

INTRODUCTION TO LIVE ONLINE REFERENCE

In the 1957 movie *Desk Set*, efficiency expert Spencer Tracy attempts to replace reference librarian Katharine Hepburn with an electronic brain, but the idea blows up (literally) in his face. After Tracy feeds too many questions into the machine too quickly, the apparatus explodes, hisses, and spews sparks, smoke, and missiles throughout the library. Unlike the smoldering machine, Hepburn deftly answers rapid-fire reference questions launched at her with efficiency, grace, and style. By the movie's end Hepburn wins both job security and Spencer Tracy's admiration and love. "No machine can do our job," proclaims the triumphant librarian.

In the 1968 movie *2001; A Space Odyssey*, the computer character HAL is depicted in the beginning of the film as a gregarious, automated helpmate befriending and assisting his fellow space voyagers. As the story unfolds, the machine gradually begins to manipulate the environment. Like a latter-day Frankenstein, HAL gains control of and for a short time dominates the humans who created him.

Clifford Lynch used these two movies in his keynote address at the Third Annual Digital Reference Conference to demonstrate the difficulty of trying to effectively synthesize human skills and computer capabilities, the primary goal of live online reference service. In the *Desk Set* example, the human trumps the machine; in *2001* the machine trounces the human. But neither movie provides a clue about combining content and people to form a computer-based social system, Lynch says.

This report is intended to help librarians peacefully coexist with their automated information systems and provide effective online reference assistance to library patrons—not by abandoning their exploding computers and reverting to manual reference, nor by letting the machines take over. Rather, the goal is to combine the strengths of humans and machines to deliver library reference services.

In this report you'll find practical information on live online reference service systems, equipment, and supplies, as well as information on evolving technologies. Armed with this information, librarians can harness the benefits of automation to craft systems, policies, and procedures to provide effective online library service to patrons.

For many librarians, the selection and implementation of the correct virtual reference software determines the ultimate success of this service. This report details information on the software and systems most commonly used in online reference service. System descriptions ranging from e-mail, chat, instant message, and audio and video communications are included. Librarian and author Steve Coffman says, "software is at the heart of virtual reference" and will "define the kind of service you can offer and how you offer it." (Coffman, Sept./Oct. 2001, p. 15)

Clifford Lynch says the technology is not what makes online reference sophisticated frontier work. The frontier work is the nontechnical social aspects of automated reference—which Lynch characterizes as squishy things—that present the greatest challenges and opportunities for librarians. (Lynch, Nov. 12, 2001) Staffing issues, standards adoption, privacy, and competition be-

tween libraries are among the squishy areas that can make or break online reference projects, and this report examines these topics as well.

This report also offers case studies of live online reference service in different types of libraries. As Coffman notes, "until recently, every library that started a service had to go through the time-consuming process from the ground up, and often they...were simply reinventing the wheel with no easy way to capitalize on the knowledge and experience of libraries that had been operating these services for awhile." (Coffman, Sept./Oct. 2001, p. 20) Now that several libraries have experimented with online reference, others can take advantage of the precedents set.

A word of caution about establishing an online reference service: because you are offering virtual service, patron expectations are elevated. People expect that when a computer is being used, somehow all the information in the world is available. "How many cars got stuck in the mud in the year 2000?" now seems like a reasonable question because computers seem omniscient. (O'Neill, Nov. 13, 2001)

Expectations about live online reference service also are high among professional librarians. Virtual reference is one of the great emerging trends in librarianship and is an integral part of many library leaders' future vision. The online reference service offers the possibility of delivering help live, anywhere, anytime to anyone.

Though some librarians welcome this transformation, eager to harness the anticipated benefits of anytime, online access to library services, others dread it. Coffman writes, "starting a virtual reference service includes many unanswered questions and unresolved issues...(and) plenty of risk..." (Coffman, Sept./Oct., 2001, p. 15) Library science professor Charles R. McClure asks: is live online reference "on the cutting edge, or the bleeding edge of library service?" (McClure, Nov. 11, 2001) Or, as one librarian at Miami-Dade Community College North Campus Library in Miami said, "Virtual library science is the frontier of library science, but you know what happened at the frontier: some people claimed their stakes and others got shot." Whether librarians ultimately are the victors in this brave new world remains to be seen.

Live online reference service profoundly alters traditional library services. Service shifts from finding the right book for the right person at the right time to connecting the right information or knowledge to the right person at the right time. Library science professor Kenneth E. Dowlin sees this shift transforming libraries from a book and site-visit orientation to one focused on remote access. This transformation "will necessarily entail an enhancement and redefinition of library services." (Atkinson, p. 3)

Moving from the traditional reference world to one that is live and online requires great agility and flexibility. Librarians are "building two libraries simultaneously, a digital one and traditional one," said Ross Atkinson (p. 3), Cornell University's library administrator, which is never easy.

