

The IM Cometh: The Future of Chat Reference

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It has been over a decade since librarians first began offering chat reference services to their users. Over the years, librarians have explored a variety of options for providing live online reference. There are chat services that are designed to help users from just one library and others that are intended to help users from a group of libraries. Some libraries restrict questions to ready reference, while others take all questions. There are librarians who monitor the service from reference desks, librarians who only do chat from staff offices, and even some that monitor accounts from a centralized reference center. Librarians have also employed many different technologies which allow them to exchange text-based messages with library users in real time: MOOs, MUDs, IRC, chat rooms, instant messaging, commercial Web-based chat software, VoIP software, and video software with chat components (Francoeur 2001; Sloan 2006). In short, the last ten years have been an era of experimentation and innovation for chat reference services. Currently, the majority of academic libraries that provide chat reference have set up their services along one of these three models:

- the library has its own subscription to Web-based chat software (such as OCLC's *QuestionPoint*, Docutec's *VRL*, or *LivePerson*), does not participate in a chat reference cooperative, and offers limited hours of service
- the library has set up its own screen names in one or more commercial instant messaging services (such as AOL *IM*, Yahoo! *Messenger*, MSN *Messenger*), monitors only those screen names, and offers limited hours of service
- the library shares a subscription to a Web-based chat software, participates in a chat reference cooperative, and offers lengthy or round-the-clock hours of service

In the late 1990s, there were a considerable number of Internet technologies used to offer chat reference; by the early 2000s, that number had shrunk notably. From recent developments, it appears that the coming years are likely to mark another era of expanding technology choices for how chat reference services can be provided. Those who try to predict such developments accurately, though, do so at their peril, as the pace of technological change has quickened considerably and we begin to enter an environment of ubiquitous computing so well described by Morville in *Ambient Findability* (2005). The ways in which we can offer a chat service are constrained by the technology available. As the technology changes, so too will our services. This chapter analyzes current technology trends and maps how those changes will shape chat reference services in the near future.

Before delving into the trends themselves, it is worth taking a moment to sketch the history of chat services. Sloan's research into the history of virtual reference services suggests that the first library-based chat reference service was

launched in 1996 by Michigan State University (2006). From 1996 to 1999, most libraries offering chat reference were using either instant messaging software, chat rooms, or homegrown software (such as that used by Temple University). These years mark the first era of chat reference services, when none of the library vendors were providing chat reference software and the functionality of the available software was limited. A new era of chat reference began in 1999-2000, when libraries first began using robust chat software originally designed for online retailers (such as Lands End and L.L. Bean) who wanted to be able to chat with customers on their Web sites and direct them to specific pages on their sites. These feature-rich chat products generated a great deal of attention in the library world for the next five or six years, as they provided a raft of features that made chat reference seem more respectable and professional. Many libraries signed up for expensive subscriptions to a class of chat technology that will here be referred to as "Web-based chat software."

Glossary

Web-based chat, Chat:

Throughout this chapter, live chat programs like QuestionPoint, LSSI, and Docutek will be referred to as "Web-based chat" or "chat." These feature-rich products frequently offer co-browsing, page pushing, and the ability to form multi-library staffing groups.

Instant Messaging, IM:

Throughout this chapter, live chat programs like AIM, Yahoo!, MSN, and Google Talk will be referred to as "Instant Messengers" or "IM." These light-weight, externally hosted services have been more recently adopted by libraries as a result of their low learning curve and prevalence amongst college-age individuals.

By 2004, though, critics of Web-based chat software found company in growing numbers of librarians who began to view the software as cumbersome, hard to learn, buggy, and expensive. A pair of articles by Coffman and Arret (2004a, 2004b), two early advocates of chat reference and Web-based chat software, questioned whether such services were supportable and instead advocated that libraries expand their telephone reference services to reach offsite users. These articles marked the start of a series of publications that highlighted the failings of expensive software and argued that there was a cheaper, easier way to do chat reference (Tenopir 2004; Forster 2005; Horowitz, Flanagan, and Helman 2005; Houghton and Schmidt 2005; Stephens 2006). With the 2004 release of Windows Service Pack 2 and the concurrent rise of pop-up blockers, firewalls, and alternative browsers not fully supported by Web-based chat software (such as Firefox), many libraries began to report problems with their Web-based chat reference software: users who could not connect, users who were disconnected,

and co-browsing that failed (Lupien 2006; McCulley and Reinauer 2006; Pulliam and McCullen 2006; Radford and Kern 2006).

