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To E- or Not to E-: Print vs. Electronic Ready Reference

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To E- or Not to E- : Print vs. Electronic Ready Reference Tools

by **Frances C. Wilkinson** (The University of New Mexico; Phone: 505-277-4241; Fax 505-277-7288) <fwilkins@UNM.edu> and **Linda Lewis** (The University of New Mexico; Phone: 505-277-7828; Fax 505-277-4446) <llewis@UNM.edu>

The past several keynote columns for the reference issue of *Against the Grain* have dealt with issues such as the proliferation of reference materials, the increasing array of format choices, the impact of the Web on reference publishing, and the growth of products that combine traditional indexing and full-text features. Looking back over those columns, it is evident that the growth of electronic reference tools in the past few years has surpassed almost all predictions. As recently as five years ago, few publishers or librarians would have predicted that major print dictionaries or encyclopedias would be supplanted by entirely electronic versions. Now many publishers are considering doing just that!

This column will explore attitudes of both librarians and end-users toward electronic ready reference tools, specifically, electronic dictionaries and encyclopedias. To address these issues the authors

conducted an interview-style "joint discussion" among four librarians from three institutions. The librarians are from institutions ranging from traditional brick and mortar schools (**Guilford College** and the **University of New Mexico**) to an entirely virtual school (**Western Governors University**).

Librarians were asked to respond to questions on whether or not they provide access to free and/or subscribed to electronic reference tools, if they keep usage statistics on these tools, if end-users more often access them remotely or in the library, their views on questionable Internet resources, if there is a need for print tools if electronic ones are available, and what they feel are the main concerns of end-users. They polled a group of their end-users asking them whether or not they have used electronic ready reference re-

sources, if they prefer the print or electronic version of them, if they see a need for print reference tools if electronic versions are available, how they decide which electronic tools to use, and if they usually access them remotely or in the library. Finally, the librarians reacted to the end-users' responses.

The librarians and their institutions...

Ruth Richardson Scales is the Selector for Art, English, Philosophy, and Theatre Studies, at the Hege Library at **Guilford College** in Greensboro, NC.

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If Rumors Were Horses

Information Today, Inc. and **Cambridge Scientific Abstracts** have announced a joint agreement to buy **R.R. Bowker** from **Reed Elsevier**. Unofficial estimates put the purchase price in the \$20-30 million range. **Cambridge** will acquire the **Books In Print** family of products; **Ulrich's Periodical Directory**; **Magazines for Libraries**; a number of journals and newsletters, such as **Business Information Review** and **Journal of Information Science**; and a variety of other small products. In addition, **Cambridge** will have the exclusive right to operate the U.S. office of the **ISBN (International Standard Book Number)** agency. The directories purchased by **Information Today** include **Literary Market Place**, **International Literary Market Place**, **American Book Trade Directory**, **American Library Directory**, **Annual Register of Grant Support**, **The Bowker Annual Library and Book**

Trade Almanac, **Library Resource Guide**, **AV Market Place**, **Directory of American Research and Technology**, and **American Men & Women of Science**. **Andrew (Drew) Meyer**, the current CEO of **Bowker** and **Marquis**, will be retiring. **Michael Cairns**, **Bowker's** former vice president for business development, will be executive vice president and general manager of **Bowker, LLC**, and will report to **Jim McGinty**, president of **Cambridge Information Group**. Read more about this at: <http://www.infotoday.com/newsbreaks/nb010824-1.htm>.

The bam-zowie **Katie Ellis** <k.d.ellis@alum.wellesley.edu>, until recently of the **University of Tennessee-Knoxville**, is happy to be back home in New Hampshire.

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ing countries for free or at deeply-reduced rates. Scheduled to start in January 2002, the initiative is expected to last for at least three years while being monitored for progress. It will benefit all *bona fide* academic and research institutions, which depend on timely access to biomedical journals. Between now and the end of this year, these institutions will be identified individually and the process put in place so that they can receive and use access authentication. All parties—the publishers and the participating institutions will learn from this experience. Decisions about how to proceed after the initiative will grow from the precedents it sets, and will be informed by the working relationships that have developed among the partners. Working with the *British Medical Journal* and the **Open Society Institute of the Soros Foundation** network, WHO approached the six biggest medical journal publishers, **Blackwell**, **Elsevier Science**, the **Harcourt Worldwide STM Group**, **Lippincott Williams & Wilkins (Wolters Kluwer)**, **Springer Verlag** and **John Wiley**, with the aim of bringing them together with the countries concerned to seek a more equitable pricing structure for online access to their international biomedical journals. The outcome is a tiered-pricing model developed by the publishers that will make nearly 1,000 of the 1,240 top international biomedical journals available to institutions in the 100 poorest countries free of charge or at deeply-reduced rates. For details, visit <http://hi-europe.co.uk/files/2001/9983.htm>.