Re-examine your purpose in undertaking this service before you begin. "[B]ear in mind...that this transition is not something being done to us, but is rather something we have chosen to do in fulfillment of our most basic service mission." (Atkinson, p. 3)

Why are so many librarians beginning, or thinking about beginning, a live online reference service? The promise of bringing library reference service to patrons whenever, wherever, and however services are needed is the 21st century extension of the library's mission. By establishing and maintaining

live real-time reference service, librarians hope to move one step closer to providing unlimited library access.

What is live online reference service?

Live online reference services enable patrons to receive information over the Internet from a librarian who is really there when the person needs that information. To some, this service sounds easy. But the provision of such a service is far from simple. The difficulty derives from trying to combine three elements—live, online, reference help—at once.

For a long time librarians have been able to do two of the three actions simultaneously. Telephone reference, a standard service offered in most libraries since the 1950s, provides live reference service. Though telephone reference can be effective, it lacks some benefits offered by a computer. A librarian has trouble pushing Web sites to patrons—escorting them through databases or co-browsing the Internet—over the phone.

E-mail reference effectively combines the computer and reference help but is usually not done in real-time, meaning the person must wait—sometimes up to a few days—for a response. Only by combining all three aspects of the service as outlined above can a librarian exploit all the capabilities of a computer and the Internet to help a remote library user.

As Lehigh University Library's Stacey Kimmel and Jenne Heise write (p.1), the new twist that live online technology brings is the ability for "customer service representatives [*read: librarians*] to interact with their clients over the Web." The features available "take the reference interaction beyond the older technologies of phone and email."

Because the concepts and technology are still emerging, the terms used to describe the service are still evolving. Throughout this publication the words online, digital, and virtual are used interchangeably. Likewise, the terms real-time and live mean the same thing throughout: synchronous, interactive communication.

For clarification, here are some additional definitions for terms used in this report:

AskA services—"Internet-based question-and-answer services that connect users with experts and subject expertise." (Virtual Reference Desk, www.vrd.org/about.shtml, Nov. 9, 2001.)

Asynchronous online reference—The use of "either a Web page or e-mail to take a question into a service at any time, and to answer it when resources are available." Asynchronous reference assumes "users can either completely represent their queries without a reference interview or that such limitations can be overcome through a series of exchanges...over time." (Lankes, 2000, p. 8)

Co-browsing—A feature that allows the librarian and patron to navigate the Web together remotely.

Digital reference—A "network of expertise, intermediations, and resources put at the disposal of a user seeking answers in an online/networked environment." (McClure, Nov. 11, 2001) The term encompasses virtual, online, electronic, cooperative, collaborative, and networked reference.

Unlike traditional reference, digital reference service is assumed to be “a multi-part process where a user seeks a solution to an information problem...not just a question followed by an answer,” (Lankes, Nov. 12, 2001) “Both digital reference services and AskA services use the Internet to connect [users] with people who can answer questions and support the development of skills.” (Virtual Reference Desk, www.vrd.org/about.shtml)

Customer Relationship Management (CRM)—The process by which a company interacts with its customers, gathers information about them (needs, preferences, past transactions), and shares this data within marketing, sales, and service functions. (Kimmel and Heise, p. 10)

Disintermediation—“The removal or reduction of the role of librarians in linking the user with information.” (Atkinson, p. 4) Disintermediation simply eliminates the middleman from reference service. (Thomsen, p. 11)

Electronic Customer Relationship Management (ECRM)—Using the Internet and software tools to provide electronic sales, marketing, and customer services. ECRM can include chat, email, online self-service, online purchasing, and other services. (Kimmel and Heise, p. 10)

Escorting—A feature that “allows the librarian to ‘lead’ a patron around the Web.” (Blank, Phil, www.lib.duke.edu/reference/liveonlineref.htm. Updated Oct. 15, 2001)

Knowledge bit or “knowbit”—“A combination of an inquiry and a response, linked together with human knowledge.” (Butler, as quoted in Lankes, 2000, p. 93)

Knowledge base—A distributed index of question-and-answer archives across all services involved in a consortium. (Lankes and Kasowitz, p. 211)

Live online reference—The same as real-time reference. Strictly speaking, live online reference could be provided without being done in real-time and without involving in interaction with a questioner. For this report, the interactivity between questioner and librarian is assumed.