At this point, the number of libraries using instant messaging (IM) software such as AOL's IM began to grow quickly. Some libraries dropped their Web-based chat for IM software. Others just starting out in chat reference only considered IM, while others decided to run IM services parallel to their Web-based one. The era in which Web-based chat software dominated the discussion of chat reference services had come to a close. Based on the increasing number of libraries now using IM for their chat services, it is fair to say that IM software is now seen as an equally valid technology option for providing a chat service (to see the growth of IM software for chat services, take a look at the history of updates to the "Chat reference libraries" page on the *LISWiki*). The future of chat reference begins here, where IM software is now an established and expanding part of the chat reference environment.

Converging Communication Channels

The number of ways to communicate via the Internet has expanded considerably in recent years. The current options include:

- e-mail
- bulletin boards and message boards
- Q&A services (*Ask MetaFilter*, *Yahoo! Answers*, etc.)
- instant messaging
- chat rooms
- social network sites (*Facebook*, *MySpace*, etc.)
- blogs
- wikis
- Voice over Internet Protocol (*Skype*, etc.)
- Web conferencing/video conferencing

Not only are there many online communication channels, there are many Web services that allow you take messages composed in one channel and transport them over to another. The *New York Times* technology columnist David Pogue reported on forthcoming "systems that [will] unify your communication (voice, text messages, and chat, for example) by giving you a single address book mailbox for all of them" (Pogue 2007). Content composed in one channel can be passed along or republished in many others in a daisy chain: cell phones can be used to send an instant message, which in turn can be converted into text message, which in turn can be converted into a blog post on the Web, which can then be automatically e-mailed out to subscribers or posted to someone's profile page in a social networking site like *Facebook*. *Twitter* is one such service that takes messages written in one medium and then distributes them broadly across many others. A *Twitter* user can compose a message on her cell phone that is then posted to her *Twitter* page and sent as a text message to any of her friends who have elected to get her updates this way. Her stream of messages also generates an RSS feed that republishes what she has written; that feed can in turn be republished on a blog or on her *Facebook* page.

The convergence and intertwining of communication channels, which is becoming more and more the norm on the Web, offers new opportunities for library reference services. A reference interaction that begins in one channel might be completed in another. Presently, it is not uncommon for a librarian engaged in a chat session to recommend that the patron call the librarian on the phone for more in-depth assistance, or that the patron look for an e-mail from the librarian that offers further advice about the question at hand. As newer communication channels mature, librarians may find a chat session turning into a Voice over Internet Protocol (VoIP) session or a video conference. Many IM clients already include VoIP and video capabilities.

Convergence among instant messaging systems is another notable trend. Initially, the major instant messaging services (AOL *IM*, Yahoo! *Messenger*, and MSN *Messenger*) did not allow users from one service to send messages to another. If you had an AOL IM (*AIM*) account, for example, you were only able to send messages to other *AIM* users. Over the years, the major services have opened up a bit. For example, Yahoo! *Messenger* and MSN *Messenger* (now known as *Windows Live Messenger*) allow messages to and from each other's services. Complete interoperability between all the major services is still in the future, though. A number of companies have recognized the need for a service that would allow people to at least bundle together all their IM accounts in one screen, allowing them to monitor several accounts in one place. A librarian who wants to maximize the number of potential users of the library's IM will likely create accounts and screen names in each of the major services. Using an IM bundling service like *Meebo*, *Trillian*, or *Pidgin*, allows them to monitor all their accounts at once.

Another notable trend in IM is the rise of the "chat with me now" widget on library Web sites that allows one-to-one chats for users regardless of whether they have IM accounts. Setting up these widgets is simply a matter of creating an account with one of the free Web services (such as those from *Meebo*, *Plugoo*, or *Chatango*) and copying code provided by the service into pages on your library site. The *MeeboMe* widget from *Meebo* allows the librarian to monitor both the library's IM screen names and its *MeeboMe* widget all from the same interface. As can be seen on the "Online Reference" page in the *Library Success* wiki, there is a long list of libraries using IM bundling services and chat widgets for their chat reference services (2007).

