott of the Internet Public Library.

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