And a related initiative. The **Université Cheikh Anta Diop de Dakar** in the West African nation of Senegal has signed the first licensing agreement delivered through the **IDEAL Charter for Low-Income Coun-**

tries, **Harcourt's** philanthropic initiative making electronic journals affordable to very poor nations. Through this license, universities, research centers, and teaching hospitals across Senegal may access the over 300 journals in science, technology and medicine on **IDEAL**—at <http://www.idealibrary.com>. Along with the **Université Cheikh Anta Diop**, **Université Gaston Berger de Saint-Louis** in Senegal is initially participating in the first charter license. As connectivity becomes more widespread in Senegal, a nation of about 10 million, more institutions will take advantage of this licensing agreement. The **IDEAL** charter offers nationwide licenses, meaning that once a license is purchased in a country, any technologically ready and eligible institution there may access **IDEAL** journals without paying any additional licensing fee. Further details about the charter initiative appear at <http://www.academicpress.com/www/ideal/charter.htm>. The **Université Cheikh Anta Diop** is funding Senegal's **IDEAL** charter license out of the acquisitions budget of the university's library, directed by **Dr. Henri Sene**. Scientific associations currently endorsing the **IDEAL** charter include **IASTMP (International Association of Scientific, Technical and Medical Publishers)**, **INASP (International Network for the Availability of Scientific Publications)**, and **TWAS (Third World Academy of Sciences)**. Researchers in poor nations are voicing support for publisher-led initiatives such as the charter.

Heard from the wonderful **Bob Molyneux** <drdata@molyneux.com> who tells me first, that he is an **assistant professor** at USC. Second, **Table 1** on page 38 of the June issue had some missing numbers: All are FTE faculty. Mean, 1979-80: 11.8; Mean, 1998-99: 14.3; Median, 1979-80: 10.7; Median, 1998-99: 13.3. Also, the declines are increases instead so the % in the right hand column

should be: Means, 1979-80 to 1998-99: 21%; Median, 1979-80 to 1998-99: 24%. We have reprinted this table in this issue of **ATG** see p. 36 and Bob is also going to load the tables up on his Website! There won't be tables in the next few columns. See **The Devil's Advocate**, this issue, p. 36.

A recent note in the **Bookseller**: A group of UK and US scientists has vowed to boycott **Reed and Harcourt General STM** journals from September, following the merger of the two groups. The academics are angry that research papers supplied for free to corporate publishers are sold back to the scientific and library communities at a huge profit. In an open letter, written by the **Public Library of Science (PLS)** pressure group, 25,000 academics worldwide pledged not to write for, edit, review or subscribe to any journal that would not make all material available for free after six months.

Have you read **Clifford Lynch's** paper "The Battle to define the future of the book in the digital world" which was published on **First Monday's** Website http://www.firstmonday.dk/issues/issue6_6/lynch/index.html. If not, you need to.

And, did you read the **Op Eds** in the past two **Charleston Advisors**? <http://www.charlestonco.com>. The first is by **Chuck Hamaker** <cahamake@email.uncc.edu> and the second is by **Pat Schroeder**, president and CEO of the **Association of American Publishers**. Both articles discuss the fact that the **AAP** and librarians seem to be at loggerheads in terms of access to information. And, here's yet another article in the **MIT Technology Review**, June, 2001, "Owning the Future: Looting the Library," by **Seth Shulman** <http://www.technologyreview.com/magazine/jun01/shulman.asp>.

Heard recently from **Mary-the fantastic-fit-as-a-fiddle-Fugle** <mfugle@lww.com> who was reading **Against the Grain** and told me about a great book, **Mary Gordon's** *Spending* that she's been reading. Have you read it? What all have you been reading. Why not share it with other **ATG** readers here in the Rumors column? <strauchk@earthlink.net>

Tsinghua University in the **People's Republic of China** has purchased the **ISI Web of Knowledge** suite of Web products, including the **ISI Web of Science**, **ISI Journal Citation Reports on the Web**, **ISI Chemistry**, **ISI Proceedings**, **ISI Current Contents Connect**, and **Derwent Innovations Index**. **Tsinghua University** was established in 1911 and is located in the northwest corner of Beijing. Today, **Tsinghua University** is made up of 44 departments distributed in 11 schools, including disciplines like Sciences, Engineering, Humanities and Social Sciences, Economics, Management and the Arts. For more information about **Tsinghua University**, please visit the university home page at www.tsinghua.edu.cn.

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About Guilford College: Guilford College began as a **Quaker Boarding School** in 1837 and is the fourth oldest degree-granting institution in North Carolina and the third oldest co-educational institution in the United States. It offers a four-year liberal arts program with thirty-three academic majors, five cooperative pre-professional programs, and twenty-one concentrations. **Guilford** draws on its **Quaker** and liberal arts traditions to prepare its approximately 1,500 students from forty states and twenty-five nations for a lifetime of learning, work, and constructive action dedicated to the betterment of the world. It is one

of the few college campuses listed as a National Historic District by the U.S. Department of the Interior.

Carroll L. Botts is the Coordinator of Reference & Instruction at the Fine Arts Library and **Rebecca Bauerschmidt** is the Information Technology Librarian at the General Library, both at The **University of New Mexico** in Albuquerque, NM.

About UNM: Founded in 1889, the **University of New Mexico (UNM)** is the state's premiere institution of higher learning. Its nearly 30,000 students can choose from over 200 degree programs offering bachelor's, master's, and doctoral degrees. **UNM** has

more than 2,900 full-time faculty members in its eleven schools

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and colleges. The UNM library system is a member of the **Association of Research Libraries**; it includes five subject-specific branches of the General Library, the Health Sciences Center Library, the Law Library, and other discipline-specific libraries. In the 1999/2000 fiscal year its collection count exceeded 2 million volumes, more than 58,000 volumes were added, and nearly 18,000 current print and online serials subscriptions were received.

Barbara Rosen is the Distance Services Librarian for the **Western Governors University** at The University of New Mexico in Albuquerque, NM.

