Josiah M. Drewry. Google Scholar, Windows Live Academic Search, and Beyond: A Study of New Tools and Changing Habits in ARL Libraries. A Master's Paper for the M.S. in L.S degree. July, 2007. 63 pages. Advisor: Lisa Norberg

Google Scholar and Windows Live Academic Search (WLAS) are examples of "blended" databases, a controversial new class of tools which provide free, speedy access to academic content as well as citation analysis capabilities, linkage to individual library holdings and other services. Though researchers have published dozens of theoretical and empirical studies involving these tools, none have yet described how they are actually being used in a variety of academic settings. The author sent questionnaires to 540 librarians at 108 ARL libraries to learn how they deployed Google Scholar and WLAS in reference transactions and instruction sessions. Participants were also asked speak about the ways that non-traditional databases are affecting research in academic libraries. The author finds that, while these tools provoked mixed reactions among librarians, their popularity and usefulness—especially that of Google Scholar—are forcing librarians to acknowledge the possible arrival of a new paradigm in academic research.

Headings:

Electronic information resources

Databases

Academic libraries – Reference services

Academic libraries – Use studies

Information literacy – Study and teaching

GOOGLE SCHOLAR, WINDOWS LIVE ACADEMIC SEARCH AND BEYOND: A STUDY OF NEW TOOLS AND CHANGING HABITS IN ARL LIBRARIES

by
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Introduction

Academic libraries were among the first institutions to put internet technology into widespread use, most notably through e-mail, OPACs, and subscription databases. Today, as more and more of the world's scholarly output is available online and accessible in seconds, libraries remain at the vanguard in implementation of digital technology in scholarship and education. As outlays for print resources have started to shrink, ever greater proportions of libraries' budgets go towards the purchase of computer hardware and subscriptions to digital content. Academic libraries are no longer content to be "storehouses" of millions of books and journals. They must now reach out to patrons, help them understand the new technologies and tools that are changing the way research is done, help them develop critical thinking skills, help them to circumvent information overload.

Today, "the physical library is no longer the primary focus for many information seekers" (Pomerantz, 2006). The internet search engine is king. According to Pomerantz, over 18 million Americans (and millions more, worldwide) use search engines every day. Google and others index billions of individual pages on the internet, consistently working to return meaningful information, some of it of real scholarly value. Google alone claims to index over 8 billion individual web pages, though many researchers don't believe that the largest index is always the best, "if the index isn't refreshed often or if the relevancy simply isn't there" (Sullivan, 2004). At least 72% of academic authors use Google to find scholarly articles (Friend, 2006). Not all of them

are necessarily ignoring content they can find in paid-subscription databases, but many librarians and other researchers believe that over-reliance on internet search engines to find scholarly content can severely limit quality research.

It turns out that Google agrees. Enter Google Scholar, in November of 2004, a free database of "peer-reviewed papers, theses, books, abstracts and articles, from academic publishers, professional societies, preprint repositories, universities and other scholarly organizations" for academically-oriented users of Google (see "About Google Scholar", at http://scholar.google.com/intl/en/scholar/about.html). Due to its simple, familiar interface, many researchers agreed that Google Scholar "will attract scholars who are discouraged by the complexity and diversity of the many databases at their disposal" (Neuhaus, 2006). Google's arrangements with publishers are shrouded in mystery, and many libraries are reluctant to advocate for a free tool they know little about when they have paid dearly for more traditional databases, yet Google Scholar "has gained widespread acceptance and is linked from the websites of highly respected libraries" (Myhill, 4/2005). One need look no further than a recent decision to integrate Google Scholar into the popular online learning system, Blackboard, to see that Google Scholar is an increasingly accepted and important tool in academic research (Adler, 2006).

Other, comparable tools have followed. Windows Live Academic Search (WLAS) was released in April of 2006, and offers many of the same features as Google Scholar. In addition, WLAS offers customizable macros for the advanced user, and freely discloses the journals and other sources it indexes (from "Windows Live Academic Home Page," http://academic.live.com/default.aspx). Very little has been written about

WLAS so far. This study is believed to be one of the first to assess its use by academic librarians.

The immediate success of Google Scholar and others has already started to alter the traditional relationship between libraries and academic publishers and database aggregators, for better or worse. This paper seeks to answer the following research questions: How often do ARL librarians use Google Scholar and WLAS at the reference desk and in instruction sessions, and do the ways it is being used correspond with the ways previous researchers believe they should be used? Do librarians prefer to use Google Scholar or WLAS, and why? What other issues do working librarians have with these tools, and how do they believe these tools will affect academic research in the future?

As Google Scholar is still a new tool, and WLAS even newer, librarians need to be aware of the ways that other librarians are thinking about them or integrating them into the services they provide. The results of this study highlight important issues that surround the use of these databases and should help educate librarians (and through them, students and other researchers) to use these tools wisely and efficiently.

Literature Review

Content of Google Scholar

Google Scholar, like its parent search engine, Google, scours and indexes content freely available on the web. Google Scholar, however, limits its searchable content to "peer-reviewed papers, theses, books, abstracts and articles, from academic publishers, professional societies, preprint repositories, university and other scholarly organizations," even including government agencies (see http://scholar.google.com/intl/en/scholar/about.html). The number of pages and records that Google Scholar has crawled is a mystery, though it is allegedly in the "tens of millions" (Wieklinski, 2005). One reviewer wrote that Google is "as secretive about its coverage as the North Korean government about the famine in the country," which frustrates many researchers and librarians writing about Google Scholar (Jacsó, 2005). Google's secrecy, combined with Google Scholar's incredibly broad scope, often results in unexpected findings for researchers; they may come across a U.S. Patent, a page from a cookbook, a letter to the editor, or even a person's resume, leaving it up to the researcher to assess scholarly legitimacy (Jacsó, 2004; Price, 2004; Pomerantz, 2006)

It is clear that Google engineers have been busy adding content to Google Scholar since it was introduced in November of 2004. Directly following its release in beta, Peter Jacsó found that Google Scholar has "enormous gaps in its coverage of publishers' archives, and implicitly in the direct links to the full-text documents therein" (Jacsó,

2004). For one publisher, Blackwell, only 10% of its content was searchable, and only 1/15 of content in PubMed was available through Google Scholar. (Jacsó, 2004). In early 2005, he found that Google Scholar only indexed 10-30% of content from the journal *Nature* and other high-profile journals that it had access to (Jacsó, 2005). Jacsó also discovered that Google limits its indexing of articles and web pages to the first 100-120 kilobytes (Kb) of an item, while MSN limits its crawlers at 150 Kb and Yahoo! indexes up to .5 megabytes (Jacsó, 2005). Indexing only a fraction of a journal or a publisher's holdings can result in a false sense of security for researchers, especially when gaps in coverage like Google Scholar's are not disclosed.

A large-scale study performed in the summer of 2005 by Neuhaus et al. compared the reach of Google Scholar with the holdings of 47 other free and proprietary databases and found that the Google Scholar's coverage was much improved in several areas. Google Scholar's coverage of the 47 databases ranged from 6% for humanities sources like Historical Abstracts to 100% for sources in science, technology and medicine such as PubMed and ACM, and 94% for BioMed Central. (Neuhaus, 2006). On average, only 10% of databases in the humanities were indexed, compared with 39% in the social sciences, 41% in education, 76% in science and medicine, and 77% of multidisciplinary sources. An average of 95% of content in open-access databases was covered by Google Scholar, compared with only 57% of databases not available on the free web. They also found that Google Scholar showed "a pronounced bias" towards English-language publications, indexing 68% of Psycinfo's English-language content, and only 12% of the rest (Neuhaus, 2006). Librarians and researchers would be well-served by this

knowledge; while Google Scholar is known to be interdisciplinary in its coverage, few are aware of how much content they may be missing in their particular area of research.

Another issue that plagues users of many databases is the introduction of the "moving wall," where new published research may not be available through a database for a certain period of time, commonly between 3 months and a year. In 2005, Jacsó found that there was a 6-month delay in adding content to Google Scholar (Jacsó, 2005). Later, Neuhaus et al. found a lag time of at least three months for content from BioMed, though that had shortened to 2 months by the winter of 2006 (Neuhaus, 2005; Burright, 2006). Another study found that, as of February 2005, Google Scholar had only indexed 2 million of the 57 million items then included in WorldCat, but engineers were committed to eventually indexing all of them (Felter, 2005). While gaps in coverage, moving walls and Google's consistent stance against full disclosure of Google Scholar's contents should signal users to be cautious, these studies demonstrate Google's commitment to continually improving Google Scholar.

Features of Google Scholar

The vast amount of content that Google Scholar provides access to might be enough to recommend it to users, but what makes it a useful tool to many researchers are its other features, all of which have never been included together in a single database. First, the ranking of Google Scholar's search results is largely influenced by citation counts generated by Google's link-analysis, which means that users see the most highly cited (and theoretically, the most influential) articles first (Pomerantz, 2006). In addition, underneath the citation and link to each article is a "cited by" link that users can click to

see which other authors have cited that particular article. These capabilities make it a direct competitor to other databases like ISI's Web of Science and Elsevier's Scopus, though feedback by researchers has been mixed. For instance, a study by Richard Belew found "surprisingly good agreement" between Google Scholar and ISI, though he noted that ISI's indexing of journal articles was better than Google Scholar's (Belew, 2005). Other researchers have found that Google Scholar's citation counts are often inflated by duplications and include errors in transcription (Wieklinski, 2005; Jacsó, 2005). Jacsó notes that ISI and Scopus offer powerful advanced-searching options, while Google Scholar's search tool is inadequate to explore the "size source base, breadth and composition of a database" (Jacsó, 2005). Still others note that no single database offering citation analysis can be considered perfect or even comprehensive (Bauer, 2005; Friend, 2006).

A unique feature of Google Scholar is its focus on "versioning," or compiling each different version of a particular article or other work in one place. Different versions can come from publishers' databases, preprint repositories, or even faculty homepages. When Google Scholar was first released, different versions of the same paper would be returned individually, in no clear order and with no obvious indication as to which was the "official" version, which was confusing and problematic for researchers (Jacsó, 2005). Now, however, users must click on a link below the citation of one of the versions to see the others listed.

Google's decision to implement versioning highlights several important aspects of Google Scholar's revolutionary nature. Friend (2006) concedes that open access repositories and other new, nontraditional sources of content are beginning to change the

way we seek information, and may be giving academic institutions more power in bargaining with publishers. Google Scholar is accelerating this change, as it brings more and more previously unknown or unpublicized content to more and more users. At the same time, there is a large amount of content on the web that Google's crawlers haven't indexed and users' assumptions that Google indexes the entire free web can lead to confusion and disappointment (Myhill, 2005).

