Reference Services in the Digital Age[1]

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Abstract

Reference services have always been a key element in libraries. They provide personalized guidance to library users in accessing appropriate information resources to meet their needs. With the amount and complexity of information increasing, the need to differentiate useful information from misinformation, and the rising needs and expectations of users, reference services are even more important today than before. Fortunately, technology offers opportunities to provide and enhance these services. This paper describes some of the emerging digital reference services, including e-mail and web forms, text-based chat services, web-camera based services, ask-a-….. services, digital robots, and collaborative services. The future of digital reference services is also explored.

A library plays different roles for different people. To some, it is a place to read books for relaxation and newspapers to keep up to date; to others it is a place to do research; to others still, it is a place for seeking information in response to a particular need. Today, the informational role of the library is emphasized.

Libraries and librarians play an important role in providing access to information, organizing it, and helping users find the information they need. One key element of libraries has been the reference service, where librarians help users to find an information source or the information itself to meet their individual needs.

With the amount and diversity of information available on the Internet and in databases constantly increasing, the lack of organization on the web, the demands of users who want quick, clear answers in response to an information need, and (sometimes) the lack of skills among users to find information, there is an even greater need for reference services today.

Fortunately, information and communication technology (ICT), and in particular the Internet and online services, provide opportunities for enhanced reference services. Many libraries are now offering, or considering offering, reference services via the Internet to their users.

This paper describes the emergence, concept and practices of reference services in the digital age, with a focus on digital reference services.

The Changing Role of Libraries

Libraries are organized collections of books, journals, and other sources of recorded information. They commonly include reference works, such as encyclopedias, that provide factual information, and indexes, which help users find information in other sources (Library, 2004). Over the last few years, libraries have also started providing access to information in electronic formats, such as CD-ROMs, the Internet, and online databases.

The traditional role of the library has always been as an intermediary between the information producer (or publisher) and the user. For information producers, the library acted as a clearinghouse of products. Information producers would normally provide the library with their products, thus reducing the administrative problems and costs of providing the products directly to the users. For the user, the library was an efficient instrument to make available a limited set of relevant information sources out of the entire universe of publications. The library acted as a selective filter and quality instrument, making available to the user only those publications that were relevant and of sufficient quality. Also, since publications were acquired through library funds, information was usually made available to end users either free of charge or at minimum cost (Owen, 1997).

The traditional roles of the library can be summarized as:

Selection: choosing and acquiring information resources available in the marketplace, based on user needs, quality standards, and the available budget;

Storage: maintaining the availability of publications through short-term as well as long-term storage and preservation;

Service: making the information resources available through facilities and procedures for on-site use, circulation, and loans to and from other libraries;

Support: providing guidance and assistance to the user, including the development of support systems such as catalogues, user education, reference services, etc.

Today, there has been a shift in the role of the library, from a clearinghouse of products and a service centre for printed publications towards becoming an intermediary for traditional materials, **and** for networked services based on digital information resources. These information resources come in various formats – printed, audio, video, multimedia, and electronic. The resources may or may not be owned by the library. Some of these resources may be free and available to users directly, others are available only through libraries that have acquired them.

Libraries are also expected to "add value" to the products and services. Adding value to information is part of the core and expertise of libraries. Value is added to information by facilitating access through indexing and bibliographic description, and through the creation of systems, which make information more logically organized and easier to find. Librarians themselves add value to the collections (both traditional and networked) by helping users navigate the universe of information through content development, instruction, search services, and reference assistance (Cunningham, Ascher and Brown, 2003). One form of adding value is the provision of reference services.

Reference Services

Reference services arose in the late 19th and early 20th centuries in response to several forces and trends, including:

- an increase in the number and variety of information resources available in libraries and outside,
- an increase in the complexity of those information resources,
- these increases [above] combining to make it more difficult for people to find the resource they were looking for, and to find the information they needed within that resource, and

- an increase in the number and diversity of people using libraries (particularly public libraries), leading to a wider range of information needs, enquiries, and sophistication in the search for information (Janes, 2002).

