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Assembling the Orchestra: The Role of Librarians in an e-Science Environment

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ing Online Usage of NeTworked Electronic Resources) statistics is essential for renewal of online resources. At urban and suburban community hospitals, it is not uncommon for the physicians and surgeons to be on staff at more than one hospital. Referring them to a librarian at another hospital where they are on staff is another facet of cooperation among biomedical libraries. This practice enhances the medical staff's access to online library resources. It can also influence collection development decisions.

Trends

The key to success in deploying changes in library services is a proactive, comprehensive user education program. Regularly scheduled group presentations can be done by the librarian during CME events, nursing orientation, and nursing skills fairs. Departmental, leadership, and committee meetings are excellent venues for linking discussion items to relevant library resources. Participants in employee health fairs and hospital support groups appreciate information about consumer health resources. In hospitals, the path to user education is more closely aligned with that in the public library than in academics. Hospital staff is encouraged to use library resources, but clearly this is not an expectation. Because some staff rarely use library services, it may be efficient for the librarian to do searches for them. The trend in hospitals toward

100% productivity of the patient care staff means that it is more cost-effective for the librarian to spend time finding, summarizing, and reporting requested information.

Looking forward, converting to online subscriptions whenever possible is necessary. Integrating these resources with the EHR will provide instant access to relevant medical literature for health care providers. Increasingly, hospital library users carry handheld devices and request access to library resources via mobile platforms. Subscribing to resources that offer mobile applications provides bedside access for busy clinicians.

In today's health care climate, it is difficult for small community hospitals to survive independently. A mode of survival is to merge with a larger, multi-facility healthcare system. The process of a merger presents many new challenges and opportunities to a solo librarian. Melding computer networks and resources with a new organization is akin to starting over with a new employer. The individual hospital's Web presence disappears, and Web pages must be integrated within the new health system's existing Web portals. Careful deliberations transpire to design the best fit for a new Web presence. Working with librarians at remote locations to decide what to keep and what to cancel is a different approach to collection management. Selection of resources that are best for the whole healthcare system, while maintaining essential resources for local clientele, adds a new dimension to collection development. 🍷

Endnotes

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Assembling the Orchestra: The Role of Librarians in an e-Science Environment

by **Sally A. Gore** (Head, Research and Scholarly Communication Services, Lamar Soutter Library, University of Massachusetts Medical School) <sally.gore@umassmed.edu>

*What we all lack is not style nor do we lack the suppleness of bow and fingers that passes for talent. We have a well-staffed orchestra, a rich palette, varied resources . . . No, what we lack is the guiding principle, the soul of things, the very idea of the subject.*¹ — **Gustave Flaubert**

There is that time, before the conductor arrives and the lights dim, when the members of the orchestra make their way on stage, finding their places in their respective sections: woodwinds, strings, brass, percussion. Sitting in the audience waiting, you can hear them preparing for what's to come. They tweak, and they tune. They adjust strings and bows and tuning pegs. I do this very thing myself, solo in my living room, each time I pull out my mandolin to practice. The mandolin is a temperamental little instrument, easily affected by temperature and humidity. I

pluck and pluck, turning the pegs, tuning the paired strings to each other. Like the orchestra, it can be a little annoying for anyone in earshot, but it's a necessary part of getting the act together. Without the preparation beforehand, the music to follow will never reach its full potential and beauty.

For many years, science has been tuning, using the tools available, perhaps unknowingly, to prepare itself for a time when it could work more collaboratively both within and across disciplines. That time is now and while there's still a good bit of tweaking to be done before

the orchestra is going to play a masterpiece, those of us watching, supporting, and/or participating in research closely are beginning to see the possibilities of the world of e-Science. However, as **Flaubert** suggests in the opening quote to this piece, lacking guiding principles and a general understanding of this new world, all of the players involved will suffer, including the researchers, librarians, and publishers.

e-Science is defined not as a new discipline of science, but as a new research methodology; one that makes full use of today's computer technology. In sciences such as astronomy, geology, or bioinformatics, technology allows for huge amounts of data to be generated faster than ever imaginable. Similarly, technology



now exists allowing researchers to share and/or repurpose data as they've not been able to do before. These features speed up the scientific process, making it possible for researchers to make new discoveries faster and with greater efficiency than in the past.