One feature that has brought Google Scholar into the mainstream of the academic research community is its ability to link to content already paid for by libraries. This feature makes it a competitor to other federated and "metasearching" databases like WebFeat and MetaLib, which were actually created to provide alternatives to the "one-stop-shopping" of Google (see Chen, 2006 for a detailed comparison of these three tools). In fact, a recent usability study by researchers in Sweden found that Google Scholar allowed students to search for, find, and save scholarly articles faster and with more general satisfaction than they could by using MetaLib (Nygren, 2006). Google Scholar itself is a federated search engine; instead of dynamically searching many databases as a query is made, its resources are compiled prior to the search and returned very quickly (Pomerantz, 2006). Many researchers and librarians find Google Scholar's linking feature to be a boon for libraries, as it provides another point of access to library resources and justifies libraries' budgets (Friend 2006; Mullen, 2006). While some librarians worry that Google Scholar will steer users away from resources in the library, Mullen and Hartman stress that "it does not replace the library collection. It expands access" (Kesselman, 2005; Mullen, 2006).

Content of WLAS

At the time of its launch in beta, Microsoft disclosed that WLAS provided access to academic journal articles and papers, as well as notes and slides from conferences, but only "in the fields of biology, medicine, computer science, physics, electrical engineering, and related subject areas" (see http://help.live.com). Recently, some theses, dissertations and academic books have been added as well (http://academic.live.com) Microsoft has formed partnerships with 51 academic publishers in the sciences, including many of the same ones that Google Scholar indexes, for access to a combined total of roughly 4,300 journals and 2000 conferences (Thomas, 2006; Jacsó, 2006). Unlike Google Scholar, Microsoft freely lists these publishers online (see "Learn More" at http://academic.live.com), although WLAS "probably has the smallest set of proprietary content" of databases with a similar subject scope, including Google Scholar, Scopus, and Web of Science (O'Leary, 2007). One reason for this may be that WLAS uses "structured feeds [from publishers] to build its index," and doesn't search the open web like Google Scholar does (Sherman, 2006). While Google Scholar does not index or provide access to content published by key publishers like Elsevier, Microsoft has partnered with Elsevier to allow access to 400 of their journals through WLAS (Thomas, 2006). The American Psychological Association is another partner of Microsoft's that Google Scholar doesn't seem index. WLAS claimed to provide access to about 6 million records at the time of its launch, though the true number may have been less than 4 million (Jacsó, 2006). No independent estimations have been published since May of 2006. However, Jacsó found the subject coverage of WLAS to be much

broader than Microsoft admitted, including content in health sciences, social sciences, and various disciplines in the humanities (Jacsó, 2006).

Features of WLAS

Like Google Scholar, WLAS provides a simple search interface, allows libraries to link to their proprietary content for free, and provides links beside each record for sending a search to its larger search engine, MSN. But there are several key differences in the interface and search capabilities that aren't often obvious to the casual user. The most striking difference is the display of results. WLAS uses a "preview pane" to display initial search results, and the user can mouse over a citation to show the abstract in another pane to the right, or decide to "show abstract" underneath the citation in list form. The organization of results in Google Scholar is more inflexible, and displaying abstracts requires at least one click. However, Google Scholar is much faster at returning results than WLAS, and the lack of an advanced search function in WLAS is a serious drawback for some reviewers (O'Leary, 2007). In WLAS, though, users can also sort the initial list of results by relevance, date, author, journal, or by conference, if the results include conference proceedings.

Another major difference between the two tools is that WLAS doesn't arrange results by citation counts or offer a way to search citations only, which is "a serious shortcoming in a scientific research product" (O'Leary, 2007). In contrast to Google Scholar's relevance ranking, WLAS ranks results partly according to the authority of the paper (Thomas, 2006). In addition, names of authors are hyperlinked in WLAS to take the user to other works by each author. Also in contrast to Google Scholar and its

concept of "versioning," WLAS provides users with only the final published version of an article. Beside each record are easily visible links to allow the user to export citations in BibTeX, RefWorks and EndNote formats (Google Scholar has the same citation exportation capabilities, but the user has to toggle them on under "preferences"). RSS feeds from WLAS are available, and signing in with an MSN ID enables WLAS to remember users' preferences and allow them to save search parameters. Google Scholar doesn't keep track of users' searches when they are signed in, like other Google applications do.

Role of Google Scholar and WLAS in Libraries

Google Scholar is already in use by millions of students and other researchers worldwide. Response to this fact by librarians has been mixed, and to a large extent, echoes that of the researchers cited above. From a librarian's standpoint, there are many potential pitfalls for students and other users of Google Scholar. At the point of searching, these include: a lack of controlled vocabulary or authority files for author names and journal titles (see Burright, 2006 and Myhill, 2005); obscure and poorly documented search language (Jacsó, 2004); and difficulty limiting searches and usefully ordering search results (see Burright, 2006 and Friend, 2006). Deeper problems, those not immediately apparent to the average user, are gaps in content (see Jacsó, 2004 and Neuhaus, 2006); errors in citations (Jacsó, 2005); and moving walls and other unknown lag times in updates (Jacsó, 2005; Burright, 2005; Neuhaus, 2006; Felter, 2005). These issues may be deeply limiting to scholars, at least in part because of Google's legendary secrecy. This secrecy is precisely what bothers many librarians, who feel that they could

implement Google Scholar more effectively and with more confidence if they knew more about what is indexed, what problems remain and why (Jacsó, 2005; Pomerantz, 2006). Librarians are justifiably upset that the designers of such a valuable and widely-used tool are so inaccessible to them, or that Google's definition of "scholarly" may differ from theirs (Mullen, 2006). Other librarians worry, predictably, that the simplicity of Google Scholar and tools like it will drive users away from libraries (Kesselman, 2005).

So much critical attention has been heaped on Google Scholar, however, that a review of the literature can make one forget why it is so useful and so popular. As mentioned previously, it is the first tool to combine all of its capabilities into one database. It is blindingly fast. It indexes a huge amount of content. Its search interface is simple and familiar. It is much better for scholarly searching than Google, which must be considered at least a minor victory for librarians. And it is free, "a compelling attraction" for every library (O'Leary, 2007). Google has no stated intentions of bothering users of Google Scholar with advertisements in the near future, though some researchers are skeptical. The same positive aspects of Google Scholar listed here also apply to WLAS, as do many of the criticisms. While much less critical attention has been paid to WLAS, it may prove to be just as significant a research tool as Google Scholar in the future.

Like it or not, librarians must familiarize themselves with Google Scholar and WLAS and the issues surrounding their use. They have a duty to remain aware of patrons' needs and responsive to their desires. Many of the researchers cited above are very clear on this point. Says one, "we need to help our researcher clients to integrate their tools of choice…with our own offerings" (Felter, 2005). Another reminds readers

that Google created Google Scholar for "those in academia whose work has made Google itself a reality," and that Google "aims to make it as useful to this community as possible" (Banks, 2005).

Unfortunately, very little has been written about the potential of WLAS in libraries, or about its current usage by librarians and the academic community. Some researchers have noted in their reviews that WLAS seems like an inadequate copy of Google Scholar and other tools (O'Leary, 2007; Jacsó, 2006). Certainly, response to the introduction of WLAS would have been much more enthusiastic and thorough, had it not followed Google Scholar by a year and a half. According to Danielle Tiedt, general manager of Windows Live Premium Search, WLAS shows promise because it "addresses two needs of the academic community that have traditionally been under-served…academic users want tools to help them fine tune results, and are interested in getting more information on a search result before clicking off to a specific article" (Sherman, 2006).

Much of the future debate surrounding the use of Google Scholar, WLAS and other tools will be based on the tension between users' desires and the concerns of librarians. And what else do users really care about? "Is it finding that needle in the haystack? …just getting that essay written?" (Abram, 2005). And what do librarians care about? According to Abram, librarians prize "comprehensiveness, quality, authority and brand" (Abram, 2005). But what about usability or appearance, not to mention speed and simplicity, when there is a long line at the reference desk? In many cases, librarians and their patrons may want the same thing.

By July of 2005, eight months after the introduction of Google Scholar, a significant number of colleges and universities had integrated it into their library websites, a primary point of access for many library patrons. Two researchers at Rutgers University, Laura Mullen and Karen Hartman, were on an advisory committee to decide how to implement Google Scholar into the library's web presence at Rutgers. They decided to find out what other libraries had done in response to the same question, so they examined the websites of 113 academic libraries (see more in the Methodology section). They learned that 47% of these libraries had already places a link to Google Scholar somewhere on their websites, either in the OPAC, lists of databases, or several other places, while 20% also mentioned Google Scholar in instructional guides or workshops (Mullen, 2006).

Mullen and Hartman demonstrated the various ways that libraries have decided to implement Google Scholar in their web presences. According to another study, 85% of visitors to library websites come to find materials like scholarly journal articles, making the design of the library website crucially important in accessing content (Jasek, 2005). But how do librarians really feel about tools like Google Scholar and WLAS? Do they find them useful, despite their drawbacks? How much do they use these tools? Have they encountered advantages or disadvantages that other researchers haven't yet? These are some of the questions my study seeks to answer.

Methodology

Rationale

Very little of the published research on Google Scholar and WLAS discusses the broad deployment of these tools in academic libraries, focusing instead on technical comparisons to other tools or theoretical issues and applications. Mullen and Hartman (2006) were the first researchers to study the use of Google Scholar at a truly substantial variety of institutions, visiting the websites of 113 university libraries. These libraries are part of the Association of Research Libraries (ARL), currently including 123 institutions in the United States and Canada "that share similar research missions, aspirations, and achievements". (see http://www.arl.org/arl/ for a list). Mullen and Hartman excluded from their study the 10 ARL libraries that are not directly affiliated with colleges or universities.

Mullen and Hartman's study allowed me to form basic conclusions about broad institutional attitudes towards Google Scholar, but they did not examine the attitudes of individual librarians or gather any usage data from the institutions whose websites they studied. I felt that the scholarly community, especially those librarians and researchers who will be responsible for encouraging or discouraging the use of Google Scholar, WLAS and similar tools in the future, would benefit from more detailed knowledge of librarians' attitudes and practices in a variety of settings. I decided to interview librarians

at the same 113 libraries included in Mullen and Hartman's sample, for two major reasons. First, these libraries are marked by significant geographic diversity, serving diverse populations of students and researchers all over the United States and Canada with a vast array of research interests. In addition, these institutions as a group are unmatched in the size and variety of their holdings. ARL counts among its members many of the renowned research libraries in North America, including all 70 of the academic libraries on ALA's list of 100 largest library systems in the United States (http://www.ala.org/ala/alalibrary/libraryfactsheet/alalibraryfactsheet22.cfm). Librarians at these libraries are leaders in research, innovation and service. It follows that these librarians and the institutions they work for are likely to be familiar with emerging research tools, including Google Scholar and WLAS.