Metadata—“Information about data itself...used to understand, manage, and facilitate the sharing of and searching for materials on the World Wide Web.” (Lankes and Kasowitz, p. 211) Within digital reference, metadata is applied to questions to facilitate their coding and transfer.

Online reference—See **Digital reference**.

Real-time reference—Digital reference provided by a live person interacting simultaneously with the questioner.

Reference—The “personal assistance provided by librarians to individual library users to meet their information needs.” (Rothstein, as quoted in Peterson, p. 37)

Synchronous online reference—The opposite of asynchronous online reference. Uses “either a Web page or e-mail to take a question into a service and answer it” simultaneously with the user posting the question. (Lankes, 2000, p. 8)

Web site pushing—Web-sharing feature that allows a librarian “to type in (or paste) a URL and click a button causing the page to show up on the patron’s browser.” (Blank, Phil, www.lib.duke.edu/reference/liveonlineref.htm. Updated Oct. 15, 2001)

Electronic resources about digital reference

One of the best ways to begin planning for online reference service is to consult one of the many online sources. The most comprehensive resources are provided below. The references at the conclusion of this report provides additional resources.

Virtual Reference Desk

www.vrd.org

800-464-9107

Sponsored by the U.S. Department of Education; operated by the Information Institute of Syracuse, Syracuse University's School of Information Studies.

Virtual Reference Desk (VRD) is the best place to begin gathering data about live online reference service. Anything you need to know about virtual reference should be available through the VRD site. VRD is sponsored by the National Library of Education (NLE) and the ERIC Clearinghouse on Information and Technology, with support from the Office of Science and Technology Policy. VRD "seeks to identify and provide the resources necessary to link all K-12 community members (e.g., students, educators, parents, etc.) to necessary expertise in order to satisfy information needs." (Lankes and Kasowitz, p. 207) VRD is operated by the Information Institute of Syracuse, Syracuse University. VRD produces the Annual Virtual Reference Desk Conference, which focusing on digital reference (now in its fourth year). Other VRD services include: a database of AskA services, a starter kit with advice and methods on beginning an AskA service, and the Dig_Ref listserv. From its homepage you can find information about and links to publications, conferences, training opportunities, and online service providers. VRD maintains a network for the submission of out-of-scope questions to other digital reference services along with providing assistance through its Incubator Software product, training, and research capabilities.

Listservs

Dig-Ref Electronic Discussion List

www.vrd.org/Dig_Ref/dig_ref.html

The Virtual Reference Desk's electronic discussion group includes more than 2,000 virtual colleagues discussing digital reference.

LiveReference Electronic Discussion List

www.egroups.com/group/livereference

This listserv focuses exclusively on live online reference service.

Libref

www.library.kent.edu/libref-l

Libref encompasses all aspects of reference service, but live online service is one of the topics discussed.

MOO is an object-oriented multi-user domain.

Association of College and Research Libraries (ACRL), www.ala.org/acrl

Library and Information Technology Association (LITA), www.lita.org

Public Library Association (PLA), www.pla.org

ALA Task Force on Privacy, www.lita.org/docs/privcon/report.html

Registries of virtual reference projects

AskA Digests

www.vrd.org/AskA/digests/shtml

Subject arrangement of the Virtual Reference Desk's research into existing AskA services. Topics included range from paleontology to construction.

Phil Blank's Live Reference Product Survey, Duke University

www.lib.duke.edu/reference/liveonlineref.htm

This site offers a valuable evaluation chart comparing the features of five major reference products on the market and a section of advantages and weaknesses for each product and service. Background information and links to related sites also are provided.

ELITE Project, University of Leicester, University Library

www.le.ac.uk/li/distance/eliteproject/project/elite.html

As part of the University of Leicester's Electronic Library Project, interactive Web pages, electronic delivery of documents, e-mail communications, net conferencing, video conferencing, MOOs, and chat are included at this site. Especially helpful for online reference providers is the listing of libraries around the world using these technologies.

LiveRef Registry of Real Time Digital Reference Services

www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm

This categorized list of libraries offering real-time library reference or information services includes services using chat software, live interactive communications utilities, call center management software, customer interaction management software, Web contact center software, bulletin board services, interactive customer assistance systems, or related Internet technologies. The site is maintained by Gerry McKiernan, the science and technology librarian and bibliographer at Iowa State University Library.

The Teaching Librarian

<http://pages.prodigy.net/tabo1/index.htm>

Stephen Francoeur, a librarian at Baruch College, was interested in exploring how he could "expand his role as a teacher at the reference desk (regardless of whether that desk is real or virtual)." This Web site, which is his personal site and not affiliated with his employer, provides a useful index of chat reference services, grouped by software and library.