But all of the benefits of e-Science go unappreciated if scientists lack the knowledge and support to take advantage of them. Enter computer scientists, librarians, and publishers — fields with knowledge and expertise in making information accessible, shared, and preserved. Working together, these groups can address the challenges scientists face, while supporting their work and advancing their discoveries. Many questions remain, too, for libraries and librarians seeking to find their place in this collaborative effort. What skills do we bring to the table already and which do we need to learn or enhance to deal with this changing environment?

Working with Data

When we look at the issue of vast amounts of data — *think information* — being generated, we can identify several areas where researchers have a need that librarians can fill. The first is **data management**. Data management focuses on the entire life cycle of data, requiring researchers to think about and attend to data from creation through analysis through publication and ultimately to either preservation (curation) or destruction. Questions of format, storage requirements, and security are not things that scientists have needed to think about as much in the past. It was easy to store notebooks on a shelf, to loan them to someone else if desired, to file things away in file cabinets.

Think of how fast we've moved from floppy discs to zip drives to high-performance computer centers. Each of these advancements has affected data management, but the speed of computer processing has far outpaced the speed of the research process, let alone human behavior. Survey any set of labs and you're bound to find scientists who still write notes in notebooks, store data on the hard drive of their desktop, and back things up on thumb drives. The need to raise awareness and educate researchers in this area is a vital role that librarians, experts in information management, can pursue.

Data sharing is also an area where librarians can find a role. Both the **National Science Foundation** and the **National Institutes of Health**, along with many other public and private funding bodies, require recipients to include a data sharing plan in their grant proposal. Such a requirement means that researchers need to have a way to do this besides merely saying that they will share their data with anyone who asks for it. Computer scientists are working to build repositories that will make both storing and sharing data easier for scientists. Librarians can offer support through institutional repositories, allowing students and researchers to submit smaller data sets along

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people profile

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Sally A. Gore

BORN AND LIVED: I was born in Fredericksburg, VA and grew up in Petersburg, VA. The first three decades of my life were spent in the south, but I've lived in New England since the early 90s.

EARLY LIFE: Happy kid

PROFESSIONAL CAREER AND ACTIVITIES: I've had two somewhat formal careers; as an ordained minister and as a librarian, and some side ventures into exercise physiology, volunteer coordination, non-profit work, office work, log flume operator, etc.

FAMILY: I live with my spouse, **Lynn**, our dog, Zebediah, and our cat, Tater.

IN MY SPARE TIME: I play the mandolin, do art, maintain my blogs (<http://sally-gore.wordpress.com/> and <http://buttonaday.wordpress.com/>), ride my scooter, listen to a lot of music, read a lot of books, watch a lot of movies, and exercise not enough.

FAVORITE BOOKS: *Lying Awake* by **Mark Salzman**, *Dove* by **Robin Lee Graham**, and any and everything by **Annie Dillard**.


PET PEEVES: Motorized lawn tools, litter, and the phrase, "It just can't be done."

PHILOSOPHY: "Father, forgive us for what we must do, you forgive us and we'll forgive you. We'll forgive each other 'til we both turn blue, then we'll whistle and go fishin' in heaven." (John Prine)

MOST MEMORABLE CAREER ACHIEVEMENT: Still waiting for it — to win an Oscar for Best Original Screenplay. (Being a panelist on the national MLA Webcast was pretty cool, though.)

GOAL I HOPE TO ACHIEVE FIVE YEARS FROM NOW: To be in a position where I positively influence the overall direction of our profession, either as a library director or a consultant. If this doesn't pan out, I'm hoping to play the mandolin for **Rosanne Cash**.