While reference services provided a useful facility to library patrons, the services themselves evolved with time. The changes in reference services were brought about by new patrons, some of whom were not comfortable using networked resources, old patrons with new needs, increasing amount of services becoming digital, and the changing emphasis in teaching, research, and recreation. Perhaps the greatest thrust for changing reference services was the increasing numbers, availability and complexity of online materials in this digital age.

The Digital Age

We are entering the digital age. The primary form of information in this age is in many cases digital. The primary means for sharing information is the digital network. We see evidence of digital technology in every aspect of the economy. With digital technology, information in various formats – text, audio, video and electronic – can be created, stored, organized, accessed and transmitted with relative ease, and in forms that we could not have thought of earlier.

The digital age has brought about many changes to libraries. Some of these changes have been taking place even before the introduction of the Internet in the mid-1990s. The 1980s and early 1990s saw much discussion in libraries on issues such as "print versus electronic", "access versus ownership", "mediated versus unmediated online searching", and professional concerns that gradually widened to include electronic licensing and consortial collection development (Penka, 2003).

Today, the digital age is evident in many aspects of library services. The card catalog has been replaced with OPACs in many libraries; users now search for information from their desktop; users download e-books onto their PDAs; full-text retrieval of information sources is becoming commonplace; and services are increasingly becoming personalized and pay-as-you-use.

With information rapidly spreading beyond books and journals to digital archives, databases, and computer networks, libraries are in danger of losing their role as institutions of information access. However, many libraries are taking advantage of technology to provide enhanced services, develop new community relationships, reach new library users, and enhance the role of the library as an information resource center.

The Internet introduced interactive technologies, such as e-mail, chat, and instant messaging to the reference desk. The potential use of these services has been further enhanced by newer resources, faster transmission speeds, and the need for a patron-focused reference service (Penka, 2003).

Opportunities in the Digital Age

Libraries encounter wave after wave of technological innovations, each offering new options, features, opportunities, and potential distractions. These innovations sometimes bring about paradoxical challenges of keeping up with the changes, implementing the new technologies, and at the same time maintaining a perspective in relation to the libraries' work and core values (Penka, 2003).

Technology, and in particular the Internet, provides many opportunities to libraries. The Internet allows wider access to information available on or through the Internet, facilitates communication (through e-mail) with other libraries, librarians, and members of the user community. The Internet also provides training opportunities for the staff and the users, makes easier inter-library loans and document delivery, improves cataloging (copy

cataloging and original cataloging), and creates an improved image among the users through the web site (McClure, 1996).

Basically, the Internet allows libraries to have newer modes of communication and outreach. It allows librarians to provide information and services in a whole new setting. One area where the Internet has great potential is in the provision of reference services.

Emergence of Digital Reference

Prior to the use of the Internet, librarians relied on face-to-face communication, telephones and the fax machines to answer reference queries. With the growth of the Internet, librarians were provided with the opportunity to communicate via another medium that was cheap and available for asynchronous communication. Libraries sought to supplement the traditional services to provide access in an electronic environment.

One of the first services to go online was the Electronic Access to Reference Service (EARS), launched by the University of Maryland Health Services Library in Baltimore in 1984. Although initial e-mail-based digital reference efforts received little attention from users at that time, digital reference services grew over time and became increasingly popular, eventually leading such internationally-known services as AskERIC in 1992 and the Internet Public Library in 1995 (Wasik, 1999). Thus emerged digital reference.

Digital reference has been described as assistance offered by librarians to users through the Internet. A simple definition of digital reference service is "a mechanism by which people can submit their questions and have them answered by a library staff member through some electronic means (e-mail, chat, web forms, etc.)" (Janes, Carter and Memmott, 1999).

A more formal definition refers to of digital reference as "a network of expertise, intermediation and resources placed at the disposal of someone seeking answers in an online environment. …Digital reference can provide support for users who find online tools and resources unfamiliar, difficult to learn, or insufficient to answer their information needs. It can also provide valuable user feedback to collection builders so that they may better tailor their resources and maximize their investment in content creation" (cited in Berube, 2003)

A digital reference service generally comprises four elements:

- The user of the service
- The interface, in the form of an e-mail, a web form, a videoconference, etc.
- A librarian, or information professional, and
- Information resources, print or electronic (Berube, 2003)

The development of digital reference parallels the development of libraries itself, moving from traditional, to automated, to hybrid, and eventually to digital. In traditional libraries, the focus is on the containers of information; reference services are location-bound. In digital libraries, the focus is on the information itself, and reference services are not bound by location.