About WGU: Western Governors University (WGU) offers eight competency-based degree programs including Associate of Applied Science degrees, Associate of Science degrees, an Associate of Arts degree, Bachelor of Science degrees, and a Master of Arts degree, in the fields of learning and technology, business, and information technology. WGU has students enrolled from 44 states and 5 countries. The university offers 939 courses in its online catalog from 40 education providers from across the United States and Canada. The university has 30 employees and faculty members in its Salt Lake City, Utah, office, as well as online throughout

other states. Each student works closely with a WGU faculty mentor who guides the student through his or her customized degree program. Because of the structure and interrelationships between the librarian, the faculty mentors, and the academic coordinators, they are able to work very closely with all the students. An online discussion group is established for library announcements, and the staff is available daily for reference and technical assistance. The library page is a direct link from the WGU Home Page, which brings patrons to the entire collection of library resources and services (go to <http://www.WGU.edu> and click on the Library button on the top). Everything available

to the students from the library is online through this Web page. Depending on their situation, students may have online or physical access to local or university libraries as well, and they all have online access to many UNM Library resources, but there is no other physical WGU library beyond the Web page. **Barbara** of WGU says, "Our patrons are sophisticated searchers and are therefore open to exploring and discovering available library resources. I think I have become even more aware of the fact that many students at most colleges or universities really do not know the range of materials available to them through library Web pages. We should not be surprised by that or make judgements about it. It is just up to us to make them aware."

If you are a librarian...

1) *Does your library link to free electronic reference tools such as e-dictionaries, e-encyclopedias, e-handbooks, etc.? If so, which ones? Which resources do you link directly from your OPAC (Online Public Access Catalog)? Which resources do you link directly from your Library Web pages?*

Richardson Scales, Guilford College: "Since Guilford College is a small, private, residential liberal arts college with a Quaker heritage, not much attention had been given to electronic resources. In the last few years, more attention has been given to serving our growing non-traditional students in the Cen-

ter for Continuing Education's credit and non-credit programs. Due to the efforts of our Information Technology and Systems department, we were listed as the fifty-first most wired college in *Yahoo! Internet Life* magazine's 'America's Most Wired Colleges' in 2000. Last spring, we finished the library's Web page, which includes links to subscribed electronic resources. We plan to develop subject-specific study guides or bibliographies for the Web page that will include stable, free electronic resources. We are now evaluating free electronic reference tools for inclusion in our Reference Department's Website. We have not cataloged any free electronic resources yet due to our cataloging backlog, but plan to catalog some authoritative resources such as Dictionary.com and Bartleby.com."

Botts and Bauerschmidt, University of New Mexico: "The UNM Libraries link to a wide variety of free electronic reference tools through our library Web pages. One page lists general reference and information links that are divided into 34 categories and contain more than 230 individual links. Popular categories include Dictionaries/Thesauri, Encyclopedias, Telephone Books, Acronyms/Abbreviations, Weights and Measures, and Style Manuals. Subject- or discipline-specific free Web links are available through our 'Resources by Subject' Web pages. At UNM our practice is to catalog and maintain subscription resources and government depository items in our online library catalog. We do not catalog free electronic reference tools in the OPAC."

Rosen, Western Governors University: "The WGU Central Library page offers a link to the Ready Reference Shelf which allows access to numerous free encyclopedias, dictionaries, handbooks, directories and manuals, such as the *Merriam-Webster Dictionary*, *Roget's Thesaurus*, the Bucknell University dictionary page, *Stanford Encyclopedia of Philosophy*, *Bartlett's* and the *Almanac of Politics and Government*. Using the term 'reference tools' loosely, we go beyond strict encyclopedia information and also include sources like health sites, zip code directories, maps, and excerpts from style manuals. This is just one of the many places where librarians are broadening their scopes and definitions."

2) *Does your library subscribe/pay for electronic reference tools such as e-dictionaries, e-encyclopedias, e-handbooks, etc.? If so, which ones? Which resources do you link directly from your OPAC? Which resources do you link directly from your Library Web pages? Explain how patrons access subscription/feebased electronic reference tools remotely from off campus (how are they authenticated)?*

Richardson Scales, Guilford College: "Encyclopedia Britannica is the only elec-

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tronic reference tool we pay for directly. In North Carolina, we have the benefit of using **NC-Live**, a statewide consortium for electronic resources for public libraries, academic libraries and school media centers. With **NC-Live** we can use *Grolier Multimedia Encyclopedia* and *Funk and Wagnall's New World Encyclopedia*, in addition to several resources that would not be used in an academic library such as the *Encyclopedia of Animals* with GaleNet. *World Almanac* and *World Book Encyclopedia* are included in our **OCCLC FirstSearch** package. We have cataloged a few electronic resources, taking advantage of the 856 field since we started using a Web interface for public access to the catalog. We only catalog the few resources that we pay for directly such as the *Encyclopedia Britannica*. To date we have not cataloged anything we use through **NC-Live**. We plan to catalog more of the online resources that we subscribe to in the next academic year. The library's Web page includes links to electronic resources, but they are IP dependent or require a password from the reference librarian. Currently, off-campus users only need one password for all of the **NC-Live** resources. This password is changed by **NC-Live** twice a year and is distributed by the library staff. Users can call the circulation desk to get the passwords for **NC-Live** and other resources, which means they can only get the passwords during library hours. This presents an authentication problem, since the caller's identity is not verified. By the end of the school year, we plan to have remote access to all electronic resources through the Web page and more resources cataloged with active 856 fields using CGI scripting with URL rewriters and other methods and user identification."