HOW/WHERE DO I SEE THE INDUSTRY IN FIVE YEARS: I hope to see our profession expanding, becoming more and more entrepreneurial and creative, so that we're seen as an equal and integral part of information creation, organization, and access. I'd love to see us get out of the "middle man" position, to stop hanging our hats (and our value) on simply providing resources and focus more on creating them ourselves via new modes of publication, repositories, Web tools, apps, and more. 🐼



with their publications for easier access to the public. Publishers are also beginning to work in this area, building complementary databases of data sets, linked to the associated articles in their bibliographic databases. One of the latest examples of this new publishing model is the new **BioMed Central** title, *GigaScience* (<http://www.gigasiencejournal.com/>).

GigaScience aims to revolutionize data dissemination, organization, understanding, and use — an online open-access, open-data journal, publishing "big-data" studies from the entire spectrum of life and biomedical sciences. To achieve the goals, the journal has a novel publication format: one that links standard

manuscript publication with an extensive database that hosts all associated data and provides data analysis tools and cloud-computing resources.²

This journal likely exemplifies a coming trend in scientific publishing. For some time, publishers have asked authors to submit data along with their manuscripts. The move towards sharing data through linked repositories, as well as making data sets part of the peer review process, demonstrates both recognition and support of e-Science by the publishing industry.

Finally, **data preservation and curation** are areas often cited as a natural place for

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librarians to step in and provide services and support. Given the sheer size of some of the data sets in question, libraries may not be as well-suited for long-term storage as computing centers; however, the task of insuring their existence for historical purposes is one in line with the long-standing mission of libraries. As the future unfolds, we should observe the historical value of data, and the role of librarians, in this new world of e-Science.

Building Networks

Besides data, the second most prominent feature of e-Science is networking. As it has advanced the creation and sharing of data, computer technology has also made creating and sustaining networks of people and resources both different and plentiful. One need only to think of the many different ways we communicate today — phone, email, Skype, Webinars, smart phones, electronic notebooks and tablets, social networks — to realize we are more connected with friends, family, and colleagues than ever before.

For science, networks make collaborative work much easier. Technology allows for the easy development of networks not limited by geographical constraints. Science, like many other aspects of life today, is cross-disciplinary and global, and our technological networks foster and reflect this environment. Helping researchers find collaborators is a large part of e-Science and one where librarians have taken a role. Working in the development and training of semantic Web resources like VIVO (<http://vivoweb.org/>), librarians assist computer scientists and other information specialists pull together biographical and bibliographical information about researchers so that they can better identify future research partners.

While the technological tools of e-Science are quite impressive and their newness can be glamorous, when it comes down to it, these tools are about bringing people together. Thus, e-Science, for all its emphasis on technology and data, is also about people — and people are the business of libraries and librarians. Libraries have the history of being the non-biased, neutral hubs of information. While this physical image might be fading, the work remains the same.

By the nature of their work, librarians know

institutions in ways that scientists often don't. They see them from the level above the silos. Librarians have a wealth of information and knowledge they can harness to bring people together and foster collaborations, and the networking tools of e-Science allow librarians to do this much easier than in the past. Today, one librarian can push information out to a hundred researchers via a posting on a blog or an interactive Website. S/he can build small networks, real and virtual, to bring people together. These are skills we have always had and work we have always done. We just have different tools now.

Moving Forward

Successfully assembling the orchestra for our future in e-Science involves recognizing what we do well now, noting which of these skills will continue to be useful, and realizing the areas we must learn and/or improve in. Librarians are skilled in information management, cataloging and metadata, searching, archiving, and delivering resources. We also possess the intangibles like objectivity, as well as both a sense and a mission of providing service and support.

What some of us lack is subject knowledge. Is being a generalist enough to effectively communicate with researchers about their information needs? We also need a better understanding of the research process, of research methods and statistics. Finally, we can practice those entrepreneurial skills — sales and marketing and creative problem solving — that scientists have honed over the years. Researchers are often entrepreneurs, securing their own funding, planning their own “business” strategies, hiring their own staff, etc. Librarians can perhaps better work in this world if we adopt some of the same patterns and behavior.