WLAS is a tool that had not been released when Mullen and Hartman conducted their research. At the time I conducted this study, I had not found any large-scale research comparing WLAS and Google Scholar. I wanted to study the effect of WLAS on research in academic libraries because it is a direct competitor to Google Scholar, and another example of a free, "blended" database with an array of functions. I believe, like other researchers, that these tools and others like them will be popular with a variety of library patrons in the future. Further, I believe that data gathered in consultation with librarians at these ARL libraries will provide valuable insight into the current and future usefulness of these tools and others like them.

Selection of participants

I gathered data by administering a short, web-based questionnaire to librarians with reference and instruction duties at 108 of the 123 ARL libraries (including my home institution, UNC-Chapel Hill). I was most interested in the opinions of librarians who perform reference and instruction duties, because they are the professionals most likely to use Google Scholar and WLAS or have definite opinions about their use. To ensure that my survey reached those library employees with the highest level of educational attainment and professional experience, I tried to limit my sample population to professional librarians, those possessing a Master's degree, Ph.D. or other post-graduate degree or certificate in Library or Information Science or a related field. ("Librarian" is a title generally used to refer to library employees with advanced degrees in the field, as differentiated from support staff without equivalent education and professional status.) I used "targeted" random sampling to choose 5 librarians from each institution, for a maximum potential sample size of 565. This involved visiting the staff directories on the website of each library system, compiling a list of e-mail addresses of all library staff involved in reference and/or instruction at these libraries, and using an online random number generator to choose 5 of them at random (see http://www.random.org/integers/). On some websites, branch library staff members were listed on the websites of their branch libraries, not in a central location. I included librarians in these branches in my lists of potential participants. When online staff directories either did not list staff members by department or did not draw distinctions between professional librarians and support staff, I chose 5 at random from the entire staff directory. As 5 of the 113 library

websites did not include publicly-available staff directories, I was only able to assemble a list of 540 potential participants from 108 institutions.

Questionnaire

I sent an email to the 540 potential respondents including a link to an online survey, which I created with survey technology by Qualtrics (http://www.qualtrics.com). I sent an initial e-mail to each participant between December 8th and December 10th, 2006. On December 17th, I sent a follow-up e-mail reminding participants that the survey was still accessible. December 23rd was the last day participants could respond.

The survey was composed of 18 questions, 14 of which were multiple-choice, 1 of which was in "short-answer" format, and 3 which elicited open-ended responses. (See Appendix A for the full questionnaire*).* The first 3 questions were demographic in nature, inquiring about participants' level of library-related education, their institutional affiliation, and the type of library where they work (See Fig. 1 below). The first question was designed to enable me to filter out responses from participants who were not professional librarians. I enabled non-professional librarians to complete the survey, but have ignored their responses in reporting data. I also wanted a general measure of the nature of the libraries where participants worked; the third question helped me determine if the participant was likely to provide assistance in research and/or instruction in a relatively broad or more specific range of subjects. This is relevant because of the strengths and weaknesses of Google Scholar and WLAS in certain subject areas, as described previously.

Following these questions, my survey used “skip logic” to guide the participant through the rest of the questions, meaning that a participant’s answer to a particular question would cause the survey to skip a number of follow-up questions. For example, question 4 asked participants if they performed bibliographic instruction for groups or individuals; if the participant did not, I did not ask further questions about their behavior in instruction sessions.

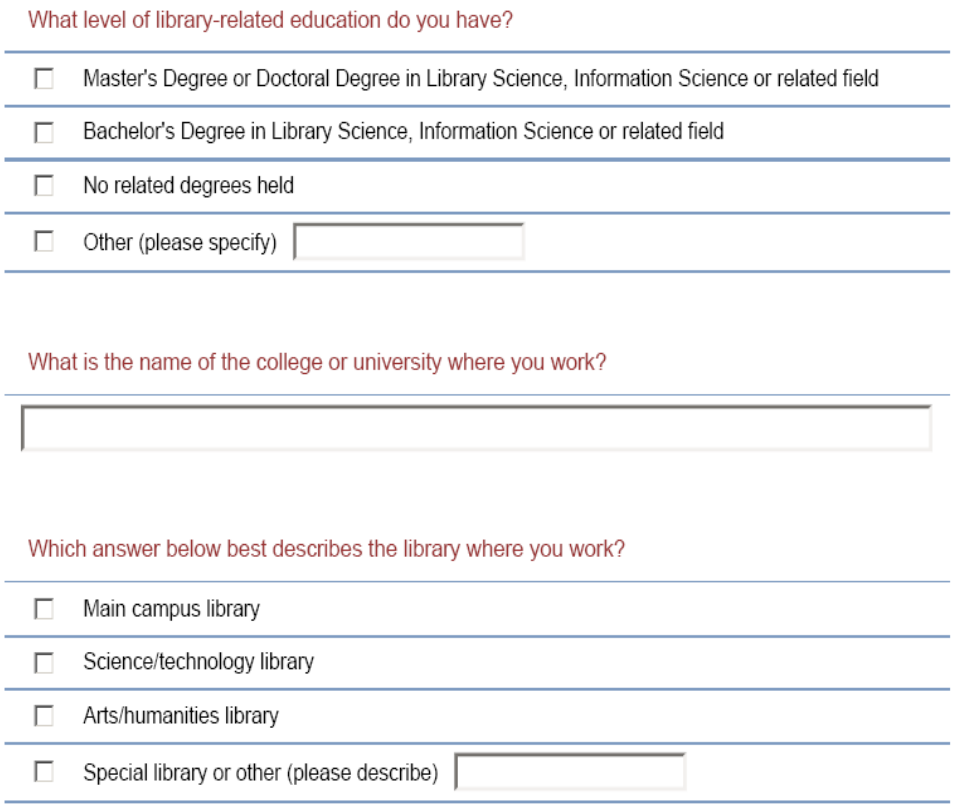

Figure 1. Survey Questions 1-3.

Results

Demographics

I received 82 complete responses to my survey, of which 76 (93%) were by librarians who possessed a Master's degree or Ph.D. in Library Science, Information Science or a related field, and of which one (1%) was by a librarian with "a postgrad degree in Library Science." Data described below was drawn only from these 77 participants. The 72 participants that volunteered their location represented 52 different institutions in 30 states, the District of Columbia and Canada. 49 (64%) work at their university's main campus library, 12 (16%) work in a science/technology library, 8 (10%) work in a library devoted to arts and humanities, and 10 (13%) work in a "special" library, including 5 (7%) in health sciences libraries, 2 (3%) in archives and special collections, one (1%) in a law library, one (1%) in a business library, and one (1%) in an information commons.

Analysis of Quantitative Data

Seventy-four participants provide group and/or individual bibliographic instruction to library patrons. 44 (70%) of them demonstrate Google Scholar in at least one major subject area. Figure 2 gives a breakdown of the major subject areas for which they demonstrate Google Scholar. (For complete answers of librarians who checked "other," see Appendix B).

5. When providing bibliographic instruction, do you demonstrate the use of Google Scholar for research in any of the major subjects below? (check all that apply)

#	Answer		Response	%
1	Arts/Humanities		15	20%
2	Social Sciences		21	28%
3	Science/Technology/Engineering		16	22%
5	Medicine		8	11%
4	Other (please describe)		10	14%
6	I do not demonstrate Google Scholar		30	41%
	Total		100	135%

Figure 2. Survey Question 5.

Only one (1%) out of the 74 librarians that perform bibliographic instruction demonstrates WLAS in instruction sessions. See Figure 3 below for a striking comparison.

6. When providing bibliographic instruction, do you demonstrate the use of Windows Live Academic Search for research in any of the major subjects below? (check all that apply)

#	Answer		Response	%
1	Arts/Humanities		0	0%
2	Social Sciences		0	0%
3	Science/Technology/Engineering		1	1%
4	Other (please describe)		0	0%
5	Medicine		1	1%
6	I do not demonstrate Windows Live Academic Search		73	99%
	Total		75	101%

Figure 3. Survey Question 6.

Seventy-five respondents provide in-person or telephone reference services. Of them, 64 (85%) have used Google Scholar at least once in reference transactions, 48 (64%) of them in the month prior to taking the survey. See Figure 4 below.

8. In providing in-person or telephone-based reference service to patrons, when was the last time you used Google Scholar to find content or suggested that a patron use it? (select only one answer)

#	Answer		Response	%
1	In the last week		15	20%
2	In the last month		33	44%
3	In the last year		7	9%
4	Never		11	15%
5	At some point, but I'm not sure when		9	12%
	Total		75	100%

Figure 4. Survey Question 8.

Only five (7%) of the participants have ever used WLAS in providing in-person or telephone reference services. See Figure 5 below.

9. In providing in-person or telephone-based reference service to patrons, when was the last time you used Windows Live Academic Search to find content or suggested that a patron use it?

#	Answer		Response	%
1	In the last week		0	0%
2	In the last month		2	3%
3	In the last year		0	0%
4	Never		70	93%
5	At some point, but I'm not sure when		3	4%
	Total		75	100%

Figure 5. Survey Question 9.

Seventy-two (94%) of respondents provide electronic reference services. Of them, 42 (58%) have used Google Scholar in electronic reference transactions, 18 (25%) of them in the last month. See Figure 6 below.

11. In providing e-mail, chat/instant message or other electronic reference service to patrons, when was the last time you used Google Scholar to find content or suggested that a patron use it?

#	Answer	Response	%
1	In the last week	5	7%
2	In the last month	13	18%
3	In the last year	13	18%
4	Never	30	42%
5	At some point, but I'm not sure when	11	15%
	Total	72	100%

Figure 6. Survey Question 11.

Only three respondents have ever used WLAS in providing electronic reference assistance, and only two (3%) of them in the last month. See Figure 7 below.

12. In providing e-mail, chat/instant message or other electronic reference service to patrons, when was the last time you used Windows Live Academic Search to find content or suggested that a patron use it?

#	Answer	Response	%
1	In the last week	0	0%
2	In the last month	2	3%
3	In the last year	1	1%
4	Never	69	96%
5	At some point, but I'm not sure when	0	0%
	Total	72	100%

Figure 7. Survey Question 12.