ALA resources

Librarians can always turn to the American Library Association (ALA) for information about recent developments and trends in librarianship. Because of the library industry's broad interest in the subject, various aspects of digital and online reference have been addressed by many ALA divisions. For instance, Association of College and Research Libraries (ACRL) sponsored a program entitled "Digital Reference: Trends, Techniques and Changes" at the New Orleans conference in January 2002. Library and Information Technology Association (LITA) included several articles on online reference in its online journal, *Information Technology and Libraries*. *Public Libraries*, published by Public Library Association (PLA), provides an excellent overview of the subject as a supplement to its Sept./Oct. 2001

issue. The complex issue of patron privacy, including the sticky problems arising with online reference, is being addressed by a newly formed ALA Task Force on Privacy.

One of the most active ALA divisions exploring live online reference has been Reference and User Services Association (RUSA). Its Machine-Assisted Reference Section (MARS) sponsored an ALA Midwinter 2002 discussion forum called "We Deliver! Bringing Live Reference to Our Users" and hosted a preconference entitled "Digital Reference @ Your Library" at the ALA Annual Conference in June 2002. (At the 2001 Annual Conference, a Digital Reference Committee was established within RUSA to provide a forum for discussing the topic.) Additionally, the MARS Products and Services Committee, which strives to "create, collect, analyze, evaluate and disseminate information on...electronic reference products and services," provides another avenue for exploring the topic within a professional setting. (<http://ready.library.univ.edu/~jvaughan/ala/index.html>, Feb. 5, 2002, Feb. 11, 2002)

Reference and User
Services Association
(RUSA), www.ala.org/rusa

MARS, www.ala.org/rusa/mars

Online bibliographies

Digital Reference Resource Database

www.vrd.org/database.shtml

Virtual Reference Desk's database of resources about digital reference refers to more than 90 articles, books, and Web sites.

Digital Reference Services: A Bibliography

www.lis.uiuc.edu/~b-sloan/digiref.html

Bernie Sloan at the Graduate School of Library and Information Science at the University of Illinois at Urbana-Champaign developed this bibliography for a research project. The items in the bibliography relate to the topic of online or virtual or digital reference services.

LiveRef Registry of Real Time Digital Reference Services

www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm

This bibliography is part of the overview site LiveRef described above.

Other resources

QuIP

www.vrd.org/Tech/QuIP

Provides information about the Question Interchange Profile (QuIP), a proposed standard to facilitate transferring questions between reference services.

NISO Workshop on Networked Reference

www.niso.org/news/events_workshops/netref.html

Agendas, presentations, and background from the April 25-26, 2001, national workshop that led to the decision to promulgate digital reference standards can be found here.

Assessing Quality in Digital Reference

<http://quartz.syr.edu/quality>

Source for information about a national study being conducted to assess quality in online reference services.

Internet Use Statistics

www.pewinternet.org

An outstanding resource for statistics on home Internet use.

Standards Development

www.niso.org/committees/committee_az.html

Web site for the NISO (National Information Standards Organization) committee investigating the establishment of digital reference standards.

History and status of live online reference service

Live online reference service is a hot topic. Programs on the subject draw standing-room-only crowds, hands-on demonstration sessions fill up within minutes of their announcement, and online reference software products are proliferating. The few library science faculty members expert in the topic are in great demand for writing and speaking engagements. Attendance at the Virtual Reference Desk's Annual Digital Reference Conference has grown from 250 people to more than 450 in just three years. About 700 attendees are expected for the 2002 meeting, to be held in Chicago in November.

Interest in the subject has shifted from information gathering to establishing programs to deliver live online reference. "There are lots of libraries doing lots of interesting and neat things" with virtual reference, says Charles R. McClure. (McClure, Nov. 13, 2001)

Because of the service's rapid growth, knowing exactly how many virtual reference services exist is difficult; however, general agreement is that their numbers are impressive and growing. Research conducted by library science professor Joseph Janes indicates that 45% of academic libraries and 12.5% of public libraries in the United States offer some form of digital reference service. (Janes, 1999, and Janes, 2000) Gerry McKiernan's registry of live online reference services included more than 75 libraries providing that service as of Oct. 12, 2001. (www.public.iastate.edu/~cyberstacks/LiveRef.htm) As of March 2002 LSSI's Virtual Reference Desk, one of the major software products for providing online reference, had more than 40 library installations.

A dizzying array of companies and products have sprung up to provide online reference software and support. Companies begin, are sold, or go bankrupt almost daily.

