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Exploring the Future of Digital Reference through Scenario Planning

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Abstract

In the final chapter, Nicholson uses the scenario planning method to explore several possible futures for digital reference services. Using two dimensions – funding sources and automation - four different scenarios are developed. Common needs across all four scenarios drive a discussion of both current and future research needs, and are used to position all components from this digital reference research agenda book in a common context.

Introduction

Throughout this work, the authors have developed a research agenda and laid some of the groundwork toward the exploration of this agenda. In order to conclude this book, we will use Schwartz's model of scenario planning (1996) to explore the feasibility of the research agenda, the placement of the work presented here, and other opportunities for researchers in digital reference.

In order to begin the process, we develop several possible future scenarios dealing with digital reference. The goal is not to predict which future will occur, but to explore issues that may drive different futures. The process begins by looking two types of major forces – those that are predetermined and those that are uncertain. The uncertain forces are then used to develop different scenarios of the future, and then commonalities in the scenarios are explored to present fruitful opportunities (Wilkinson, 1998). Finally, the agenda presented in this work will be mapped across these scenarios to confirm what has been presented and explore additional areas of research.

Major Forces

Across all the scenarios, there are some forces that will remain constant. These are assumptions that we are making about the future; these predetermined forces are those that should not change. Some of these major predetermined forces are:

- **Information needs:** People will still have needs for information. In addition, they usually want that information as quickly as possible (or at least want it at their fingertips when they are ready for it). As presented earlier by Lankes and McClennen, it is not useful to separate services into synchronous and asynchronous systems; all that distinguishes the two is the amount of time it takes between steps of the reference process.
- **Need for expertise:** In the future, the need for assistance in finding information will still exist. That assistance may be a human intermediary or may be human expertise captured within a tool, but many people will still need assistance in getting from their state of an information need to the information that will meet that need.
- **Digital information:** Most information will be available through some type of digital or virtual form. There may still be a paper/analog/tangible version of the information, but most information will also be available digitally or through visualization tools. This will include non-textual forms of information such as music, video, and objects.
- **Universal networks:** The concepts of the Internet continue to grow and stabilize, and there still is a universal network that allows those around the world with the technology to connect to communicate and share information easily.
- **Technology convergence:** As more information is available digitally, the devices that convey and store that information will converge. Cell phones that can be used to transfer documents during the call will bring about new methods of telephone reference work, bringing telephone reference into the same domain as live-chat reference. Wireless technologies will allow users to ask for help from any location using portable computers (which may be nothing more than a wristwatch). Users will not be tied to a desktop computer to receive assistance and documents.

There are also some forces that are uncertain. Combinations of these uncertain forces power the different scenarios presented here. The two uncertain forces used are:

- **Funding:** Will there be library services as we have come to know them in the future, paid out of public funds? Digital reference services may be provided through these public services, or may be paid for by the individuals answering the questions. In addition, a future might exist that mirrors the services of today: digital reference services are available through both channels of funding. Many commercial information services (such as Onstar and Cellular 411 services) are adding more types of information in order to assist their customers; are reference desk services on their way?
- **Automation:** Currently, we have not developed tools that are as good as humans in resolving information needs. However, as standards for agents, question archives, and better searching algorithms are developed, it is possible that there will be tools that serve many information needs better than a human. These tools will be based on the training provided by humans; therefore, human expertise is still part of the digital reference system. The uncertainty is whether the human expert will work directly with the end user or whether the expertise will be captured in a system and delivered to the end user as appropriate.

Scenarios

In order to examine these forces, four stories will be told based upon different combinations of the uncertain forces. All stories will have the predetermined forces in common.

		Funding	
		Public	Commercial
Automation	Human	Digital Reference Desk	Universal Answer Center

	System	AutoRef Library Service	GigaSearch Service
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Each of the following scenarios could result from the uncertain forces pushing in a different way. These are not the only possible scenarios from these forces, and these scenarios are not mutually exclusive; they are presented here in order to allow exploration of an appropriate research agenda.

All four stories start the same way:

Kendra has an information need. She uses some type of communication device in order to connect to a reference service via a worldwide network. This device epitomizes the convergence of technology and allows communication via video, voice, text, and file transfer. These devices are available both in handheld form and are also integrated into many other devices, such as computers, cars, televisions, and appliances; therefore, Kendra could be calling from anywhere in a mixed-media communication environment.

Digital Reference Desk

Kendra contacts her local public library's Digital Reference Desk. A librarian works with Kendra through a traditional reference interview through text, voice, or video. Results and appropriate documents, video, and other items are delivered immediately to Kendra's communication device.

Technical Details

This scenario reflects the possibility that the task of reference may not change considerably. The technology will certainly change, but the concept and model of reference may remain the same. However, if the interactions are archived and

indexed, a librarian can use previous questions to quickly answer the needs of new patrons. For many librarians, this is the only future they acknowledge; however, in order to be prepared, this profession must be cognizant of other possibilities.