Another aspect of the convergence trend can be seen in the case of the social networking site, *Facebook*. In August 2006, *Facebook* released its application programming interface (API) to the public, allowing developers outside the company to create various widgets that *Facebook* users could add to their profile pages. Some librarians have begun to experiment with these widgets. In 2007, the University of Illinois at Urbana-Champaign created a library widget that anyone can add to their profile page and use to search the catalog or connect with the library's chat reference service. *Meebo* has created a *MeeboMe* widget that can be put on a profile page; this widget might be useful to the academic librarian who wants to create a *Facebook* page and give students a way to chat directly with the

librarian. There are also widgets for *Twitter* and a similar service, *Jaiku*, that can be added to *Facebook* pages.

Some chat reference services have set up profile pages in *MySpace*: the state-wide services for Maryland (*AskUsNow.org*) and for New Jersey (*QandANJ.org*) and the service for the libraries of the University of Central Florida. It is not certain what percentage of students actually expect to find a profile page for their library, let alone their library's chat service, in *MySpace* (or even add that profile page as a "friend"). Still, the payoff in free advertising for the chat service may alone be worth the minimal effort that it takes a library's staff to set up such a profile in *MySpace*. A survey by Lenhart and Madden (2006) found that fifty-five percent of all youth between the ages of twelve and seventeen use social networking sites. Boyd (in press) notes, though, that the real numbers may be higher. She points out that surveys of teens conducted by the Pew Internet and American Life project are done with the child's parent present, a situation in which some teens might be unwilling to admit to their online activities. Regardless, the number of teens with profiles on online social networking sites is large enough that librarians need to be aware of this cohort of future college students.

Rapid Shifts in Technologies and Services

As librarians try to work with new communication channels on the Web, they must be mindful that what is wildly popular now on the Internet may soon be passé. With the rise of *MySpace* and *Facebook*'s popularity, many librarians have been exploring ways that they can embed themselves in social network sites. Working in these environments presents unique challenges for librarians, as the recent past is littered with social sites whose online traffic grew quickly and then in the course of a year or two cooled off notably (as was the case for *Classmates.com*, *Friendster*, and *Orkut*). Although at the moment, *Facebook*'s trajectory continues to be upward, it is entirely possible it too will be abandoned in the not-too-distant future when much of its audience's attention is captured by some new network. Librarians who want to harness the power of these sites must be prepared for change and instability. Even if a library has invested time in setting up reference services in *Facebook*, for example, the tools it develops there and the lessons it learns about how to do reference in a social network site will likely be useful in whatever is the next big thing online.

One way a librarian can offer reference in *Facebook* is to add a *MeeboMe* widget to the library's institution page or to the pages of individual librarians who have set up profiles. This use of chat widgets on librarian profile pages mirrors a development that is becoming more common on the Web sites of academic libraries: each subject specialist in the library is given his or her own Web page that features not only office phone numbers and e-mail addresses but also chat options; some have links that users can click to initiate direct IM sessions with that librarian, while others feature chat widgets (such as the *MeeboMe* or *Chatango* widgets) that allow anyone to see if that particular librarian is online and available for chat.

Many academic librarians have long given their contact information to students and faculty so that research consultations, impromptu or scheduled, might be set up. The use of chat technology in *Facebook* profile pages or librarian profile pages on library Web sites seems to herald a new way of providing chat reference that would be a bit different from traditional chat services. Imagine a college library Web site, for example, where every librarian has his or her own profile page with a *MeeboMe* widget. Because the pages contain links to individuals' chat widgets in addition to a general chat service, students can speak directly to the most appropriate subject specialist. Additionally, every librarian could have a profile page in *Facebook* that features a *MeeboMe* widget.