Seven to 10 major vendors of virtual reference software are in business. A host of nonlibrary software solutions also are being adapted by local libraries. More detail on these products and applications is provided in Chapter 3.

Several reasons are offered to explain the proliferation of interactive online reference services. Syracuse University library science professor R. David Lankes says online reference service is a natural outgrowth from the establishment of digital libraries. First, content was put online, with little thought

given to how people would use or access this information. But people quickly saw that content itself is not useful without assistance in finding it. Digital librarians are needed to help people navigate their way through the digitized information. (Lankes, Nov. 12, 2001)

Distance students also are driving the need for online reference. With thousands of students taking courses many miles and in some cases many time zones away from their institutions, online reference service is a necessity. Commuter students also have increased the need for automated assistance. The ubiquity of Internet access and capabilities for remote library access also explain the need for online assistance. (Nesbit, Nov. 12, 2001)

Elevated user expectations are leading some libraries to embrace live online reference. "Users want convenient...continuous service access, 24 hours per day, 365 days per year, from anywhere," Richard Sweeney says. (as quoted in Cassell, p. 6) "Users want the power to decide when, where and how to obtain access to a library service. They even want to determine the level of library service they should receive." Increases in complexity of information resources also are driving the need for online assistance. For many people, navigating the Web without assistance is impossible.

In some cases librarians are pushing for online reference to stay relevant. Declining usage statistics in circulation and traditional reference service have motivated some librarians to turn to online service as their salvation. One speaker at the Virtual Reference Desk Conference tellingly subtitled a presentation, "Winning Back Our Patrons."

Though the exact numbers have been debated, patron use of traditional library reference is declining. "There are indicators from some sources that the numbers of questions asked in libraries is decreasing," concluded one ALA statistical analysis of library usage patterns. Likewise, the Association of Research Libraries (ARL) found reference transactions were down an average of 1.4% per year from 1991 to 2000. From 1999 to 2000 reference numbers went from 129,089 to 117,027. Total circulation decreased 0.7% as an annual percentage change from 1991 to 2000, with circulation dropping from 505,378 to 472,853 in the last year.

According to one *Library Journal* report, five of 10 librarians report circulation is declining. ("Book Report 2000," p. 131)

Some librarians have jumped on the automated assistance bandwagon in response to a perceived threat from services such as AskJeeves. As reference coordinator Kelly Broughton writes, "If we don't do it now, someone else will. There are plenty of non-library-oriented Ask-A services out there on the Internet, and not all of them do things nearly as well as we could." (Broughton, p. 27) Both commercial and nonprofit organizations are offering many of these information services.

One study found that, of the digital reference services currently listed in the Virtual Reference Desk's AskA+ Locator service, only 18% had some sort of library affiliation, with about half of them staffed by librarians. For several of the AskA services, the staff was provided by an assortment of experts.

Changing staffing patterns also have attributed to the explosion of interest in virtual reference service. The use of paraprofessionals in some libraries has freed librarians to concentrate on higher-level tasks. This shift in hiring practices permits employing professionals who can dedicate more time to online reference, instead of handling less-demanding in-person questions, such as directions or hours.

Service Trends in ARL Libraries, 1991-2000,
www.arl.org/stats/arlstat/graphs/2000+1.html

ALA statistical analysis of library usage patterns,
<http://cs.ala.org/@yourlibrary/factsheet2.com>

Library Affiliations in the AskA+ Locator, VRD—A Report of Library-related AskA Services,
www.vrd.org/AskA/library.shtml

The broader societal change toward greater use of temporary or contract staff has created a workforce willing and able to deliver reference from unconventional work sites, such as from home during off-library hours. Most of these freelance librarians, often calling themselves information professionals or information brokers, hold an MLS or MLIS degree. A limited number of paraprofessional staff choose this employment option.

Some libraries have been especially eager to embrace temporary contract employees because of budget constraints. Since contract employment allows libraries to stretch their limited staffing budget, the existence of this alternative makes experimentation with virtual reference service possible. Also, in the face of shrinking budgets, libraries have been forced to differentiate services to different populations of patrons both inside and outside their organizations. Virtual reference service is one way to more effectively try to reach all the populations that libraries must serve.

The move to live online reference is a natural outgrowth of the library's mission. Ever since reference service began, librarians have been trying to make asking questions easy for patrons. In the 1800s patrons needed to walk into the library to pose their question. By the 1930s, they could deliver the inquiry via telephone or in person. By the 1990s e-mail took its place alongside the phone. The natural progression for the 21st century adds live online reference, via chat, voice, and video to the technologies libraries use to deliver library assistance.