Botts and Bauerschmidt, University of New Mexico: "UNM Libraries have subscriptions to a number of electronic ready reference materials, including *American National Biography*, *Gale Biography and Genealogy Index*, *Grove Dictionary of Music and Musicians*, *Oxford English Dictionary*, *Reference USA*, *World Almanac* and many more. Most of these resources are available from our **Web-based OPAC** for our on-campus patrons. Rather than distribute special account names and passwords to access the individual resources, we use an **Internet Protocol (IP)** method of authentication that also includes the university dialup lines. We are currently researching a method of proxy authentication from our **OPAC** to provide additional access. These e-resources are also available on our library Web pages.

Patrons may access them through a page that alphabetically lists all of our subscription-based resources or through our specialized 'Resources by Subject' Web pages. Again we primarily use **IP** authentication, but also provide access to our off-campus students, faculty and staff via **EZProxy**, a Web-based proxy server. Patrons need only a university computer account and password to use the proxy server; no special browser setup is required."

Rosen, Western Governors University: "We have online subscriptions to the **World Book Encyclopedia**, **Acxiom Phone Books**, **Books in Print**, **FactSearch**, **Health Reference Center**, **MDX Health**, and the **World Almanac**, all through **FirstSearch**. These sources are accessed through the **WGU** Web page. Patrons are authenticated before entering the particular system by entering their **WGU** Library assigned passwords."

3) Does your library keep usage statistics on electronic reference tools? If so, do end-users more frequently access these e-tools in the library or from a remote site? Do they more frequently access free library linked e-tools or library paid for e-tools?

Richardson Scales, Guilford College: "Currently, we only have access to statistics from **NC-Live**, which are still being developed. Since we do not have a local authentication system or scripting, we do not have statistics for the other resources. Once we add scripting for remote access to the electronic resources, we will have access to local and targeted statistics. We are really looking forward to the benefits of accurate and detailed statistics, mainly for collection management. We need to know if the resources that we are paying for are being used or if students prefer the free resources."

Botts and Bauerschmidt, University of New Mexico: "We do not specifically track access for ready reference materials, but we do employ tools that allow us to review usage of electronic products in general. Further, we recently formed a committee to assist in compiling and reviewing access statistics and trends. Many vendors provide usage statistics for subscription-based resources. We also use Web server log analysis programs, such as **Webalizer** and **NetTracker**, which provide access statistics for our Web pages. However, due to the way our campus network is set up, we do not know if the usage occurs within the library, in other campus buildings, or off-campus using university dialups. Our

EZProxy service is accessed by our off-campus patrons who use a commercial or non-university Internet service provider. Reviewing the **EZProxy** logs provides true off-campus usage statistics for our subscription-based resources. At this time we do not know which reference resources, free or subscription-based, patrons use more often. It seems that their specific information needs and their awareness of resources determines which sources are used."

Rosen, Western Governors University: "All end-users access e-tools from a remote site, generally their home or office. We keep usage statistics on our subscription databases as well as our free Web page hits. Our subscription encyclopedia-type databases are used significantly less than comparable free reference tools from our Web pages. The hits for the Web page are easily 50 times greater per month than those for the subscription databases. Of course, since the Web pages are all open to the public, unlike the proprietary databases, those statistics could very well include non-**WGU** students. I believe students predominantly use the free sites librarians may make available, but perhaps even more, the free sites they have found and bookmarked for their own personal use."

4) End-users have been known to accept reference information online (even when it comes from questionable sources) rather than use reference print resources in the library. Has this happened in your library? If so, how have you reacted to and dealt with this conflict?

Richardson Scales, Guilford College: "Our Reference Librarians usually find out about the problem of students using questionable sources from the teaching faculty. We include Web resource evaluation in our subject-specific bibliographic instruction. Currently, we are changing the bibliographic instruction for First Year Experience classes to include some critical thinking about Web resources. I hope that in the next year, with more electronic resources available directly through the Website, students will stop using the questionable Websites and think of the library as a more authoritative alternative."

Botts and Bauerschmidt, University of New Mexico: "Oh, yes! While we would like for our patrons to consult us, the reality is that many prefer to 'find it on the Internet' on their own. Of course we have all noticed that students get younger each year — and they seem to increasingly prefer online resources. After all, online information always has some kind of search engine; print resources often require reading lengthy usage guides. Unfortunately many patrons do not view reference librarians as human equivalents to online search engines. However, when we can 'get them in our clutches' we do our best to recommend the most appropriate resources based on the patron's needs;

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these may be print or they may be online. Often a good online resource exists; the patron just is not aware of it. One young student was using **Yahoo!** to find a short biography of **Michelangelo**. He did not have time to 'read a book' and was sure there would be something 'on the Internet.' He was delighted to be shown the article on **Michelangelo** in the *Grove Dictionary of Art*. Why, it even had links to images! While library instruction programs can raise the level of patron information literacy, a good one-on-one help session with a reference librarian when an information need exists (read: I have a paper due), is often the most effective way for patrons to learn to use reference materials."