AutoRef Library Service

Kendra connects to AutoRef, a service paid for by her local library, and submits her question. The AutoRef searches the history of reference transactions, and matches Kendra's questions to previously answered questions, and presents Kendra with a number of topical choices to help her narrow her need to the most appropriate question/answer pairs and information containers.

Technical Details

Since scalability and cost are issues, this type of automated solution may emerge as a way of capturing and leveraging the expertise of reference librarians beyond the single interaction with one patron. This will require advances in search techniques, archiving of interactions, and developments in cross-media searching. A reduction in funding for live human expertise may require this type of solution.

Universal Answer Center

Kendra calls the Universal Answer Center, an extension of the telephone information service offered by telephone companies. This Center can also be reached through integrated devices in automobiles, televisions, and computers. For a nominal fee, the Universal Answer Center will connect the user with a librarian who will conduct a reference interview and assist the user with ready reference needs. More advanced research will require an additional fee, and results will be delivered to the user's communication device.

Technical Details

This type of commercial information service currently lives alongside of publicly-funded services; however, these services are not as ubiquitous as in this scenario.

Convenience information services such as telephone information and OnStar have expanded their range of services, and these services will continue expand in their offering. As librarianship is the profession best qualified to answer a large range of questions, these services may employ these experts to provide high-quality question-answering services.

GigaSearch Service

Kendra submits her search to the commercial GigaSearch Service. She has previously set up an account with this service, so a micropayment is deducted for her search; however, a version that is funded through user tracking and product placement is available. Her search is matched to previously created subject guides through a relevance-feedback based process. As she explores these guides, her behaviors modify the guides for future use.

Technical Details

These subject guides are created by librarians working for GigaSearch. When a user is exhibiting patterns of a search failure, the search is captured and entered into a queue for a librarian to analyze and answer with a new document. The components of the traditional reference process still exist, but are broken up and made scalable by delivering results previously created. In order to stay competitive, GigaSearch employs many automated techniques for broken connections, out-of-date material, and service management concerns.

Common Research Needs

All four of these scenarios have a number of things in common. They all employ humans at some stage to provide the intermediation needed to handle a large amount of information. In the automated cases, the human is involved in the creation of the system, in that the knowledge of the expert is captured and given to the user when appropriate. This difference can be seen as “just-in-time” reference services as compared to “just-in-case” reference services; the creation of better storage, metadata, and searching tools will allow librarians to create storehouses of “just-in-case” reference transactions.

The research framework presented in this book will support all of these scenarios. The exploration of these research areas will allow reference librarians in traditional settings to provide appropriate service in future times of convergence and create new opportunities in the commercial sector for digital reference library services. This will require the library to separate the digital library from the digital service as discussed earlier by Pomerantz. Enterprising libraries might look for these opportunities as a way to outsource services, increase funding, and most importantly, stake out territory in new areas of mediation.

In order to take advantage of these opportunities, research is needed to lay a solid groundwork and prepare librarians for the future. The lenses for research provided by Lankes in the first chapter were policy, instruction, systems, evaluation, and behavior.

Policy research is needed to support these scenarios. User privacy is a key policy issue, especially if systems provide access to previously asked questions.

Another topic for policy research involves the ownership of expertise provided from volunteer experts on a digital reference system. As Whitlatch discussed here, managers of services are faced with the need to create new policies to successfully run the service. If libraries outsource reference services to the commercial sector, new policy explorations are needed to guide library administrators in this process.

Research involving instruction, as presented in this work by Smith, will be needed to develop appropriate methods for teaching reference in this new environment of information convergence and digital reference. If traditionally non-profit libraries are going to work more closely with corporate projects, instruction that prepares librarians for bridging non-profit libraries and profit-centered organizations is necessary.

Systems research is needed to provide the backbone of these scenarios. As more

types of information such as multimedia are available digitally, standards and systems such as those discussed in this book by Goodrum and McClennen must be developed to handle these data sources. Protocols for digital reference transactions, such as the NISO AZ standard (NISO, 2003), will be useful in using question-answer pairs originating in different digital reference systems. Agent-based systems would be useful in helping users/librarians navigate many different database interfaces and other information systems.

Evaluation of services and behavioral research merge in digital libraries, as all of the behavior is recorded in the system logs. Given the increase in the number and types of users, the complexity of multiple technologies, and multiple access points, advances in evaluation research are needed to give managers and administrators a data-based understanding of their services. The bibliomining process (Nicholson and Stanton, in press) combines data warehousing and data mining to help library decision-makers identify patterns of use and create evidence-based measures and reports. However, as the information in the system logs is incomplete and based upon the constraints of the system, traditional usability studies and patron surveys can help managers understand what the system is not providing.

Conclusion

Digital reference services are going to change as technologies converge and competitors arise. Librarians can either stay behind their desks, allowing the competition to grow unchecked, or can become an active player in shaping the future of information mediation. This scenario planning has shown four different futures, but many commonalities. By creating alliances and being prepared through a forward-thinking research agenda, we can place ourselves in the future as the best group for assisting users with information needs, regardless of channel, type of information container, or method of funding.

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