With the increasing amount of resources available in electronic format, research performed using print resources only will yield limited results. Users expect librarians to search a combination of print and digital resources to find the information they want. Similarly, reference services provided in the traditional physical settings may be limited in their scope (Parsons, 2001).

Digital reference services provide many benefits for libraries. They can potentially operate 24 hours a day, 7 days a week when spread over a number of time zones; they provide services without regard to location or person. Digital reference services are available at the point of demand, i.e. the desktop. Digital reference also adds value overall to library service in that it supports social inclusion by extending reference services to physically-challenged users who cannot come to the library for one reason or another. With digital

reference services, these users can access information and receive real-time guidance from librarians (Berube, 2003).

Digital reference services can take many forms, but they can be divided into two broad categories (adapted from Francoeur, 2002)

1. *Asynchronous transactions*, where the there is a time delay between the question being posed and the answer being given. Asynchronous transactions generally take the form of

    a. *E-mail*, whereby a user sends a question or a request to the librarian or a specifically designated reference service section (e.g. libref@libraryname…) via regular e-mail. The user supplies whatever information he or she feels is necessary. The librarian may ask for clarification if necessary, and sends the answer in a return e-mail, or through telephone or fax.

    E-mail reference service is popular from the users' perspective because it is widely available, it does not require additional software, it is non-threatening and non-intrusive, and the question can be stated in the user's own style of language. From the librarians' perspective, e-mail-based reference is easy to implement, and no extra training is required.

    b. *Web forms*, where users click on a button on the library's web site, which pops up a form where the question can be typed in. Other specific information (e.g. name, e-mail address) must also be filled in together with the question. The completed form is then sent to the library by clicking on a "send" (or "submit" or something similar) button. The library may replay by e-mail, telephone, fax or letter.

    Web forms provide a structured format, and facilitate the framing of a question.

    c. *AskA services*, which are usually corporate-sponsored web sites that allow users to ask questions and receive answers for free from public information located mainly on the World Wide Web or from proprietary databases and networks of field experts. A variety of AskA services exist, Ask-An-AntarcticExpert to Ask-A-Reporter. A list of current AskA services is available at http://www.vrd.org/locator/subject.shtml

2. *Synchronous transactions*, which take place in real-time with an almost immediate response to a query or a request. Synchronous transactions generally take the form of

    a. *Chat reference, using simple technologies*, where the reference librarian and the user can communicate with each other using short text messages in real time using normal chat software. The service may be using free instant messaging software (e.g. ICQ or AOL Instant Messenger), web-based chat rooms (e.g. Anexa.com), or chat software (e.g. ConferenceRoom from WebMaster).

    This form of reference is easy to use and allows basic communication. The user begins by typing in an opening query or question. The librarian may negotiate the query if necessary, before leading the user to the information source.

    b. *Chat reference, using web contact software*, where the software allows for instant messaging, and also allows collaborative browsing between the librarian and the user. The system usually consists of a split screen where in one screen the librarian and users can see each other's typed questions and responses, with the other screen showing web pages, or other electronic information resources, or a library's catalog screen. The librarian can show the user particular pages or screens, while carrying out a text-based conversation with him or her.

    This has the advantage that the user is actually able to see what the librarian was referring to, instead of just a text-based description. Individual libraries usually offer this service at specific times of the day. In some systems, the text transactions can be recorded and e-mailed to the user as notes to refer, and for the librarian to keep for records.

Some products are designed specifically for use in library settings, including Virtual Reference Software from LSSI, and 24/7 Reference from the Metropolitan Cooperative Library System, while some commercial products, such as LivePerson, may be adapted for use in library settings (Kasowitz, 2001).

c. *Video-conferencing or web-camera services*, where librarians and users are able to see each other in one window of the monitor through a camera. Web sites or other electronic resources can be displayed in another window on the monitor.

d. *Digital reference robots*, use principles of artificial intelligence to respond to questions. A user types in a question, and the system interprets it by asking the user to choose from a set of differently worded questions. Based on the choice, an answer is then provided. The best known of these systems is AskJeeves available on the Internet.