Rosen, Western Governors University: "I have heard this from a lot from librarians, though I have a different take on it. Initially, I do not see it as a conflict, but as something from which we can all learn. At one time, the library was the easiest place to go for reference tools or other information. That is not true for a lot of students now, who are able to get similar information from the Web (if they have access) at home, and there is nothing wrong with that. There is a profusion of reputable sites out there as well as 'questionable' ones. I focus on how students find the former. Evaluating a page or site is the key, and passing those evaluative skills on to the user is the only answer. Sure, we, as librarians, can put up the best page with the best sites, but in less than two minutes, the user has linked to sites way beyond what WE said to use. If I approach a patron in a library who is looking at a Website, I, and most reference librarians, will always say, 'let's look at where this is from,' or 'I can show you how to find out whether this site is reputable.' If the patron is not aware of these methods, they are always quite responsive when we show them how to do it themselves, and hopefully will go home and be more discriminating searchers. Unfortunately, we are only hitting a very small percentage of our users in the library any more whether we are online universities or not. The key is to get the evaluation skills out to the remote users. Other than instructors and parents, the Web page is the only way to go. Why don't we all put up links on our home pages, near the 'ask a librarian' link, for a link to information about 'How to evaluate a page,' with a few salient points? I do not think that some pages are necessarily 'bad.' I think the patron just needs to be aware of where the page came from, and go from there, depending on their purposes. It is the old lesson some of us have ingrained in our minds since childhood: do not believe everything you read and always be aware of the perspective. We just cannot be as lax about this as we have been in the past, but it is the same old story, with more people. Often the feelings we (librarians and scholars) have

today about some sources of information are buried in old beliefs and false securities. We never really knew the origins of many print sources for sure in the past. Perhaps the electronic era is pushing us to places we may not want to go. We should let go, see what these new users are finding out there, and just give them the tools to evaluate the information with us. This is a good thing, not a bad one."

5) Do you see any need for print reference tools if electronic versions are available?

Richardson Scales, Guilford College: "Since **Guilford College** is a small college that serves a diverse student body, many with different learning styles, we need to include both print and electronic reference tools as much as our budget will allow. The more ways a student can find the information they need, the better. We will not discard a print reference source when an online version is available, but we will have to consider the additional cost of print and online on a case-by-case basis."

Botts and Bauerschmidt, University of New Mexico: "Definitely yes. We are in a world of transition and we need to have both formats available. We have to consider patron preference. Some patrons prefer the speed and flexibility of electronic methods. Other patrons are uncomfortable with computers, preferring to search by more traditional means: indexes, tables of contents, etc. Some find it much easier to read the printed page than a screen of shimmering light. At this time we should try to provide options for both types of patron—when we can afford to do so. Of course, the reality is that this is becoming a luxury we will not be able to afford in terms of both funding and the space that print resources require. While we are increasingly relying on e-resources, there are often times when the network goes down. Also, print resources can be used without electricity. This may become an increasing benefit with these 'rolling blackouts' looming on the horizon!"

Rosen, Western Governors University: "Although the answer to this is very gradually starting to change as more security becomes available concerning storage, format changes, etc., there are still a lot of unanswered questions, so for now, there is still the need for print. It depends on the particular electronic source, the institutions, their budget, their needs and their users. For our purposes, with an online library, there is no need for a print equivalent. One of the keys here is to move in the direction that the scholarly publishing organizations, such as **Highwire**, **SPARC**, **BioOne** or **Project Muse** have taken with periodicals, where scholarly organizations are controlling the archived information. Though publishers of most of the reference tools are commercial, libraries need to have more

control of issues like archiving, perhaps through regional or statewide consortiums."

6) What are the main concerns of end-users? Content? Usability? Remote Access? Print functions?

Richardson Scales, Guilford College: "Students want ease of access, usability, and print functions. They are used to the high level of functionality and options available on the Web; they expect the library to maintain that level. They prefer keyword searching, as well as being able to choose search fields. Students love easy printing as well as the ability to forward through e-mail or download. Many off campus students would benefit from seamless remote access. Many have gone to the large university libraries in town to use their resources out of frustration with ours. Upperclassmen are more concerned with content and depth of the information than the features available. Faculty members are primarily concerned with content."

Botts and Bauerschmidt, University of New Mexico: "More and more we see that if a reference tool like the *Grove Dictionary of Music and Musicians* is available in the library in both print and online, end-users usually ask to be shown the online version. It seems that they find navigating online to be a lot easier. Also, patrons like the ability to access reference tools remotely. Our libraries usually close between ten and midnight and earlier on weekends. We have a twenty-four-hour computer lab on campus and many students have computers at home. Remote access allows patrons to fit their research time into their own schedules, which are often complicated by classes, work, and family. It seems that content is becoming less of an issue with patrons. While this is unfortunate from a scholarly point of view, the reality is that the convenience and accessibility of electronic resources are what patrons value most. In our fast-paced society of cell phones and multi-tasking, this does not really come as a surprise. We should not spend too much time lamenting the demise of scholarship—there is an ever-increasing level of quality information becoming available online."

Rosen, Western Governors University: "The main concern of online patrons today seems to be speed of obtaining material, as it is for anyone in society today. Everything is millions of times faster, and the same is true of information. Though the users may not be aware specifically, low bandwidth is the main drawback, and once that increases in the next decade, there will be major changes in all areas. I think the ease of use is important to users, which goes along with speed and impatience. They want it now, and fast, and it better be good. It is this attitude that is driving the information industry. It works for restaurants in big cities, where only the ones that satisfy those needs survive."

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If you are an end-user...

1) Have you used electronic dictionaries, encyclopedias, and/or handbooks such as the OED (Oxford English Dictionary), the Grove encyclopedias, etc.? (If not, do not continue interview/survey.)

Guilford College: "No students polled had used the library's electronic ready reference tools, although many had found 'free' tools on the Internet, some of which were very authoritative. Ten students, eight undergraduate and two graduate students majoring in humanities, sciences, and the arts, were asked to use the library's tools and were then polled."