A word of caution is advisable: students may not see *Facebook* as being valuable to their research efforts, but instead think of it as a place for socializing. An informal poll conducted by librarians at the University of Michigan on the school's *Facebook* network suggests that social sites are unlikely sites for reference services (Chapman 2007). Students were asked to indicate their "preferred method for getting research help from a librarian" from a list of five choices. Out of the two hundred students who responded, the greatest number (59%, n=118) said that they would rather go in person to see a librarian while the smallest number, just one, selected "*Facebook/MySpace/other social network*" as the preferred method of contact. Nineteen percent (n=38) of the students selected "I'm not interested in contacting a librarian;" one has to wonder if some of these respondents felt annoyed that librarians were contemplating being in *Facebook* and so selected this option out of anger or sarcasm. Of the five choices, instant messaging came in fourth place (16%, n=16). Despite the possibility that students are not yet ready to share social networks with anyone but their peers, librarians should be prepared to investigate new social networks as they arise, see what the terms of service are (can a profile page be set up for the library or just librarians), and find ways to use those networks to connect students to the chat services of both the library and of specific librarians who are subject specialists.

The bewildering array of new Web services and tools in recent years tends to overshadow the instabilities in the process of Web evolution. One phenomenon that is not widely reported is the much-heralded launch of a Web site that later fails. Librarians who are trying to build their new services based on emerging Web services should keep in mind that some sites do not endure. Consider, for example, the closure of a Web service that seemed to hold great promise for chat reference services: *Jybe*. In 2005, a number of librarians were touting *Jybe* as a great (and free) way to co-browse Web pages with users and were heralding it as a technology that, when paired with IM software, could equal the expensive Web-based chat software provided by *QuestionPoint*, *Tutor.com* and *Docutek*; by 2007, though, the service had shut down (Abram 2005, Francoeur 2005, Pival 2007, Stephens 2005). It is fortunate that no libraries were relying on *Jybe* during its short existence.

With all the excitement over developments taking place on the Web, it is important not to overlook mobile technologies that will likely shape chat refer-

ence services in the future. It is now common for cell phones to be enabled to browse the Web, send text messages, and store and play music and video files. Smart phones, such as the Palm *Treo*, BlackBerry *Curve*, and the Apple *iPhone*, grow more popular every year. Also on the horizon are ultramobile PCs (UMPCs), which are essentially supercompact notebook computers that are about the size of a paperback book. Designing Web services for these mobile devices is an area of activity that will only increase as cell phones and wireless devices grow more sophisticated. *Facebook* already has a version optimized for mobile devices. In the coming years, students will not be the only ones who use these advanced devices to connect to library chat services; librarians, too, will increasingly use them. For example, at the library at the University of California, Merced, Michelle Jacobs regularly assists students by using her smart phone to chat, text message, and speak with them while also using the device to search the Web for resources (Jacobs 2007).

As E-mail Fades, Instant Messaging Rises

The current revival of interest in IM software for chat reference services is unlikely to wane in the near future for a number of reasons. Some of these reasons have been valid since the late 1990s, when a number of the earliest chat reference services selected IM over other chat technologies. The strongest arguments for using IM have been that the software is free, stable, easy to learn, and that many students are already using it to communicate with their friends and family. This last point is notable. The number of daily IM users has been steadily rising over the years. In a survey conducted in 2000, sixteen percent of eighteen to twenty-nine year-olds reported having sent an instant message the day before (Pew Internet and American Life Project 2007). By 2006, IM usage was up to sixty-six percent (Lenhart and Madden 2006). An earlier study of technology use by teenagers noted that seventy-five percent of teens who go online use IM, and that among all teens, online or not, two-thirds use IM (Lenhart, Madden, and Hitlin 2005). This study also noted that “when asked about which modes of communication they use most often when communicating with friends, online teens consistently choose IM over e-mail in a wide array of contexts” and “they view e-mail as something you use to talk to ‘old people,’ institutions, or to send complex instructions to large groups” (ii). Many librarians recognize that by offering IM as a reference communication channel, they are providing students with an interface that is familiar and may reduce the anxiety that some students feel about asking a question. It is not just the incoming waves of students at universities who view IM as a familiar way of communicating; newly minted librarians from this generational cohort are likely to share this preference for IM over e-mail.