What makes Google Scholar an appropriate tool for academic research? Almost three quarters of the 77 respondents (73%) to Question 13 replied that "general ease of

use" was a factor. More than half (61%) felt that the ability to link to library holdings was important, while almost half (49% and 44%, respectively), replied that Google Scholar's speed and the variety of sources it provided access to were significant. Several other factors proved significant to a large minority of respondents. For further details, see Figure 8 below. Only six respondents (8%) had no opinion about Google Scholar's features. Of the ten (13%) that chose "other," an additional two (3%) of them remarked on the variety of sources available in Google Scholar, two (3%) of them commented on students' familiarity with it, and one (1%) mentioned a specific application involved in linking to library holdings. (See Appendix B for a complete list of responses by those who chose "other"). Subtracting the six (8%) that have no opinion, 71 respondents chose an average of 3.93 different reasons why Google Scholar is an appropriate tool for research.

13. Which features of Google Scholar make it an appropriate tool for academic research? Check all that apply.

#	Answer		Response	%
1	General ease of use		56	73%
3	Speed		38	49%
4	Relevance ranking		21	27%
5	Citation counting function		19	25%
6	Quality of sources		21	27%
7	Variety of sources		34	44%
8	Ease of finding full text		24	31%
9	Linkage to library holdings		47	61%
10	Other (please specify)		10	13%
11	Power of advanced search interface		9	12%
12	I have no opinion		6	8%
	Total		285	370%

Figure 8. Survey Question 13.

Only seven (9%) of respondents had an opinion about the specific features of WLAS that make it useful for academic research. Those seven chose an average of 2.43 appropriate features; as with Google Scholar, the most popular of these was "General ease of use." See Figure 9 below for more results.

15. Which features of Windows Live Academic Search make it an appropriate tool for academic research? Check all that apply.

#	Answer		Response	%
1	General ease of use		5	6%
3	Speed		2	3%
4	Relevance ranking		0	0%
5	Citation counting function		2	3%
6	Quality of sources		2	3%
7	Variety of sources		1	1%
8	Ease of finding full text		2	3%
9	Linkage to library holdings		2	3%
10	Other (please specify)		1	1%
11	Power of advanced search interface		0	0%
12	Ease of citation exportation		0	0%
13	I have no opinion		70	91%
	Total		87	113%

Other (please specify)
Never used It

Figure 9. Survey Question 15.

As seen in Figure 10 below, over half of the 77 respondents (52%) felt that Google Scholar, WLAS and other tools will "definitely" or "probably" lead to decreased usage of other databases that libraries already pay for, while only 28 (36%) felt that this would "probably not" or "definitely not" happen, and 9 (12%) were not sure.

17. Do you think that the use of free tools like Google Scholar and Windows Live Academic Search will lead to decreased usage of traditional, subscription-based library databases?

#	Answer		Response	%
1	Definitely		10	13%
2	Probably		30	39%
3	Probably not		24	31%
4	Definitely not		4	5%
5	Not sure		9	12%
	Total		77	100%

Figure 10. Survey Question 17.

Analysis of Qualitative Data

Questions 14 and 16, respectively, asked participants what they would change about Google Scholar and WLAS if they could. Because these questions were open-ended, they invited an incredible range of responses, which was certainly desirable but which made the data I gathered not easily quantifiable. Most respondents' specific concerns were echoed by others and have been noted by other researchers, as I have discussed in the literature review. The first group of concerns I identified is related to the content that these databases index. Specifically, these are "lack of sources" and "quality of sources." "Inadequate use of metadata" is another category of concerns, and includes: concerns about inflated or mistaken citation counts; arbitrary, confusing or otherwise illegitimate "relevance" ranking of results; and inadequate linking capabilities. Some respondents, like researchers cited above, complained about the search interface and/or the display of results, another category of response. Other concerns I thought of as "environmental". These included issues involving Google's secrecy or "opacity," as well as "poor patron awareness" that can lead to misuse of these databases. Many responses

addressed more than one concern or aspect of the databases, and were tallied accordingly. (For a full list of responses, see Appendix B).

There were 43 responses to Question 14, "Is there anything particular about Google Scholar that you don't like, or that you would change if you could?" Thirteen (30%) of the 43 responses came under the heading *inadequate use of metadata*. Here are examples of these concerns:

> "Contains duplicate or erroneous citations, especially after the first 3 to 4 pages. As a librarian I would like more up-front functionality and limits."
>
> "I would like to see Google introduce a better relevance ranking using metadata characteristics. The citation counting feature is intriguing but the whole concept of "cited"-ness produces soft numbers and is better treated with multiple comparisons to citation sources (Web of Science, SCOPUS, ArXiv, internal citations in journal publications, and other sources)."
>
> "Links to library holdings (OpenURL) do not always provide enough metadata (i.e., the amount of metadata is inconsistent). In some cases patrons do not find full text resources that the library has."

The second largest group of concerns about Google Scholar was *Google's opacity or lack of disclosure*, cited by nine respondents (21%). This includes Google's refusal to provide a full list of the vendors or sources Google Scholar indexes, as well as fears about Google's inadequate indexing or provision of materials. For example:

> **"**It would be nice to know what resources it's indexing--it seems to be skewed toward medical and scientific literature more so [than] humanities."
>
> "I also would REALLY like some kind of idea of how the database is put together (what exactly is in there, how are the subject limits defined, how the relevance is determined, etc. -- I don't expect to find out but this is exactly why I don't really use it in any serious way.)"

> "Not sure what publishers are being indexed versus proprietary databases, where I have more confidence that my searching is more comprehensive."

Eight respondents (19%) suggested a range of improvements to Google Scholar's *search interface and/or display of results:*

> "I wish there was an accurate way of organizing results by date. And I wish that there [weren't] such bizarre differences between identical searches even seconds apart."

> "The default opening screen should actually be the Advanced Search."

> "Better search interface would be nice. Better controls of search results (i.e. not so many web sites)."

Lack of sources is another common concern, cited by six (14%) respondents:

> "I am not sure that Elsevier titles are included and that would be a big gap."

> "Some gaps in coverage of major journals."

Another six (14%) of respondents felt that *poor patron awareness* of Google Scholar's strengths or shortcomings was a major problem:

> "What I don't like about Google Scholar is that it seems many graduate students and faculty I've spoke to use it extensively for their research, mistakenly believing it is searching library resources. As an engineering librarian, I find this particularly troublesome because Google Scholar, in my opinion, does not do an effective job in find engineering resources."

> "Increased awareness by patrons that it is linking to the sources we pay for."

> "[It is] very confusing for students, particularly when trying to teach them about Article Indexes subscribed to by the library."

In addition, three respondents (7%) replied that there was nothing about Google Scholar they would improve. Two participants (5%) questioned the quality of sources,

one (2%) stated that students relied too heavily on Google Scholar, and one (2%) found that it is generally not as useful as other database aggregators.

There were only 23 responses to the same question about WLAS, Question 16. Of them, 15 (65%) had either never heard of WLAS, had heard of it but never used it, or had barely used it and had no further comment. An additional two (9%) replied "n/a." Of those that were familiar with WLAS, five (22%) expressed distaste for the *search interface and/or display of results:*

> "I never remember to use it; the one time I looked at it the interface seemed pretty poor."
>
> "The scrolling is annoying. I think it is more taxing on the wrist than clicking on the next page."
>
> "I tried it once and found the scrolling results display completely unusable."

two respondents (9%) also cited structural concerns, including dead links and inadequate citation counting. One respondent (4%) wanted to improve the citation export feature, one (4%) wanted a larger variety of sources, one (4%) wanted more disclosure about the contents of the database, one (4%) cited inadequate speed, and one (4%) said their problems were the "same as problems with Google."

A similar approach to that used in interpreting responses to Questions 14 and 16 was used in interpreting responses to the final question, #18, which asks, "Finally, please share with us any issues you can think of related to the use of Google Scholar and Windows Live Academic Search in academic libraries. If you have opinions that this survey hasn't allowed you to share yet, please discuss them. Please tell us of any specific effects you believe these tools will have on research in academic libraries in the future."

There were 44 responses to Question 18. Most responses with specific complaints, concerns or suggestions spoke of Google Scholar specifically (32, or 73%), while only five (11%) mentioned issues associated with WLAS or appeared to consider it as anything but a clone of Google Scholar. Many responses demonstrated positive feelings and expectations about tools like Google Scholar and WLAS, or at least tempered points of caution with other notes of optimism. Seventeen responses (39%) stressed the use of a variety of databases in conducting research and/or suggested proper communication and teaching techniques to spread awareness about the strengths and weaknesses of Google Scholar and WLAS. For example:

> "Google Scholar is good resource for libraries, but subscription databases are still a necessity for librarians and scholars. I think I would suggest it more, if our library did not already subscribe to a wide range of databases."
>
> "I think librarians need to talk more about the positive aspects of Google Scholar and when it would be appropriate to use."
>
> "As long as there is still money to be made by subscription-based library databases, Google Scholar (and the like) will continue to be a supplemental tool for research."
>
> "I don't think it is a matter of liking it or not liking, but we have to acknowledge that faculty and students use these services."

The second major issue that librarians mention in connection with these tools is overuse or reliance on these tools, especially in leading to ignorance of other appropriate tools and potential gaps in research. Fourteen (32%) of the respondents expressed concern about this possibility. For example:

> "My main concern with Google Scholar is that students and even faculty have told me it is the ONLY database they use for research."

> "I can't speak for WLAS (have never used it), but I know that Google's Scholar's holdings are too spotty to be relied upon for any kind of comprehensive search."
>
> "Researchers are very likely to miss important citations and important connections if they don't learn to use library-provided resources and don't take advantage of the expertise of librarians (such as myself)."

Nine respondents (20%) stressed that databases libraries pay for already are often better for their stated purposes than Google Scholar and/or WLAS, who try to combine many of these different functions in one place:

> **"**Since I mostly deal with arts, humanities and social sciences, I don't find it to be as useful as perhaps my science & engineering colleagues might."
>
> "I hope that these tools will get better but really the line between academic search engines and quality academic citation databases is pretty firm. They are not meant to be competing. They have completely different uses."
>
> "While Google Scholar often retrieves useful citations and articles, the results are often enormous in number, and students and researchers would be better served searching in a more focused database, e.g., EconLit or MLA."

Another nine respondents (20%) made the point that these tools will force other database vendors to make improvements:

> "Internet products such as Google Scholar raise the bar for subscription based vendors."
>
> "I believe that free, easy-to-use free services Google Scholar and Windows Live Academic Search will force subscription-based database aggregators and creators to continue to refine their own services, such as creating more easily-navigated user interfaces, quicker return times, and higher-quality content."

Six respondents (14%) mentioned that these tools are, for good or bad, are indexing or providing access to material that libraries have already paid for. For example:

> "The ironic thing about asking whether Google Scholar will lead to a decreased use in traditional library databases is that much of the content that Google Scholar retrieves is from traditional subscription based resources. Google Scholar is a great finding tool; library databases continue to provide the content that GS locates."