University of New Mexico: "Twenty-five UNM library patrons were polled in order to gain a better understanding of end-user perceptions of electronic reference tools. The analysis is based on the responses of the eighteen who stated that they use these electronic resources. They include seven undergraduates, seven graduate students, two faculty members, and two non-degree students."

Western Governors University: "Ten of the 200 students polled online responded. All, except one, use e-reference material, though even that one said he/she uses e-encyclopedias minimally. Two of the students polled are in the Associate of Science in Business and the remainder are students in the Masters of Arts in Learning and Technology. The latter are all teachers working on their MA."

2) If a reference tool is available in both print (paper) and electronic versions, which one do you use and why? Do you see any need for print reference tools if electronic versions are available?

Guilford College: "The majority of students polled prefer materials in electronic formats because of the ease of searching, the links to additional sources, the ease of printing, and access to multi-media information. One student said 'But if I need to copy it I prefer the electronic version, not because copying magazines costs money, but because online versions are usually printer-ready and look better.' Another student stated 'You can save anything you need instead of having to make a photocopy...' Two students stated that electronic resources were adequate for general information but not acceptable for large research projects. A student who prefers electronic reference tools liked the ease of use, stating 'You cannot borrow reference books.' One student who preferred print said that 'It is faster to find the print volume than to turn on the computer and load the CD or to find the right link and wait for it to load. Print resources are more portable and they are accessible when the computers are down.' All but one of the students polled felt that print tools should be retained. As one student stated 'Sometimes it is nice to read a book.'"

University of New Mexico: "When asked if they would use print or electronic reference tools if both were available, our respondents overwhelmingly reported that they preferred electronic formats. Speed, efficiency, ease of use, currency, and printing capabilities were commonly cited as reasons for this preference. The efficiency of search engines was particularly appreciated by many. As one undergraduate stated, 'You usually don't have to wade through a lot of subject matter to find what you are looking for.' Remote access was also listed as a determining factor. The three who preferred to use print resources said that print was easier to read and they could usually find information faster in printed materials. Although the vast majority of those surveyed preferred electronic reference tools, that same group stated that the library should have print versions even if electronic ones are available. Most cited technological concerns like computer failures or network and server problems. One faculty member wrote, 'Data in the print version is secure. Computer hacker manipulation of data is not a threat with printed material.' Some stated that print versions are necessary when all of the library computer stations are in use. Others felt that print resources should be provided for those who are not comfortable with electronic formats. One respondent said of printed works, 'You can take them and use them without having to stare at a computer.' Two members of fine arts disciplines pointed out that because of copyright issues, not all illustrations contained in print resources like the *Grove Dictionary of Art* are included in their electronic versions. One reason given for not maintaining a print resource is that its electronic equivalent is easier to update for currency."

Western Governors University: "All users prefer the electronic versions because of the following reasons: 'they are already at the computer when they need to use a reference source (I have access from my desk.... rather than walking across campus to the library), Web based versions are usually the current version, many good reference works online are either free or low cost, faster and more flexible than with the paper version, cut and paste capability is available, searching tools and capabilities make it easier, and the ability to search for related information is easy and less bulky.' Some said the print equivalents in their school libraries are often out of date. But, interestingly, though they all prefer electronic, most see the rewards to print and want to keep print as well, for the following reasons: 'so students can learn to look up information without electronics, to serve students with additional different learning styles, and in cases where there is a lack of technology.' Other comments include, 'If I am doing a detailed research project, I'm more comfortable with paper...I guess because I don't have to go through the whole log in and wait process, print is always handy, it can be used by candlelight in a power out-

age.' One student/teacher said, 'On-line versions fail only if you need to refer to the information off-line, where you may need to print off from the on-line version, ...It is easier to plagiarize using a computer and the cut and paste function...' (As a colleague discovered, though plagiarizing becomes easier, the instructor can use the same approach to check to see if a work is plagiarized, by using a comprehensive search engine, typing in a relevant phrase from the questionable paper, and obtaining the source of the paper.)"

3) How do you decide which electronic reference tools to use? Some factors might include the content, ease of use, ability to download or print, the recommendation of librarians/professors, the recommendation of friends, etc. Which of these factors influence you the most? What else influences your selection of electronic reference tools?

Guilford College: "Nearly all the students said that the major factors they consider when deciding which electronic reference tools to use were ease of use and content. Students also mentioned the reputation of the publisher. One student stated 'If it is a name I know like *Britannica* or *Grolier*, I can be pretty sure the information I get is both relevant and valid.' Other frequently mentioned factors were the number and variety of links, multi-media materials, and the ease of printing. Recommendations of librarians, teachers, and friends were also mentioned as playing a highly influential role in their decision making process."

University of New Mexico: "While reasons for selecting a particular electronic reference tool vary, ease of use and content were reported as the most significant factors. Some said that the authority of the resource helped determine their choice. Good previous experiences are also important to users. 'If I have used a resource and it was helpful I am more likely to keep using it rather than every time trying a new one just to see what information I might get.' Half of those surveyed said they relied on recommendations of others such as their professors, librarians, and peers. Two replied that Website referrals influence their selection of electronic tools. Other factors mentioned included the currency of the resource and the ability to download or print information."