Another notable aspect of IM is that users can add others to their buddy lists. Scanning your buddy list allows you to see who is online and whether they are available to chat. This functionality is referred to as “presence,” and is an important concept not just in IM but also in social networking sites like *Facebook* and *MySpace*. This desire to display your presence and to keep tabs on the presence

of your friends brings to mind Rettig's ideas about the "Net Generation's" use of reference services (a term borrowed from Don Tapscott's book, *Growing Up Digital*). Drawing on Tapscott's generalizations about the Net Generation, Rettig argues that they value "immediacy, interactivity, personalization, and mobility" (2003, 19). In thinking about the "presence functionality" of IM, Rettig links it to the Net Generation's need for immediacy. I agree, and would also argue that the ability to add buddies in your IM client and see if they are online is congruent with the Net Generation's inclinations. Building a buddy list creates a personalized communication galaxy with the user at the center and the handpicked buddies orbiting around. Librarians who launch an IM reference service are creating IM screen names that can be added to buddy lists and thus tap into the drive to personalize that is so prevalent among the Net Generation.

In his vision of the future of reference, Rettig also suggests that we need to move away from seeing reference as always tied to a place, specifically, the reference desk (18). The library Web site, too, is a place, one that the student must visit to get remote reference services. But if a library has an IM reference service, the student who has added the library's screen name to his or her instant messaging buddy list can connect to reference without having to come to a place (the physical library or the virtual library on the Web). Just as librarians could be setting up profiles in *Facebook* and forming a reference cloud outside of our traditional place (the library), we could do the same by offering IM screen names for our students to add to their buddy lists.

In the past five years, companies have spent considerable energy on expanding the realm of the possible with IM software. While in the 1990s, IM messaging meant using one company's software client to chat with your friends using the same client (AOL users could only chat with other AOL users, etc.), there has been some movement toward interoperability between clients. Furthermore, as mentioned earlier, there are now services such as *Trillian*, *Meebo*, and *Pidgin*, that allow you to monitor screen names from different commercial IM services in one place. If you use Google's *Gmail* service, you can now use a Web interface initially designed for e-mail to chat with other *Gmail* users who are in your contact list.

The leading commercial IM clients have also begun offering much more than messaging features, such as advanced technologies like VoIP, file sharing, and video conferencing. Some libraries have begun to use the commercial IM client interface so they can offer these additional modes of communication. For example, Queensland University of Technology uses the *Windows Live Messenger* client so that it can use IM and VoIP with students, and Ohio University has begun using *Skype* for the IM, VoIP, and video conferencing that it offers.

As some of the major commercial IM services continue to exclude one another from their networks, a movement to use an open IM protocol known as *Jabber* has been gaining momentum. Also known as XMPP, for extensible messaging and presence protocol, *Jabber* allows anyone to set up a server with *Jabber* and run their own IM service. Google has done this with their *GTalk* service, but remains alone among the major IM services to have adopted *Jabber*. One of the

key advantages of using *Jabber* is that it gives you control over the server where archives of the IM sessions are stored. The commercial IM services detail user privacy in their terms of service documents, but none of them allow librarians to have any sort of control over those archives.

It is worth stressing, though, that just because there is great value in offering reference service via instant messaging, does not mean that librarians should abandon Web-based chat software as an option. There does not have to be an either/or choice between IM and Web-based chat software; it can be a both/and proposition instead. Research into who uses IM reference services and Web-based chat reference services suggests that they are reaching different audiences and that they are used for different purposes.

One study, comparing the use of a college library's IM reference to its Web-based chat service, found that because one part of the college population (the undergraduates) clearly preferred IM, while others (the graduate students and faculty) leaned toward the Web-based service, it was advisable for the library to continue to maintain both (Ward and Kern 2006). This study also shed light on the different ways that IM and Web-based chat are used by patrons. Librarians staffing the two services noticed that users of the IM service tended to "get part of an answer to a question...and then do some research on their own and return to IM once they have a question on the next step of the process," a pattern not apparent in the way the Web-based chat service was used (426). Running two parallel chat services (an IM one and a Web-based one that uses more complex software) may be a good way, then, to meet different needs and different users. It might also be useful for answering different kinds of questions; academic libraries that offer an IM-based service as well as a Web-based chat service have reported that their IM service seems to be best for handling questions that are local in nature (such as what the fine is for overdue books) or are easy to answer (such as ready reference questions) and their Web-based chat service is better poised for dealing with in-depth, research questions (King 2007; Lupien and Rourke 2007).