> "I don't think it is a matter of liking it or not liking, but we have to acknowledge that faculty and students use these services. I use it to tell them not to pay for content that they have access to already through the library website."

Four respondents (9%) found certain aspects of these tools to be confusing for users*:*

> "They often find items that look appropriate, but either can't get to them or they turn out not to be what they needed. With Google they still get far too many hits, with no sorting options. WLAS is harder to target, and has no advanced search option."

> "I think the lack of clarity surrounding what Google Scholar actually does and where it obtains this information is very confusing for students."

Also, three participants mentioned that these tools, because they are free and include a huge amount of content, *are especially helpful for small or under-funded libraries.* One respondent wrote:

> "Google Scholar is a great resource for small academic libraries who cannot afford Web of Science or some of the more specialized indexes. Yes, their patrons can use Google, and wade through the junk - but GS is much more useful for locating research articles."

Discussion

Google Scholar far ahead of WLAS

The survey results demonstrate striking differences in levels of use and levels of awareness of Google Scholar and WLAS by academic librarians. Google Scholar is much more familiar to librarians, and is used several times more in a variety of ways. A major reason for this could be that Google Scholar was introduced first, resulting in much more fanfare surrounding its launch and giving librarians a year and a half to familiarize themselves with it before Microsoft introduced a competing product. The power of Google's name may be another factor. Google is by far the world's most popular search engine, and is used by at least 72% of academic authors to search for scholarly articles (Friend, 2006). Librarians and students are both comfortable using Google, and Google Scholar's resemblance to Google makes it incredibly easy for them to use. Librarians suffer from information overload just like library patrons do; WLAS or any other tool needs to be sufficiently exciting to make librarians want to change their habits. Insufficient marketing or a lack of "buzz" may also have an effect; a full 65% of the 23 librarians who responded to Question 16 had never heard of WLAS. Also of importance is that WLAS indexes a comparatively narrow field of subjects, concentrating heavily on the sciences. Librarians who know this are not very likely to use it or suggest its use in subject areas outside of its stated scope.

Library instruction at present

Over half (59%) of the survey respondents that provide instructional services demonstrate Google Scholar in one or more major subject areas. This could represent a high rate of acceptance for a single database, but without comparable data on other databases, it's impossible to determine the actual significance of this finding. For instance, it would be helpful to know how many respondents demonstrate other large, multi-disciplinary databases such as Ebsco's Academic Search Premier. We do know that Mullen and Hartman found Google Scholar in class guides and workshop literature on the websites of 20% of the libraries they studied, but we can't necessarily conclude that the demonstration of Google Scholar has tripled in the time since their study (Mullen, 2006).

At first glance, librarians aren't demonstrating Google Scholar proportionately with its coverage in certain subject areas. For instance, 28% of respondents suggest using it for social sciences, while only 11% demonstrate it for medical research, though its coverage of the social sciences is only about half as comprehensive as its coverage of medical sources (Neuhaus, 2006). However, only 7% of respondents identified themselves as working in medical or health sciences libraries.

Other mitigating factors prevent the formation of definite conclusions from this data. It is possible that many librarians aren't aware of or aren't bothered by Google Scholar's comparatively poor coverage in the humanities and social sciences; though it is equally possible that this weakness is overshadowed by Google Scholar's other strengths, like speed and simplicity. In addition, though some librarians most likely demonstrate Google Scholar because they deem it at least as useful as other tools, others probably

discuss it to try to alleviate confusion and promote responsible use by students that already use it. Future researchers studying this question should ask instruction librarians *why* they demonstrate these tools for research in certain subject areas and not others. For instance, some librarians may feel that Google Scholar's citation-analysis tool is very useful for students in the humanities and social sciences, while the lag time in indexing content from PubMed makes it useless for students in the health sciences.

Strikingly, only one librarian demonstrated WLAS in instruction sessions, which only seems to reflect how few respondents have even heard of WLAS, and/or how loyal they are to other tools like Google Scholar.

Reference services at present

Despite having general notions of its popularity, I was surprised to find that a large majority of respondents (85%) have used Google Scholar or suggested its use at least once in providing in-person or telephone reference services. What may be more telling is that 64% had used it in the last month. Because Google Scholar had been on the market for over two years at the time of our study, we believe that the 64% who had used it in the previous month had already proved its usefulness to themselves and are very likely to continue using it. However, a simple majority (58%) of respondents had used Google Scholar in providing e-reference services, and only 25% had used it in the previous month. These percentages seem low, but they may be largely explained by the fact that electronic reference questions still represent a small proportion of all reference transactions. A survey by Joseph Janes in 2002 found that 55.9% of academic reference librarians at 655 libraries had answered two or fewer questions using electronic reference services in the previous week (Janes, 2002). In addition, only 19% of questions asked in

2006 at the Davis Library Reference desk at UNC-Chapel Hill were in electronic format (Tobin, 2006). I hypothesize that if questions in electronic format represented 50% of all questions asked, usage of Google Scholar in e-reference transactions would equal or exceed usage in in-person reference transactions.

We are not able to draw any new conclusions about the use of WLAS in reference services, as only two respondents used it in the previous month for in-person or telephone reference transactions, and only three had used it for e-reference transactions.

What does all this mean?

So why do reference and instruction librarians teach Google Scholar and WLAS in instruction sessions? Why do they use them or advocate their use during reference transactions? How do these decisions relate to their hopes for these and other tools in the future, and their worries about how Google Scholar and WLAS are affecting academic research today?

We have established that librarians generally have a different (and more complicated) set of reservations about using Google Scholar and WLAS than students do. It appears that when librarians do recommend using these tools, it is because their desires match the desires of the patrons they are helping. Of librarians surveyed, 73% say that "general ease of use" is one factor that makes Google Scholar an appropriate tool for research. "Speed" is the third most popular factor, cited by 49% of respondents, followed by "variety of sources" (44%). All three of these are things that I believe students want, as Abram says, whether they're just trying to finish a paper or trying to find "that needle in the haystack" (Abram 2005). Students know that they can type in almost any keyword

or keywords and Google Scholar will return something useful. While 61% of our respondents said that "linkage to library holdings" that are already paid for was an important aspect of Google Scholar, some also mentioned that students weren't aware of this function. Most likely, students that aren't aware of it take good advantage of its utility anyway.

There are other aspects of these databases (and other databases) that librarians care about, while students generally don't know about them. These include: the power of search interfaces, the quality of sources, the proper and consistent use of metadata in search results, citation counts and other functions. These concerns are included in the quantitative responses to Questions 13 and 15, as well as in the qualitative data relating to Questions 14, 16, and 18. Responses to certain features of Google Scholar and WLAS are mixed. For instance, "inadequate use of metadata" is the most popular criticism of Google Scholar, yet "relevance ranking," "citation counting function," and "linkage to library holdings" are all cited as positive aspects by over 25% of respondents.

How does one account for apparent contradictions like this one? Maybe the best way would be to conduct more surveys. I would like examples of reference questions that lead librarians to use Google Scholar or WLAS (or to stay away from them). How often are these tools used only when checking citations? How often are they used for ready reference questions, as opposed to in-depth research questions? Do librarians talk about their concerns with library patrons when they use these tools on the reference desk? How many librarians know that Google Scholar and WLAS are relatively weak in the humanities? Google Scholar and WLAS can be difficult tools to "figure out," despite their simplicity. My research suggests that what makes these tools useful or not useful

depends heavily on what a patron or librarian is looking for at a particular time. It depends equally heavily on the user's level of knowledge about these tools specifically and the usage of electronic databases generally. This is part of why these tools are so controversial, but it is also why librarians are so necessary. We will always need people to teach users how to evaluate the tools available to them.

Google Scholar and Windows Live Academic Search both remain in beta at this time. The engineers at Google and Microsoft are working hard to update these databases, incorporate feedback, and improve control of searching and display of results. This study provides substantial support to other researchers who have written about the positive and negative aspects of these tools; almost every previous argument for or against their use has been supported by respondents to my survey. Though 52% of respondents felt that tools like Google Scholar and WLAS will lead to decreased usage of traditional databases, almost as many either disagreed or weren't sure. This is one of the many "unknowns" about these tools, and it convinces me that it is too early to tell exactly what their impact will be. I believe, like many of my respondents, that Google Scholar, WLAS and others will highlight the need for well-educated and open-minded librarians, as well as responsive and open-minded academic publishers and vendors of database technology. Studying these tools and their use in academic libraries is a crucial step in envisioning and implementing library services of the future.

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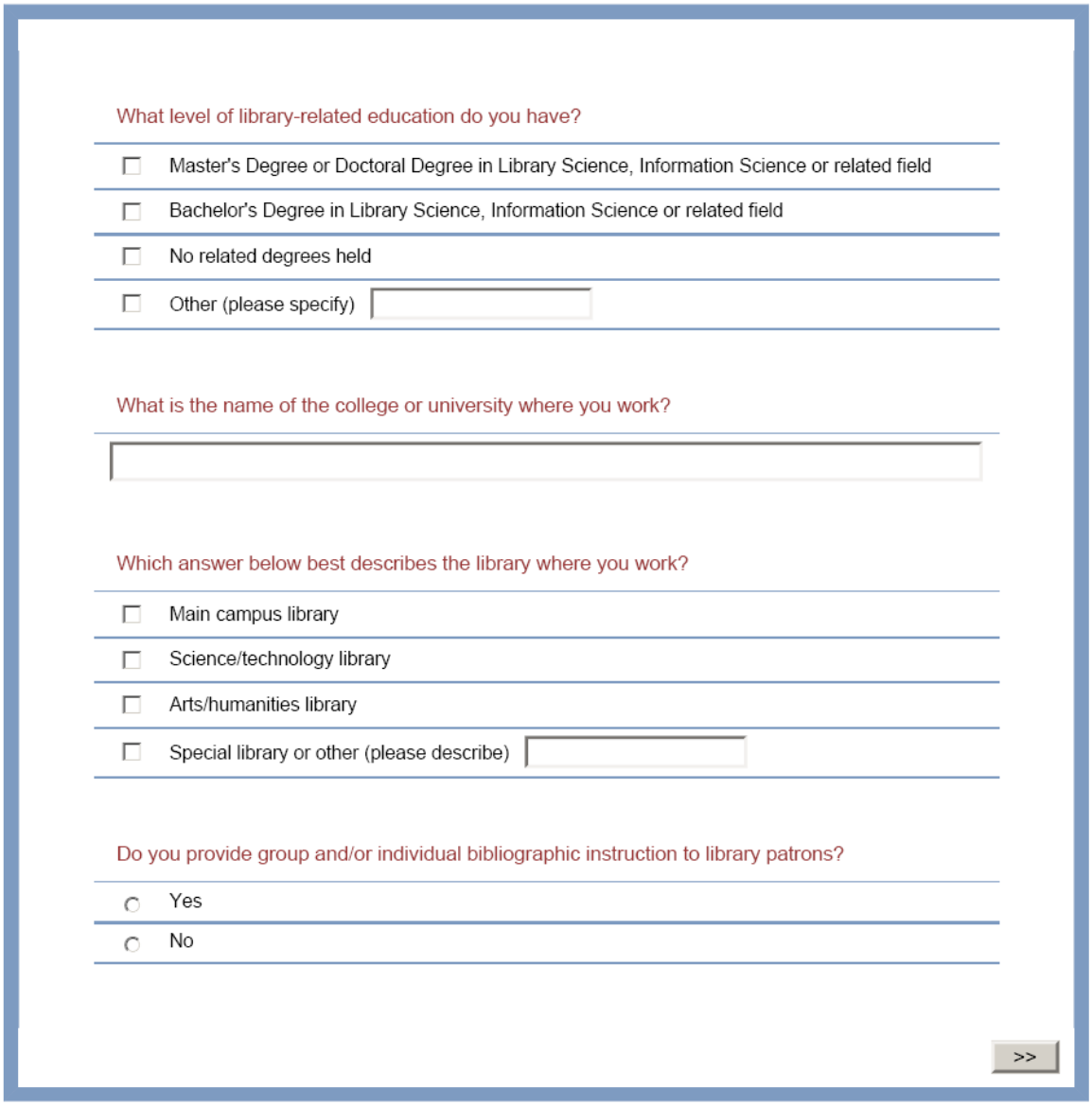
Appendix A (Questionnaire)



What level of library-related education do you have?