3. *Collaborative digital reference services*, where two or more libraries team up to offer reference services using any of the above formats. The user would send a request to a member library, which would be forwarded to the member library best able to answer the question. The library may receive the question because it has the domain strength, or that it may be located in another time zone that was open when the user posed the question.

Many libraries have recognized the benefits of providing collaborative digital reference service. Existing library consortia are adding digital reference to current shared services, and networks of libraries in different locations are getting together to share question loads and expertise.

In 2002 the Library of Congress (LC) and OCLC began exploring ways develop a Collaborative Digital Reference Service (CDRS). The notion behind CDRS was that creating online networks of libraries would combine the power of local collections and staff expertise with the diversity and availability of libraries and librarians throughout the world, 24 hours a day, 7 days a week. The CDRS pilot project eventually involved over 260 libraries of various types in the United States, Canada, the United Kingdom, Europe, and Asia. In June 2002, LC and OCLC introduced *QuestionPoint*, a cooperative digital reference service that evolved from CDRS and operates on a subscription basis (Penka, 2003).

Although there are slight variations among services, most digital reference services function in a similar manner. Human intermediaries evaluate incoming questions via e-mail or web forms or AskA services, and then decide on an appropriate course of action. New questions may be checked against an archive of previously answered questions for an appropriate answer. If no suitable answer is found, the question is passed along to an expert for answering. The expert supplies the necessary information, which may consist of an actual answer (factual information), pointers to additional resources (information referral), or some combination (Wasik, 1999).

Several developments have made possible the growth of digital reference services. One factor has been the dramatic growth in the number and type of tools available to support digital reference services, and products and services directed specifically at libraries. At the Virtual Reference Desk 2002 Conference (one of the annual conferences dedicated to the advancement of digital reference), one presentation provided a comparison of 18 products and services used by libraries offering digital reference synchronously and asynchronously. Of those systems presented, six were specifically developed or targeted directly to libraries, such as QuestionPoint, LSSI, and 24/7 Reference (Penka, 2003)

Other factors leading to a growth in digital reference are an increase in research and development in that area, and standards development for digital reference systems. Recent research on librarians' experiences and attitudes about digital reference, statistical and qualitative measuring of reference service, and the establishment of a research agenda at the

Digital Reference Research Symposium point to this growing emphasis on digital reference. In 2002, NISO initiated the AZ standards committee for networked reference (Penka, 2003). IFLA, through its Reference Work Section, has produced a set of Digital Reference Guidelines, and has also initiated a Digital Standards Reference Project.

There are many digital reference services available today. LiveRef at *http://www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm* keeps a registry of real-time digital reference services.

The Future

It is difficult to predict the future, but looking at the trends and changes taking place, it is quite possible that the next few years will see:

A more prominent role for reference services, where the services provided are attractive, effective, evaluated, marketed, integrated, professional, institutionalized, value-based, and appropriate (Janes, 2002). Reference services have often been given a secondary role, being offered if there are sufficient staff after having provided for acquisitions, circulation, and cataloging. Reference services have the potential to add value to library services, and thus truly make a difference to library patrons.

A *tiered reference service*, where libraries are linked through collaborative arrangements to share the reference responsibilities. Questions will be attempted at the local level, and if unanswered may be routed to a system level, a consortial level, national level, or even at the international level.

A global digital reference service, where reference questions can be sent electronically and answered by another librarian in another country, who can provide a better answer or a faster response.

A *point-of-need reference service*, where answers are provided at any time, any place and in any form desired by the user. Live reference services are available 24 hour a day (e.g. the *KnowItNow24x7* web site provided by the Cleveland Public Library) which provide the service when needed. Wireless technology and integration of mobile phones and web facilities allow for services to be provided wherever needed. Services are being provided through e-mail, telephone, fax, and others forms depending on users' preferences.

The technology and the mechanisms to create this future are available. There are of course challenges ahead – policies, staff training, privacy, intellectual property, and quality control (Wu and Liu, 2001) -- but they are not insurmountable.

The future is indeed bright for digital reference services!

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