I have an old college sorority sister who is a concert flutist. She recently posted a status update on her Facebook page saying, “Holy Toledo! My flute is AMAZING!” She'd recently picked it up from a technician who'd given it a good tune-up. “It's better than when I bought it. Some stuff I thought was MY issue turned out to be the flute's and is now GONE!” I thought of this post as I was writing this article and using the orchestra metaphor to describe e-Science. An orchestra is made up of instruments and people. Bringing them all together to make beautiful music requires a lot of practice and fine tuning of both — the people and the instruments.

The same can be said for e-Science. It too is an orchestra made up of researchers, computer scientists, librarians, and publishers, all with different instruments to play. We've also all been practicing our roles a certain way for a long time. Now we face a bit of retuning, and we have some new music to learn, perhaps we might even need to change instruments, but it is not a situation we haven't addressed successfully before. The curtain is merely rising on a new performance.

Some Helpful Resources:

- **e-Science Portal for New England Librarians** (<http://esciencelibrary.umassmed.edu/>) — The Portal is a collaborative project initiated at the **University of Massachusetts Medical School** through funding from the **National Network of Libraries of Medicine**. It is “designed for librarians working in research organizations that generate, share, store and/or use data for basic scientific research in the health, biological, and physical sciences. Bringing together resources on education, outreach and collaboration, current practices, and e-science news — the portal provides librarians with the tools, knowledge, and skills to effectively participate in networked science.”
- **e-Science Initiative of the Lamar Soutter Library, University of Massachusetts Medical School** (http://library.umassmed.edu/escience_symposium09.cfm) — The Initiative includes several annual events including an e-Science Symposium, professional development day, and Science Boot Camp for Librarians. Information on each is available on the Library's Website.
- **e-Science Institute** (<http://www.arl.org/rtr/eresearch/escien/index.shtml>) Association for Research Libraries site (Highlights, Overview, Support for Outreach, Articles, etc.) 🌐

Endnotes

1. **Gustave Flaubert**, letter to **Louis Bouilhet** (2 June, 1850), Correspondence, Vol. 1 (Paris: Gaillimard, 1973), 627.
2. **BioMed Central**, *GigaScience* journal homepage, “Aims and Scope,” <http://www.gigasciencejournal.com/> (accessed July 14, 2011).

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John Long WAS at the **Charleston Conference** and he tells me that he swam laps at the **Medical University of South Carolina Wellness Center pool** while he was here. That's a great place and I highly recommend it. I walk the pool at least three times a week myself.

Speaking of the **MUSC Pool**, I wonder if **John** ran into **Pam Censer**, retired from the **University of Florida**, Gainesville? **Pam** was in town for the **Conference with Michelle Crump**, but she was really sick! Anyway, **Pam** loves to swim and

many times we have tried to get her in the **College of Charleston** pool. Stories to tell! Oh! And see the pic of **Pam's** grandbaby in this issue, p.1.

Just learned that the impressive **Selden Durgom Lamoureux** will be leaving **NCSU Libraries** with great affection and appreciation after three and a half excellent years. **Selden** will be freelancing and remaining involved with professional commitments, including **SERU**, **Kuali OLE**, and teaching. Oh! And Rumor has it that she'll be returning to her previous life as a potter! Good Luck, **Selden**! And keep in touch with all us working stiffs out here!

Did y'all happen to meet the gorgeous **Roula Awad-Harb** <rharb@ndu.edu.lb> (Head, Acquisitions, Gifts & Exchange Dept. **Notre Dame**

University-Louaize, Lebanon) at the **Charleston Conference**? She flew a long way to come but she says it was well worth the time and expense! She says she is giving a talk at her library about the **Conference** and what all she learned that will be of interest to her colleagues. We hope that **Roula** will be back next year and tell us about libraries in Lebanon.

Springer Science+Business Media has agreed to purchase **Wolters Kluwer's** pharmaceuticals-focused marketing and publishing services (**MPS**) unit. The deal is pending regulatory approval. According to a statement by **Wolters Kluwer**, “proceeds from this divestment are expected to be used for general

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