- ☐ Master's Degree or Doctoral Degree in Library Science, Information Science or related field
- ☐ Bachelor's Degree in Library Science, Information Science or related field
- ☐ No related degrees held
- ☐ Other (please specify)

What is the name of the college or university where you work?

Which answer below best describes the library where you work?

- ☐ Main campus library
- ☐ Science/technology library
- ☐ Arts/humanities library
- ☐ Special library or other (please describe)

Do you provide group and/or individual bibliographic instruction to library patrons?

- ○ Yes
- ○ No

>>

When providing bibliographic instruction, do you demonstrate the use of Google Scholar for research in any of the major subjects below? (check all that apply)

- ☐ Arts/Humanities
- ☐ Social Sciences
- ☐ Science/Technology/Engineering
- ☐ Medicine
- ☐ Other (please describe)
- ☐ I do not demonstrate Google Scholar

When providing bibliographic instruction, do you demonstrate the use of Windows Live Academic Search for research in any of the major subjects below? (check all that apply)

- ☐ Arts/Humanities
- ☐ Social Sciences
- ☐ Science/Technology/Engineering
- ☐ Medicine
- ☐ Other (please describe)
- ☐ I do not demonstrate Windows Live Academic Search

<< >>

Do you provide in-person (desk) and/or telephone-based reference service to library patrons?

- ☐ Yes
- ☐ No

<< >>

In providing in-person or telephone-based reference service to patrons, when was the last time you used Google Scholar to find content or suggested that a patron use it? (select only one answer)

- ☐ In the last week
- ☐ In the last month
- ☐ In the last year
- ☐ Never
- ☐ At some point, but I'm not sure when

In providing in-person or telephone-based reference service to patrons, when was the last time you used Windows Live Academic Search to find content or suggested that a patron use it? (select only one answer)

- ☐ In the last week
- ☐ In the last month
- ☐ In the last year
- ☐ Never
- ☐ At some point, but I'm not sure when

<< >>

Do you provide any electronic reference service to library patrons? This includes e-mail, chat, instant message or any other related service.

- ○ Yes
- ○ No

<< >>

In providing e-mail, chat/instant message or other electronic reference service to patrons, when was the last time you used Google Scholar to find content or suggested that a patron use it? (select only one answer)

- ☐ In the last week
- ☐ In the last month
- ☐ In the last year
- ☐ Never
- ☐ At some point, but I'm not sure when

In providing e-mail, chat/instant message or other electronic reference service to patrons, when was the last time you used Windows Live Academic Search to find content or suggested that a patron use it? (select only one answer)

- ☐ In the last week
- ☐ In the last month
- ☐ In the last year
- ☐ Never
- ☐ At some point, but I'm not sure when

<< >>

Which features of Google Scholar make it an appropriate tool for academic research? Check all that apply.

☐	General ease of use	☐	Variety of sources
☐	Speed	☐	Ease of finding full text
☐	Relevance ranking	☐	Linkage to library holdings
☐	Citation counting function	☐	Other (please specify)
☐	Power of advanced search interface	☐	I have no opinion
☐	Quality of sources		

Is there anything in particular about Google Scholar that you don't like, or that you would change if you could?

<< >>

Which features of Windows Live Academic Search make it an appropriate tool for academic research? Check all that apply.

☐ General ease of use	☐ Ease of finding full text
☐ Speed	☐ Ease of citation exportation
☐ Citation counting function	☐ Linkage to library holdings
☐ Power of advanced search interface	☐ Relevance ranking
☐ Quality of sources	☐ Other (please specify)
☐ Variety of sources	☐ I have no opinion

Is there anything in particular about Windows Live Academic Search that you don't like, or that you would change if you could?

<< >>

Do you think that the use of free tools like Google Scholar and Windows Live Academic Search will lead to decreased usage of traditional, subscription-based library databases?

Definitely	Probably	Probably not	Definitely not	Not sure
○	○	○	○	○

Finally, please share with us any issues you can think of related to the use of Google Scholar and Windows Live Academic Search in academic libraries. If you have opinions that this survey hasn't allowed you to share yet, please discuss them. Please tell us of any specific effects you believe these tools will have on research in academic libraries in the future.

<< >>

We thank you for your time spent taking this survey.
Your data has been recorded.

Appendix B (Answers to short answer/open-ended questions)

13. Which features of Google Scholar make it an appropriate tool for academic research? (Written responses of those that chose “other”)

Other (please specify)
Sources seem to be from journal publishers, faculty websites, and academic institutions
Psychological tests are often included in the appendices of papers, giving us the quickest access to them in all the time I have been a librarian.
Students are familiar with it.
Students familiarity with Google ...
occasionally has citation data that is unavailable in web of science, especially for proceedings
Can be helpful in tracking down conference proceedings or other fugitive/grey scholarly literature. very current material that will take months to show up in subscription databases.
abilty to implement SFX
I only use Google Scholar via LibX, I don't go to G.S. to search queries
ease of SEARCHING full text (does not necessariliy "find" it
availability to general public

14. Is there anything in particular about Google Scholar that you don't like, or that you would change if you could?

I don't feel that, especially considering the many and varied databases at our disposal, that Google Scholar returns as many high quality sources as other general knowledge databases (Academic Search Premier, ProQuest Research Library, etc.).
I find it useful as a supplementary tool - but not as a replacement for using Scholars Portal Search (an aggregator of about 70-90 databases) and other appropriate databases.
I would make the Google Scholar ranking system more compliant with "general" Google's PageRank system by hyperlinking all references in all articles, so that a ranking based on frequency of scholarly citations is possible. I realize that this would be a very, very expensive enterprise, but that's really the best improvement that could be made.
I have never been able to figure out the method by which results are displayed. The relevancy ranking criteria seems arbitary at best.
Contains duplicate or erroneous citations, especially after the first 3 to 4 pages. As a

librarian I would like more up-front functionality and limits.
no
I am not sure that Elsevier titles are included and that would be a big gap.
I would like to see Google introduce a better relevance ranking using metadata characteristics. The citation counting feature is intriguing but the whole concept of "cited"-ness produces soft numbers and is better treated with multiple comparisons to citation sources (Web of Science, SCOPUS, ArXiv, internal citations in journal publications, and other sources).
What I don't like about Google Scholar is that it seems many graduate students and faculty I've spoke to use it extensively for their research, mistakenly believing it is searching library resources. As an engineering librarian, I find this particularly troublesome because Google Scholar, in my opinion, does not do an effective job in find engineering resources.
They should make better use of the structured data they to which they have access.
1. Links to library holdings (OpenURL) do not always provide enough metadata (i.e., the amount of metadata is inconsistent). In some cases patrons do not find full text resources that the library has. 2. Some gaps in coverage of major journals.
I would like to see Google advertise their Google Scholar service (or at least make it easier to find ... a lot of undergrads don't look anywhere beyond the homepage (and we know how dangerous that can be if you're using Google for academic research!).
More systematic and thoughtful approach to what is indexed. A little to happenstance just yet.
I wish there was an accurate way of organizing results by date. And I wish that there wasn't such bizarre differences between identical searches even seconds apart. I also would REALLY like some kind of idea of how the database is put together (what exactly is in there, how are the subject limits defined, how the relevance is determined, etc. -- I don't expect to find out but this is exactly why I don't really use it in any serious way.)
I would like to be able to filter by type of resource, e.g., article or book, and by sub-topic. I would also like to sort by date. It would be nice to know what resources it's indexing--it seems to be skewed toward medical and scientific literature more so that humanities.
not sure
Better search interface would be nice Better controls of search results (i.e. not so many web sites)
It doesn't provide complete citations for articles. While we have electronic (SFX) linking to our full text electronic sources, if we don't have something it can be a nuisance determining the needed information for Interlibrary Loan (or finding a print version of the item).
Increased awareness by patrons that it is linking to the sources we pay for.
Sometimes if patrons are automatically authenticated into our databases, JSTOR, for

instance, they never see a, "you are entering UH resources message," and they sometimes assume that content is available "on the web." I think this causes some confusion as it can bolster the belief that everything is free online and Google is enough. It does, however, make research easier for many and that should be the ultimate goal.
not enough coverage of journals in the humanities
I would like to see a clearer labeling of source types and a clearer indication of whether something is actually a peer-reviewed source.
Citation counts include working paper versions of published articles, which is very misleading for researchers.
I use google scholar some myself, especially when I am looking for full text articles in one of my research areas. I don't show it to students, mostly because I am working with them to use online databases, and I feel that Google Scholar blurs the line a little bit between the two. AN experienced researcher can evaluate pros and cons and make a good choice every time he or she seeks information; many of our students, who just want the quickest easiest way, might not get the right message from Google scholar.
I would like Google Scholar to be clearer about what resources are being searched and what aren't.
The default opening screen should actually be the Advanced Search.
I like the faceted browsing on the side, but I wish it were improved. I also wish that it was clearer what is freely available online, and what is subscription only (that is, what we only have full text in because the library paid for it.) It's not perfect, but for some fields I work with -- computer science especially -- it has pretty good coverage
I assume users often believe they have to pay for articles that the library owns, even with the links to the library's holdings. (If they click the title, they are led to an abstact and purchasing information.) I would like the link to the library's holdings to be more prominent. I wish Google would allow us to use our "Find It" logo on the results page. Google's "Import into Endnote" feature needs a lot of work (loads of errors in citations).
It is very misleading for patrons because it only includes content from selected vendors. The variety of types of resources confuses patarons who, at the college/university level, need to learn the features of, differences among, and how to evaluate scholarly journals, conference papers, report literature, general or popular magazines, trade publications, and image and data sources. Speed and ease of use and relevancy ranking are nice features, but the advanced features of a native subscription periodical index are often needed to perform a well-focused search. I seldom encounter students who just need a few sources that they can quickly and easily get from GS. I would, instead, suggest they use Academic Search Premier or Research Library from ProQuest. The searching is better and the links to full text are more direct -- outweighing the convenience of GS.
The citation counting function is worthless because it isn't a count of journals citing journals, but of web citations.
More emphasis on the general search.