Western Governors University: "All of the factors influenced all respondents. As far as the most influential factor, it ranged from content, to access (what tools are at hand), to what information is needed, to an uncluttered design, to ease of use, and to the availability of relevancy ranking. Also important were cost; the ability to copy and paste, download or print; simple searching ability; appropriateness to needs; the availability and function of search engines; and currency of databases. Most users found sites through the recommendations of colleagues, friends or advisors. To summarize, the choice of an

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electronic product is very individual, and very connected to its interface and use, unlike a book, which is more or less always a book. Though the format and design of fonts and pages of a print reference book vary, rarely does a student push it aside and say he/she doesn't like the way it looks (though a librarian might!). Electronic products are even more driven by the users now, as well as the librarians. This is, or should be, a powerful thought for librarians who are purchasing titles, and should be a reason to expect usable products."

4) Do you usually access dictionaries remotely or in the library? Do you usually access encyclopedias remotely or in the library?

Guilford College: "While a few students rely on print dictionaries, the majority do access dictionaries remotely. Nearly all the students polled access or will access encyclopedias remotely."

University of New Mexico: "We asked our end-users if they usually accessed electronic reference tools in the library or remotely. Half reported that they usually used remote access. Many said they used both because they tended to work both in the library and at home. Our favorite respondent said that while remote access was necessary when the library is closed, use in the library is preferred because, 'the staff's help is invaluable.' (We always like to hear that!)"

Western Governors University:

a. Do you usually access dictionaries remotely (home or work) or in a library? If remotely, do you usually use a print or electronic version?

"One person summarized it as follows: 'I prefer to access anything available on the Internet. I only go to the library for reference material as a last resort.' Half of the respondents use an electronic dictionary (**Merriam-Webster** <http://www.m-w.com> was mentioned by one student) and half use the print, especially if at home. I think this could be an access question. If the students realized they could bookmark or create a desktop icon for a dictionary, it may be used to a greater extent. I expect this use to grow in the next year. I wonder how many people who read this may do just that after reading about the **Merriam-Webster** user's response."

b. Do you usually access encyclopedias remotely or in a library? If remotely, do you usually use print or an electronic version?

"All respondents chose to use the electronic versions of encyclopedias. This is perhaps because of the currency of e-encyclopedias, which may not be as important a factor for dictionaries. Searching capabilities are also more apt to be required with encyclopedias when searching by subject or

keywords, and you cannot beat this function of any online source, whether you are a librarian or a patron. Encyclopedias have been available in homes in CD format for quite a while and are more familiar to many college students now. The encyclopedia on the Internet is a logical progression for them."

Librarians' reactions to end-users answers and comments...

Richardson Scales, Guilford College:

"The biggest surprise was that none of the students initially interviewed had used our few e-encyclopedias, and only some had used any of our electronic resources, including the journals and indexes. I found out later from the surveys that many of students had found their own free electronic reference tools, some which were very authoritative, without the library's assistance. This was especially shocking since most of them were library student workers and upperclassmen and knew the library's print resources very well. In response, I had a few students experiment with the *Encyclopedia Britannica* and *Grolier Multimedia Encyclopedia*. I did not do bibliographic instruction, but I was available to answer questions. I observed their reactions as they used the e-encyclopedias. While watching the students use them, I noticed they were enjoying the links to other resources and the multimedia features, such as the national anthems available in *Grolier Multimedia Encyclopedia*. They were experiencing some frustration with the lack of detail in the articles and the over-simplification of some subjects. In observing them and from their surveys, I found that they enjoyed the benefits of keyword searching and targeted searching only available in electronic resources. The best news for **Guilford College** from this survey was that the students are very discriminating about which resources, both print and electronic, they use. The upperclassmen in particular noted that while the two e-encyclopedias were fun to work with and had greater search capabilities, they preferred more authoritative and detailed resources. This is very good news since this group of students did not benefit from our new First Year Experience bibliographic instruction. I strongly believe that if we could afford more academic electronic reference tools, such as the *OED* and the *Grove* encyclopedias, and if we provided seamless remote access through the catalog or the Web page, that the students at **Guilford College** would use these resources and look at the library as a reliable source of information."

Botts and Bauerschmidt, University of New Mexico:

"It seems reasonable that, when given a choice, so many surveyed prefer electronic reference tools. The convenience and 24/7 accessibility of electronic media make them very desirable in our fast-paced world. Certainly in our experience at **UNM** when a patron comes to the reference desk and learns that the information they need

is available in both print and electronic formats, more often than not they seem to choose electronic. What was surprising to learn is that while our respondents preferred electronic resources, so many of them believed that libraries should maintain print equivalents. It is interesting that they felt that libraries need print reference tools for the same reasons as their electronic counterparts: convenience and accessibility. As many noted, a variety of technology-related problems make electronic tools less reliable to a certain extent. Print materials can always be accessed without the aid of technology, provided that the library is open. Learning that our patrons have an expectation of uninterrupted access to information is indeed valuable, but it is certainly not going to make it any easier for us when it comes time to make those inevitable budgetary decisions to cancel print resources!"

Rosen, Western Governors University:

"My perspective on these questions is prejudiced since it is from someone who deals primarily with virtual students. When someone says 'library patrons' to me, I do not imagine students sitting at library computers, or standing at the reference desk. I think of people sitting at home at their computers, munching snacks. Concerning libraries today, there is little difference between on and off campus students. As we think about these questions and the answers from the users, we have to realize that the 'reference tools' do not have the same definition as they may have had 10 or 20 years ago. Today, the reference tool is the Web. It is not an isolated, guarded, encyclopedia in the corner of the library where the librarian carefully removes it from the shelf and searches through the pages for the expectant patron. We have to be aware of the free sources as well as the paid-for ones. The patrons do not and never will know the difference, nor do they need to. As most of us have been doing the last several years, we have to continue to change our old mindsets and figure out ways to make this new model work for all of us and for our sophisticated students/patrons. For these users, especially those just entering their higher education careers, the Internet is a logical source of information. These are more than relevant and interesting questions to ask ourselves and our patrons today. When we dig out this issue several years from now, it will cause an entirely different and amusing reaction. I think it is important to question where we are in the e-world, in order to decide where we want the library to go, to decide how we want to get there, and to envision libraries and users from the broadest perspective."