It is worth noting, though, that despite the increasing interest in IM software for chat services, there are some oft-mentioned objections to the software that are unlikely to be resolved in the near future. The biggest flaw with IM software is that presently there is no way for more than one librarian to be logged in to a screen name at a time. If the library at State College, for example, sees demand for the service grow to the point where the librarian online is juggling several patrons at the same time, it is not possible to simply have a second librarian log in to the same screen name and pick up the additional traffic. Since only one librarian can monitor the service at a time, it is not feasible to build a large-scale collaborative chat service where dozens of librarians can be online simultaneously and respond to chats from patrons at member libraries (there are, though, some interesting projects in development that might allow multiple librarian logins in an IM-based service, which will be discussed a bit later). Web-based chat software, which was built for the needs of online call centers where dozens of operators might be online to chat with e-commerce customers, does not suffer from the scalability flaw that IM does.

Another problem with IM software in library chat services is that, unless the library is running its own IM server, the transcripts are not exclusively stored on servers under the library's control. Those transcripts remain on the servers of the companies who are providing the service: AOL, Yahoo!, etc. As Minow and Neuhaus note, "information stored on a third party site (vendor) likely has less legal protection than information stored on a library's server" (2005, 12). None of the major IM software providers has shown any sign of allowing users to access their transcripts, let alone edit them to remove personal information or delete them altogether. Web-based chat software, though, often allows librarians to have far greater control over the storage of transcripts, even if the transcripts are stored on external servers.

Librarians who want full control over the transcripts of chat sessions generated in an IM service do have a choice, which is to set up an IM server on their own network. This can be done in two ways. First, a library could install open-source server software that uses *Jabber*. Second, one could purchase proprietary enterprise IM server software, which is popular with corporations that need to exercise complete control over the messages that their employees send. In the next five years, it is likely that people who use commercial IM clients from AOL, Yahoo!, and Microsoft will be able to successfully send their messages through *Jabber* servers and enterprise IM servers. In short, interoperability among IM clients should continue to improve in the future.

An unresolved legal question related to commercial IM services is likely to linger in the future. It has been noted that librarians who use commercial IM accounts for reference service might be violating the terms of service agreements from those IM providers, which state that their services are for personal use only (Lankes 2007; Tucker-Raymond 2007b). No library has yet had their chat service shut down because of this, but it remains an unresolved issue. While it may seem farfetched that companies as large and busy as AOL or Microsoft might take legal action against libraries for misusing their IM software, it is worth recalling how *Facebook* shut down profile pages of libraries in 2006 because they were violating the terms of service that, at the time, limited profiles to individuals.

Co-browsing Will Continue to Bedevil Librarians

One of the early strengths of Web-based chat software was that it allowed librarians to take control of the patron's browser and navigate Web sites and subscription databases in ways that might actually teach the patron something. The promise of synching the browsers of patron and librarian, called co-browsing, has been half-fulfilled. The biggest barrier has been system incompatibility. Co-browsing has been limited to situations where both the librarian and patron are using the Internet Explorer browser on a Windows machine (some other browser-operating system combinations may allow one way page pushing). There are no signs that this limitation will be solved in the near future.

As noted by Lupien (2006), co-browsing technology has also been stymied by patrons' firewalls and pop-up blockers. Authentication systems and proxy servers

used by libraries have also been known to interfere with co-browsing. Despite the obvious benefits that co-browsing offers for instruction in reference interactions, librarians often become so frustrated by technological problems that they are unwilling to use it in chat sessions (Graves and Desai 2006).

The Number and Size of Collaborative Reference Services Will Keep Growing

The earliest chat reference services were all run as stand-alone services. It did not take long, however, for libraries to begin to recognize the efficiency of working together and sharing a collaborative service. According to Susan McGlamery (in a 2007 conversation with the author) the largest collaborative service, *QuestionPoint*, had nearly a thousand libraries in its public library cooperative service and close to three hundred in the academic cooperative as of July 2007. Many collaborations were formed when individual libraries running their own services struggled to meet demand, which often came in the form of several or more patrons logging in at the same time to chat, or in the form of patrons trying to get help during hours when the library was closed. It is worth noting that the demand often continues after the collaborative is established; statewide collaborative services have found use rising (Hirko 2005). This growth was made possible by the use of Web-based chat software, which was designed to allow large numbers of librarians to be logged on simultaneously and to permit patron queuing, routing, and transferring.