Sometimes it is not directly evident if the hit is for the article you are looking for or if it is a citation for the article. It is also not immediately clear to the patron whether or not the full-text for the article they are looking for is available. I think the display should clarify these elements so that patrons can better understand the results. (Perhaps a link that says "cited by" or something of that nature?) Also, I don't think the explanation in "About Google Scholar" clearly explains where these materials come from and why items found there may or may not also be included in Article Indexes used by the library. This makes it very confusing for students, particularly when trying to teach them about Article Indexes subscribed to by the library.
I haven't used it that often but a broader focus on subjects would be nice - rather than mostly including technical and scientific topics.
No
It would be nice to have the option to limit the search to only those items owned by my library.
More sophisticated search software - proximity operators. Ability to have a narrower subject focus, i.e. just business or just economics.
Not sure what publishers are being indexed versus proprietary databases, where I have more confidence that my searching is more comprehensive. I would ask that Google make this list available (or at least more readily available - I'm not sure if they have released these details now).
not really
advanced search sucks-- GS is just a big mess-- I only use it as last resort or for international papers
You can't always tell why a source appears on the list.
*The perception this resource creates that it is limiting to everything "scholarly." It is not searching everything, and many of the items found do not always fit the peer reviewed requirements of professors. Libraries pay a fortune for access to scholarly articles, but students assume when they find these things through Google that it's "free." They then become confused about what is acceptable for assignments since they are usually not allowed to use the "internet," and do not understand when they can't get access from off campus. I know Google is partnering with libraries to a certain extent with digitization and SFX technology, but Google Scholar could at least be more transparent on the "About" page and elsewhere about where and how it is searching (and what it may be excluding).
straightforward Boolean search capabilities

16. Is there anything in particular about Windows Live Academic Search that you don't like, or that you would change if you could?

n/a
While I saw Windows Live Academic Search demonstrated last summer I was not

sufficiently impressed to incorporate it into my workflow.
I have never heard of Windows Live Academic Search, so can't comment on it.
I have never heard of Windows Live Academic Search, so I don't have any comment. I'll have to try it out.
I have found some questionable citations and links seem less reliable than Google Scholar.
I have never used Windows Live Academic Search
No idea - have NEVER HEARD of this resource, let alone used it.
Windows Live Academic Search suffers from an early development that does not have sufficient feature strength to challenge Google Scholar. Like Google Scholar the sources for citations are not defined. Windows Live seems to come from specific commercial journals and the speed is slower than Google.
Although I am aware of Windows Live Academic Search, I have not used it.
Same as problems with Google (I don't know how it works so I can't very well use it with any confidence). And I HATE the name! LOL
I've only looked at it once (and it is my noticing of it that got it on our library's Web search page) and it seemed fine. There is so much going on that paying attention to one more thing (I think it was in beta when I looked at it) is a bit much at the moment, although this survey is reminding me of its existance and I'll probably visit it again soon (visit #2).
I honestly have not looked at Live Academic enough to know.
I tried it once and found the scrolling results display completely unusable
I have never heard of this resource
I've never used Windows Live Academic Search, or even seen it demonstrated.
Never used it
I never remember to use it; the one time I looked at it the interface seemed pretty poor. Looking at it again, it seems to mostly have journals, whereas google has books & proceedings which are useful.
The scrolling is annoying. I think it is more taxing on the wrist than clicking on the next page. (Not that people click on the next page, though.) Improve citation export feature.
I know about Windows Live Academic Search but have never used it.
I have never used Windows Live Academic Search.
I've only briefly looked at it.
n/a
I don't like the interface, the way the results are presented, and the fact that many links lead you to dead ends. There are lots of usability kind of problems there. As result, I don't use WLAS at all.

18. Finally, please share with us any issues you can think of related to the use of Google Scholar and Windows Live Academic Search in academic libraries. If you have opinions that this survey hasn't allowed you to share yet, please discuss them. Please tell us of any specific effects you believe these tools will have on research in academic libraries in the future.

I believe that free, easy-to-use free services Google Scholar and Windows Live Academic Search will force subscription-based database aggregators and creators to continue to refine their own services, such as creating more easily-navigated user interfaces, quicker return times, and higher-quality content.
I do not use Google Scholar often and I am just getting acclimated to its possibilities. I have never used Windows Live. Google Scholar is good resource for libraries, but subscription databases are still a necessity for librarians and scholars. I think I would suggest it more, if our library did not already subscribe to a wide range of databases. Smaller institutions might heavily rely on it. I am curious about the results of this survey. I try to put our resources in front of the patron, before Google scholar.
I find that both Google Scholar and Windows Live Academic Search are frustrating to students who do not have much experience searching databases of any kind. They often find items that look appropriate, but either can't get to them or they turn out not to be what they needed. With Google they still get far too many hits, with no sorting options. WLAS is harder to target, and has no advanced search option.
I don't think it is a matter of liking it or not liking, but we have to acknowledge that faculty and students use these services. I use it to tell them not to pay for content that they have access to already through the library website. We're investigating the possibility of doing the Library Links program in GoogleScholar.
I mainly use Google Scholar to point me in the correct disciplinary direction for a topic I'm not familiar with. Since I mostly deal with arts, humanities and social sciences, I don't find it to be as useful as perhaps my science & engineering colleagues might. Again, I've never heard of Windows Live Academic Search before this survey, and so I don't have any experience with or opinion of the service.
Individual databases still have capabilities not available in Google Scholar and Scholars Portal Search (an aggregator of about 70-90 databases). e.g. thesauruses; concentrations of articles in a particular subject area e.g. psychology, geography etc; controlled subject access. The fact of having multiple databases is advantageous as a way of streamlining a search - e.g. wilson databases for greater selectivity, some for journal articles only etc. Also my experience has been that, for comprehensive searching, one needs to search in more than one place. However, if these huge aggregator engines get better, they may decrease usage of databases. One vast improvement would be the ability to limit to: scholarly journals only; highly recommended resources only (preferably based on human expert selection); by broad subject area (e.g. medicine, psychology etc.).
I can't speak for WLAS (have never used it), but I know that Google's Scholar's holdings are too spotty to be relied upon for any kind of comprehensive search. I think it's great that GS is open URL compliant, however - the fact that it can connect to our

resources makes it a not-bad "second option" for some searches, especially in cross-disciplinary searches.
The ironic thing about asking whether Google Scholar will lead to a decreased use in traditonal library databases is that much of the content that Google Scholar retrieves is from traditional subscription based resources. Google Scholar is a great finding tool; library databases continue to provide the content that GS locates.
I'd prefer more emphatic branding by the participating libraries in these products to remind users that it is a service provided/added by the library. On-screen information should indicate to users for which use these search engines are best suited for remind users what should be searched in subscription-based library databases or catalogs. A nice feed-back feature of these services would be to provide participating libraries with usage data, including what subjects/topics are being searched and number of "successful" searches.
Google Scholar is a great resource for small academic libraries who cannot afford Web of Science or some of the more specialized indexes. Yes, their patrons can use Google, and wade through the junk - but GS is much more useful for locating research articles. I worry that, like Google uses, GS will attract researchers too easily - and that they will think this is all there is published on their topic. For undergraduates I think it's fine. I worry about graduate students using it exclusively as a sole source. I would like to believe that the availability of GS would be extremely helpful for low-budget, low-resource, libraries outside the U.S. These students currently plague almost any Ask-a-Librarian service for information and copies of articles on their topic. Resources like GS, and other free databases such as AGRICOLA, ERIC, etc., make it so much easier to assist researchers with limited access to a library.
Google Scholar challenges the traditional A&I services to provide appropriately fast results. An ideal search interface would combine the pre-cached, relevance ranking, and linking to both web and database features but pulling from A&I keywords, subject headings, and concept codes. In a Semantic Web search results could improve and the library community should support developments as a positive direction. Clearly the customer base (students) has spoken and they prefer Google characteristics but faculty trust libraries to teach students how to separate the "gold, silver and bronze from the dross" (Peter Lange, Provost, Duke University (ARL/ACRL Institute of Scholarly Communications, December 8, 2006).
As I mentioned earlier in the survey, my main concern with Google Scholar is that students and even faculty have told me it is the ONLY database they use for research. Although I have heard people say that they think resources like Google Scholar will eventually overshadow library subscribed databases, I think there is simply too much money to be made (by the vendors) with these databases for them to disappear.
Google's book scanning program has the potential to add a great deal of depth to the coverage, especially for researchers looking for earlier/historical sources. Another benefit of google scholar is that it includes "gray literature" sources, such as working papers and department technical reports, that are not usually covered by commercial indexes. A disadvantage of Google Scholar, versus a commercial index, is that students (especially undergrads) may not distinguish between refereed or formal