Conclusion and final thoughts...

What are the differences among the institutions? What are the differences between the perceptions of the librarians and the end-

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A Two Part Review: The Encyclopedia of Astronomy and Astrophysics —

Views from a Professor and a Student

by **Robert Dukes** (Associate Dean, Sciences and Mathematics, Professor of Physics and Astronomy, College of Charleston, Charleston, SC 29424; Phone: 843-953-8073; Fax: 843-953-4824) <dukesr@cofc.edu>
www.cofc.edu/~dukesr/ and **Kwayera Davis** (Department of Physics and Astronomy, College of Charleston)

A Professor's View

by **Robert Dukes** (Professor of Physics and Astronomy, College of Charleston) <dukesr@cofc.edu>

Introduction

This is one part of a two-part review of *The Encyclopedia of Astronomy and Astrophysics*. I am an astronomer with over twenty-five years experience teaching astronomy to undergraduates and supervising many of these undergraduates in their research. I am writing this from my perspective. The companion piece has been written by one of my students discussing the *Encyclopedia* from the student's point of view. This student is majoring in physics with a concentration in astronomy and has been involved in astronomical research for nearly two years. Hence he represents the type of student that I feel will benefit most from the *Encyclopedia*.

The *Encyclopedia* has an online edition available on a yearly subscription basis. Faculty need to be able to both recommend whether or not a library should obtain this subscription and then, if the answer is yes, decide on how to best utilize it. The adver-

tised advantages to the online edition are access from any computer on a campus, powerful search capabilities, and frequent updates. This review will be based on both the content of the *Encyclopedia* and how well the advertised advantages are met.

Using the Encyclopedia

The *Encyclopedia* consists of long articles, short descriptions or definitions, and brief biographies. The long articles are signed by the authors who for the most part are recognized authorities in the subject matter of the articles. How then will I use the *Encyclopedia* with students? I will use articles in the areas I conduct research with undergraduates in to provide background information for new students. I will use some of the less technical articles (or less technical parts of certain articles) to supplement our introductory astronomy text. I suspect that other instructors will also. As every instructor knows, in-

troductory texts are never as detailed as instructors would like in certain areas. Instructors can individualize their courses through special lectures or handouts. The *Encyclopedia* provides yet another means. Especially appealing is the fact that the articles can be downloaded as PDF files.

I have examined some of the articles in fields I am familiar with as well as fields I would like to learn something more about. In every case I have learned something. For example, the article on Variable Stars gives one of the best introductions to "non-radial pulsation" that I have seen. This will definitely be required reading for all of my research students. I will assign portions of it to my introductory students. Similarly, the article on "Gamma Ray Astronomy" helped me learn something about the field of research of two of my colleagues. One of them has indicated that he, too, will make this required reading for his students.

Level of Material/Treatment

The level of the material in the individual articles is quite varied. This presents a problem for the potential user. The majority of the long articles are suitable for advanced undergraduates and even as a review for gradu-

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users? Surprisingly little! There were few differences among end-users whether they are from traditional or virtual schools. Little difference in perception between the librarians and the end-users was found. The librarians were just as open, enthusiastic, excited, and willing to experiment with electronic reference tools as the end-users.

When planning this column the author-editors expected to find differences, possibly significant ones, between the traditional brick and mortar schools, **Guilford** and **UNM**, and the virtual school, **WGU**. As expected, the **WGU** end-users had more experience in using online reference tools than most of the end-users from **UNM** and all those from **Guilford**, but their attitudes toward these tools were remarkably similar. Specifically, the **WGU** end-users were more aware of the variety of electronic reference tools available to them. This is to

be expected since **WGU** has no physical campus with a library building that houses print materials. The librarians from both **Guilford** and **UNM** commented on the need for more bibliographic instruction and one-on-one sessions for patron information literacy and to improve critical thinking about evaluating Web resources.

Print is not dead! Even the majority of end-users from **WGU** felt that print versions of ready reference tools should be retained, as did most of the **Guilford** and **UNM** end-users. Reasons cited included differences in learning styles and the ability to use print "when the computers are down or the electricity goes out." This is not to say that most end-users do not prefer the electronic version. All the librarians shared this view, but expressed concerns that continually shrinking budgets may make this more challenging in the future.

All the librarians were aware that sometimes students accept any online reference

resource, even a questionable one, rather than use a print reference source. None of the librarians felt challenged by this, rather they felt that it presents an opportunity for them to work with end-users and show them how to better evaluate these resources. Some end-users' preferences for using any electronic reference tools that they can find should not be viewed as a conflict for librarians but as a leaning opportunity — "a good thing, not a bad one."

What are the major concerns of end-users and just how critical are they? End-users want to find information quickly and easily, they want it to be current, and they want to be able to access it anytime from anyplace. What could be simpler than that? While some are concerned about the quality of the resource, very few mentioned it as a concern. The end-users are not aware of the difference between the electronic reference tools that the library pays for and those available free on the Internet. And really, why should they be?