Collaborative chat services offer a number of benefits over standalone chat services. First, the price of subscribing to Web-based chat software is lowered. At Baruch College, our subscription price to *QuestionPoint* went down by sixty percent once we went from being solo subscribers to group subscribers with three other colleges in the City University of New York (CUNY) system. With every additional CUNY college that joins the group, our individual subscription costs decline further. Other library groups have reported similar savings (Bailey-Hainer 2005; Bishop and Torrence 2006). Second, patrons can gain access to a wider range of libraries that may be able to help them. A difficult question or one requiring resources unique to a library other than the patron's local library can often be transferred live or passed along for followup via e-mail. Collaboration provides a way for libraries "to leverage our greatest asset, staff" (Tucker-Raymond 2007a). Third, collaborative services allow libraries to support expanded service hours (in many cases, to a 24/7/365 schedule).

There is a great (and mostly unrealized) desire among librarians to figure out a way to use IM software to power a collaborative chat service. There are some efforts underway that challenge long-held assumptions about the use of IM software for chat reference. The AskNow service that operates in Australia and New Zealand had been using the *QuestionPoint* software for a number of years to run a collaborative reference service. As described by Davis (2007), AskNow launched a pilot project in November 2006 using IM software to run a parallel chat service staffed by librarians from member libraries in the cooperative. Librarians from the institutions took turns, one-at-a-time, logging in to an IM bundling service

(*Gaim*) to monitor screen names set up for the service in each of the leading IM systems (Yahoo!, AIM, etc.).

Despite the popularity of the service with both patrons and the librarians staffing it, it was recognized that it would not scale well as demand grew and the number of simultaneous chat sessions increased. The administrators of the pilot then began developing a customized *Jabber* server that would offer much of the functionality found in Web-based chat software: multiple librarians logged in and monitoring; systems for routing and queuing patrons; local storage of transcripts; and robust reporting and statistics. Once this custom-built system is completed and working, other libraries can adapt the technology for their own cooperative services. The caveat about such an approach, though, is that software development and maintenance are no longer handled by a vendor but by the library cooperative. There have been other notable efforts to explore the limits of IM software for reference services. The statewide chat service in Oregon, *L-net*, used eighteen librarians to test enterprise IM software in 2007 to see how well it would work in a collaborative setting and to find out what librarians and patrons thought of the IM service (Tucker-Raymond 2007c). At the University of North Carolina at Chapel Hill, the librarians are exploring a modification of the IM bundling software from *Pidgin* to see if multiple logins for a screen name might be possible (Furuta 2007).

Chat Transcripts Mined More Frequently

A final set of predictions about the future of chat reference relates to the growing mountain of session transcripts that librarians are compiling. The uses to which those transcripts will be put will grow more varied and refined. Transcripts are now commonly used for training staff, quality control review, evaluating librarian performance, building searchable knowledge bases, and providing data for research projects. The statewide chat cooperative service in Oregon, *L-net*, has experimented over the years with a number of projects that repurpose session transcripts. They are used to generate “buzz reports” about what is being asked; to find which Web sites users are being referred to most often; and to plot patron locations using zip codes provided at log in. As a way of demonstrating to would-be users of the service what a chat session looks like on *L-net*, the Web site offers a way to watch a replay of a real chat session. The screen shows the user’s chat interface and displays in screencast-like fashion the librarian and patron exchanging messages. The messages all come from an actual chat session that took place on the *L-net* service and has since been scrubbed of personal information so it can be publicly viewed.

For a fascinating vision of the future of chat, the Stella chatbot on the State and University Library Hamburg Web site offers a lively preview. Sitting atop what appears to be an IM interface on the Web site is an animated avatar named Stella, whose facial expressions change as she “replies” to your typed questions. She offers basic advice about resources and services at the library as well as links to relevant pages on the library Web site. Examining this chatbot service more closely, one can see that the user’s “questions” or “messages” are automatically

queried against a knowledge base that the library has created (Christensen 2006). Although Stella might appear to be chatting with you, she is simply presenting the single best search result to your natural language query of the Stella's knowledge base. Stella's animations are carefully calibrated to the specific message she returns to you and employ sophisticated technology from *Novomind*, a company that sells this animated avatar software mostly to online merchants.