publications and those which are not.
As long as there is still money to be made by subscription-based library databases, Google Scholar (and the like) will continue to be a supplemental tool for research. If Google Scholar can provide more consistent and reliable full-text results for free, then I believe the traditional databases might be in trouble...
I wonder how long these tools will remain free. It's likely that once everyone has grown used to relying on these sources, they will begin charging for access. In the end, it might not be good for libraries to be reliant on just these two sources for every kind of scholarly literature.
I hope that these tools will get better but really the line between academic search engines and quality academic citation databases is pretty firm. They are not meant to be competing. They have completely different uses. Citation databases require massive amounts of work by experts to analyze the content and make it possible to get very accurate results when searching. Search engines like GS and WLAS are there for when that work cannot or will not be done and there's no other way of getting to the information. The key is to make users understand and respect (and make use of) the difference. Otherwise, on the sole basis of ease of use, the consumer will use GS et al and ignore the power and value of Medline, ERIC, Philosopher's Index, Academic OneFile, etc.
Students know about Google Scholar and find it easy to use. If they don't need very many sources, their search results may be good enough if faculty don't require more. The future depends not only on what Google and Microsoft will do but what publishers and vendors will do. We also depend upon faculy pedagogy, which drives student research. Not sure what the future holds!
They are contributing to the impression that libraries are unnecessary. ("It is on the Web.") What people don't realize on our college campus is that the reason Google Scholar (and I presume Windows Live Academic Search) are at all useful is that we have many of the items in our library! If we didn't have the items in our electronic collections, the engines would be pretty useless in many cases. Basically Google is getting credit for us owning things and they just might put our library out of business--and then won't our users be surprised when they don't have access to much any more! A lot of the stuff found is not available for free on the Web, and this is not apparent to many users. They're going to be in for a bad surprise when all that neat stuff (that was "free"--only it never was; watch them when they graduate trying to get any of it) is no longer available to them.
I think there is a place for Google Scholar and Windows Live Academic in academic research even though I do not demonstrate them in my "one shot" classes. I barely have time to cover the databases to which we subscribe, so I briefly mention their availability and suggest that students evaluate the benefits to their individual research.
I believe that the power of Google Scholar is as a federated search engine, replacing the ones that library's have purchsed which don't really work very well. I'd like to see Google work more closely with libraries on the technologies involved to make this happen more efficiently.
There is the question of adherence to copyright law in the case of Google Scholar. I'm

not certain that it is always being considered when books are digitized. If every title is available through Google, this could affect acquisitions budgets in academic libraries. There is also the consideration of how many readers really want to read entire books online versus the number who prefer to read monographs in print format.
See previous answer about Google Scholar
Advanced students and researchers in the sciences really like the full-text nature of Google-Scholar and use it for very focused research. In particular, they like being able to search the experimental procedures at the full text level. I think librarians need to talk more about the positive aspects of Google Scholar and when it would be appropriate to use.
A major potential problem is that these will become not just one-stop shopping but only-stop shopping. While Google Scholar often retrieves useful citations and articles, the results are often enormous in number, and students and researchers would be better served searching in a more focused database, e.g., EconLit or MLA. But the apparent ease of use and the retrieval of enough plausibly good hits may engender use of only this database.
Databases are very hard to use compared to some of these tools, and the database publishers will need to make a strong and compelling case for their value in future, I think. It's only librarians that realize the value of the indexes that lie behind databases; for patrons, they just seem like really difficult-to-use search engines. I also wish more vendors would realize the benefits of the faceted browse; relevance ranking hardly ever works properly.
I never think of using Windows Live Academic. I even like the results page better with the split screen, but I stick to Google since people are more familiar with it. (Even if they don't know about the Scholar search, they know Google. Google is a verb, after all. No one out there "Windows Lives" their colleagues/friends/potential partner. They google them.) I already feel like patrons are overwhelmed by all the various research tools. Free tools could lead to decreased usage of traditional library databases for undergraduates, but I think most grad students and faculty will use it in conjunction with research databases. Hopefully, these free tools will force vendors to create better, faster, more user-friendly databases, so that patrons can benefit from the indexing and controlled vocabularies they provide. Ideally, users would use the most appropriate resources for their chosen topic. However, students often use google (normal) as their sole research tool. Google Scholar is better than Google for academic research, so teaching students how to use Google Scholar helps them produce better work.
Although I don't have time to demonstrate GS or WLAS during instruction sessions (only have 45 minutes total!) we do talk briefly about strengths (convenient and current)and limitations. I think most students just use Google without bothering to go to GS. In general, the convenience of GS and WLAS will make it more difficult to draw students into using high quality, well selected, authoritative resources and learning how to select appropriate databases and design well focused search strategies. students will be able to find sources on GS that will enable them to slide through assignments, but the quality of their research and education will have been diminished.

It's only a matter of time before traditional database vendors allow commercial search engines to index their resources. If they're smart, they'll offer consumers a pay-per-view model where they find things through a commercial search engine, link to the database, and then pay a dime or a dollar to access the article in full-text.
I believe that these tools will lead academic patrons to the databases to which we subscribe. I don't believe that it is meant to be a place where all information can be found but a pointer to where the information can be found.
I am only slightly familiar with Google Scholar and not at all familiar with Windows Live Academic Search, so my comments will have to be pretty limited and speculative. My main concerns over the likely increased usage of these and other freely available Web-based information retrieval tools include a worry that present and future generations of researchers/scholars are going to become overly reliant on such tools and will, consequently, not be willing to expend the effort needed to use library subscription databases or (horrors!) print and microform resources for their research. I find this worrisome because researchers are very likely to miss important citations and important connections if they don't learn to use library-provided resources and don't take advantage of the expertise of librarians (such as myself). In a worst-case scenario this will lead to incomplete and inferior scholarship. I certainly understand the human impulse of people wanting the most convenient access with the least amount of effort. However, there is a lot of truth to the cliche of "no pain, no gain." Realistically, I think the use of tools such as Google Scholar and Windows Live Academic Search won't completely replace the use of library subscription databases, etc. for a while but the balance is definitely tipping in favor of the former. As a librarian who began his professional career in 1980 (M.L.S. in 1980), I have witnessed an enormous shift in library operations and patron behavior. At age 49 I suspect I belong to the last generation of librarians who possess any solid experience in using the traditional print and microform reference sources that still provide the foundation of citattions for the proliferation of freely available electronic research tools. I am definitely concerned that this foundation is being undercut in the wholesale rush to use something easy and new. Am I advocating turning back the clock? No. What I am advocating is a balanced use of these new Web-based freely available resources in conjunction with library-provided electronic databases plus, yes, appropriate print and microform resources, not to mention manuscript and other archival resources as well, when appropriate.
I think the lack of clarity surrounding what Google Scholar actually does and where it obtains this information is very confusing for students. They seem to think that it is a substitute for using article indexes rather than a supplement. I think that Google Scholar is an excellent tool for finding detailed citation information and, in some cases, takes the guesswork out of trying to figure out which database may have a particular article. In many cases I have been teaching a library session on finding articles only to have students say, "I just use Google Scholar". This is an opportunity for the librarian to explain the difference between Google Scholar and an article index, but librarians don't always get the opportunity to do so. For this reason, I think, many librarians are fearful of Google Scholar but I believe if Google makes the effort to clarify the nature and function of this feature and if libraries do the same, we may be able to enhance

rather than diminish our services as well as work towards our information literacy mandates.
Eve if the search isn't done as often in the specific database, students are still using library resources to actually get to the full text of the articles
We debated on whether or not to include Google Scholar in our database list or link to it anywhere from our library web pages and we discussed if and how we wanted to promote it. We did end up including it in the list, and creating a brief guide, but don't link it promote it since we'd rather students learn and focus on the traditional databases. I wonder if how we promote it affects how people use it; I just had my first question about it last week after having it in our database list for over a year. (This may be because students are more familiar with the search interface and don't need as much assistance.)
When I teach user ed classes, I demostrate Google Advanced Search and Google Scholar. I know most of the students will go to Google first, but most of them never go beyond the initial search screen, so I show them how to use Google to do a more focused search. I think Google Advance Search is almost as good as any search screen in a proprietory database. Finally, I like Google because it performs a true federated search that in many cases links citations to our own databases. As a librarian, I use Google all the time; I don't know a colleague who doesn't; so it seems somewhat hypocritical to think that I should steer students away from it. I think the better strategy is to teach them how to use Google more effectively.
I think they will become more popular. That they are freely available is great - opens up scholarly resource discovery to people that don't have access to proprietary resources. Their ease of use is nice and they will likely become more appealing to undergrads. However, for graduate students needing to do comprehensive searches, I would recommend supplementing GS or WLA with subject indexes that tend to be comprehensive and offer the power of subject/descriptor searching. I'm not sure how ranking is done...it appears that citation counts play a large role in ranking results in GS. This can be problematic, especially if GS starts to get heavily used. For example, will only 'highly cited' literature get seen and used...and what does this do for newer (and hence, less cited) literature being published. The highly cited stuff is great for undergrads (gets them to core articles), but for more advanced research, this could be a problem.
I really don't use either of these tools. I use regular Google as ready reference, and if I want articles about topics, I go right to the databases (and teach my students to do that as well) as I have much more control over how important a term is, where in the record I want it located, and know there's quality info there. I find the results of a search engine to be unorganized, and generally not very useful if I'm looking for something specific. The reason I use Google Scholar is because that is what LibX (http://libx.org/) is running off of. So, in that respect I want Google Scholar to offer more articles, but only so that I can use this other tool even more effectively.
It seems that since Google Scholar is able to link into traditional library databases, we have the opportunity to increase our patrons' knowledge of these databases since they now have an additional access point through Google.

- need better intergration with local collections - need to work with libraries to create api for google books into our catalogs - need to work with libraries as they take GS into webct/blackboard to make sure we can add proxy into holdings - GS shows bias toward certain publishers, for them it's really about money, but scholarly communication - i am more impressed with google docs & spread sheets and other tools then GS - would be useful for students if we could buy GS interface and system and plug our subs into them-- use it as a meta/fed search, instead of lame products like webfeat and metalib - GS just raises expectations-- they will want more obscure things which we do not have and students now come in with incorrect or impossible (private papers) citations-- if it is not in google, not online, they expect us to have it, and that's just unrealistic, especially for older materials that are corp papers or tech reports
Most of the resources available to an academic institution's users are not available through Google Scholar. I think students will use it because it allows them to be lazy. However, I've also seen when they can't find what they expect, they come to the library.
Internet products such as Google Scholar raise the bar for subscription based vendors. That is, making their products easy to use, etc. As in other business sectors, I believe that Google Scholar will impact subscription based vendors ... corporate failures or corporate mergers.
Resources like this are useful for full text searching and citation verification, especially for interdisciplinary topics. Many librarians use it with patrons, and I consider it one tool among many that works better for some topics than others. Problems happen when researchers use it exclusively and miss more specialized resources in their field; they also simply cannot limit in the ways with a standardized subject heading vocabulary as they can in well-established indexes. I know this is seen as old-fashioned, but there is a reason why it has been in existence for so long--full text searching inevitably brings up a huge number of false hits and cannot account for searching specific concepts. While I'm sure Google Scholar has led to fewer people using traditional library databases, I also know that many of those same people would protest vigorously if we were to cancel a resource like the MLA International Bibliography or PsycInfo. There are times when only established indexes provide accurate results, especially until Google is far more transparent about what journals they are indexing, for what years, and with which restrictions.
While these free tools will probably reduce usage of subscription databases to some extent, there is so much more content (abstracts and full-text) available in the subscription databases that I don't think that they'll replace them. They also lack some of the sophisticated search tools found in subscription databases and some of the additional features that many offer, such as formatting citations in certain bibliographic styles and exporting to citation management software. I use them a lot to verify citations.