While many libraries offer searchable knowledge bases built from the bits and pieces of previous digital reference interactions, they usually present a simple search box as the interface. Instead, Stella offers a knowledge base interface that mimics IM software and that may be more enjoyable for patrons to interact with. While it is not likely that library chat reference services will be replaced with chatbots, it might be interesting to use a chatbot as the means by which users query a knowledge base of prior chat session transcripts.

Conclusion

It is clear that the means of communicating via the Web will continue to expand and diversify. Not only will we see new tools, but we will find many of those tools are interoperable. Other tools will become embedded in social networks or actually be social networks (like *Facebook*). As mobile phone technology grows more sophisticated and integrated into the Web, there will be a blurring of the line between Web communication tools and mobile communication. All of these developments will offer librarians more opportunities and challenges for providing chat reference service. Our communication tools will more and more become multi-channel services similar to *Skype*, which can be used for IM, VoIP, and video reference services. The debates over IM versus Web-based chat software will diminish as the technologies advance and converge, and the need to choose one or the other is eliminated; instead, librarians will have a panoply of options, all of which will make it easier for them to go where their users are.

Sources for Additional Research

Davis, K. 2007. AskNow instant messaging: Innovation in virtual reference. <http://www.nla.gov.au/nla/staffpaper/2007/documents/IM-ALJ-article.pdf>.

Davis describes how the nationwide chat service in Australia, which had long used the *QuestionPoint* software for its collaborative staffing, successfully demonstrated the viability of running a cooperative service based on IM software.

Forster, S. 2005. Instant messaging and online reference: An Altarama white paper. North Orem, UT: Altarama Information Systems.

This essay summarizes the main arguments for using IM software for chat and its relative advantages over Web-based chat software.

Horowitz, L. R., Patricia A. Flanagan, and D. L. Helman. 2005. The viability of live online reference: An assessment. *portal: Libraries and the Academy* 5 (2): 239-58.

This publication details a project that did not meet expectations and was discontinued. The authors present their findings from the assessment of the Web-based chat reference

service at the Massachusetts Institute of Technology and thoughtfully elaborate which parts of their library's service did not meet their or their user's expectations.

Houghton, S., and A. Schmidt. 2005. Web-based chat vs. instant messaging: Who wins? *Online* 29 (4): 26-30.

The authors compare reference services powered by IM to those that use Web-based chat software in ten areas: speed, cost, availability of librarians, training, user base, software, features, computer requirements, privacy, and community. The authors recommend IM software.

Lupien, P. 2006. Virtual reference in the age of pop-up blockers, firewalls, and Service Pack 2. *Online* 30 (4): 14-19. <http://www.infotoday.com/online/jul06/Lupien.shtml>.

Lupien explains in detail how Web-based chat software is increasingly hobbled by improving security technology on the computers of our users.

Radford, M. L., and M. K. Kern. 2006. A multiple-case study of the discontinuation of nine chat reference services. *Library & Information Science Research* 28 (4): 521-47.

In this article the authors identify a number of common themes that emerged through data collection which was accomplished via interviews, questionnaires, and analysis of internal documents from the libraries studied. Most salient were the reasons why the libraries decided to end chat service.

Sloan, B. 2006. Twenty years of chat reference. *Internet Reference Services Quarterly* 11 (2): 91-95.

This thumbnail sketch of how libraries have used various technologies to chat online with patrons serves as the standard account of the history of chat reference. It is particularly valuable for an account of the earliest services, some of which are now long gone.

Ward, D. and M. K. Kern. 2006. Combining IM and vendor-based chat: A report from the frontlines of an integrated service. *portal: Libraries and the Academy* 6 (4): 417-429.

The authors present a study of what it was like at the University of Illinois at Urbana-Champaign to run an IM service using *Trillian* alongside a Web-based chat reference service (which used Docutek's *VRLplus* software). Despite the comparatively greater popularity of the IM service, the authors recommend keeping both systems running to meet the needs of different user groups on campus.

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