

# Librarians, IT, and Who Is Authorized in the E-Library Age

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Librarians must have the confidence to respond “of course we can” to patron requests for information. In an age where information often comes in units much different than monographs or serials, librarians must be able to understand these units and manipulate them for our patrons. This means that certain principles – fearlessness when interacting with new tools and technologies, independence from specific software, automation, conversance with computing terms – are also principles of librarianship, and tools through which we can satisfy the librarian’s most basic purpose of connecting patrons to appropriate information.

On the other hand, while information technology professionals do work that is very similar to librarianship and often work in libraries, it is imperative for the future of libraries that they approach their work with the same set of “library values” that librarians have about their resources, their philosophy of service and their interactions with the community. We would argue that maintaining a server in a library is qualitatively different than maintaining a server elsewhere. In short, it is not enough to be a librarian without an IT education, and not enough to do technical work in a library without a library education.

There is a certain body of knowledge that library educators have identified as foundational to librarianship even though not all job roles reproduce these functions – reference, cataloging, instruction and information literacy, using metadata, and public programming. This is because these foundations teach more than a set of skills or tools – they teach a way to think through problems; they truly provide a discipline and a set of approaches to the librarian’s craft.

Through library education, every would-be librarian should learn about the reference interview

because that skill set teaches a spirit of service that is “yes”-oriented. In other words, learning about reference gives the librarian the confidence that he or she can always find an answer even if we don’t know the answer, and that information seeking is a process. We all learn cataloging even if we don’t become catalogers so that we can understand the units of description by which our resources are identified, and so that we have a multiplicity of pathways by which to connect users to resources. We all learn about instruction and information literacy because this is one of the areas in which librarians are most necessary in an age of information glut – we, as librarians, help users understand the criteria by which they decide to credential information, and then help them use these criteria to select the most appropriate resources. Even if we never sit at the reference desk or teach a workshop, it’s essential that every librarian knows how to examine, parse, evaluate and present knowledge from a larger set of data.

To a similar purpose, we learn about the nature, use and manipulation of metadata so that we are better able to illuminate opaque digital sources – if we understand the context and creation of a source, we then are better able to evaluate its content. Metadata provides a mechanism by which we can lasso unruly sources – surely a mode of thinking essential to any professional whose domain contains millions of sources of thousands of types.

Public programming connects us to our user communities and gives a reality check of their actual needs instead of our perception of their needs. Because all librarians are service professionals, it’s important to keep in mind that we’re all working with real people in our communities that have a set of priorities that may not match our own. A technical services librarian, who may never coordinate public programming, still needs this mind-set of checking and re-checking users’ skill levels, needs, wants and use patterns.

In an e-libraries environment, librarians must add to this foundation a particular attitude about technology to become the best librarians they can be, even if they never analyze server logs or install the software for an institutional repository. Indeed, certain principles of computing must be added to this foundation even if librarians don’t reproduce this knowledge in their professional work because the method that these principles teach is central to being an effective librarian working with digital resources – or, really, any resources.

There are a number of ways to provide library students with these principles of computing and ways of thinking. We think that current approaches emphasize learning specific tools rather than learning a set of methods that can be applied across contexts and tasks. This does library students a disservice. For instance, rather than learning specific software packages, students should learn concepts across similar types of software so that they can evaluate tools based on the needs of the task at hand; instead of learning how to calculate Big O notation, instructors should teach the idea of scalability so that librarians can contribute to the design of systems that grow with their library. Indeed, why would we learn how to draw arcane data structures rather than bringing home the point that computer scientists think about ways to organize data that makes the most sense for the context (stacks, queues, linked lists), even if the context isn't a user, but rather is the program being written? Library technical education is stuck in the details and teaching the tools rather than the methods, the reasons why this is integral to the profession. In the process, we are leaving behind many potential technical librarians, particularly those traditionally under-represented in computing education.

We have identified several modes of thinking that are critical for librarians to have in the digital age. What then, would be a method for teaching would-be librarians these principles? There are undoubtedly many ways to approach this, and to structure library technical education to teach these principles. Below, we outline one way library educators incorporate these ideas into the curriculum. Linux provides an ideal environment for which to learn these modes of thinking and principles. Linux is an open-source operating system, and it provides a toolbox by which the user can understand how computing works at the most basic level. Unlike proprietary systems, it provides unfettered access for the user to explore all of the details and components that make their system go.

What do we want librarians to know? They have to be comfortable in any computing environment, regardless of operating system, on a more basic level that is beyond specific software use or the accomplishment of specific tasks. We hope that students will break the bonds of what they believe specific software or tools can do, and will rather dream the ideal completion of a task and discover the tools that meet these high standards. Using Linux shows students that they have control over their computing environment and helps students develop a confidence regarding technology; using

open-source software provides an excellent environment to learn how to critically evaluate software; through using Linux utilities it is possible to understand how to automate processes; and finally, a collaborative environment will give students critical practice speaking about technology, which will enable them to be equal participants in conversations about technology in the library.

Teaching Linux shows individuals that they have complete control over their system, and provides them with the tools to quickly customize and change any feature in that system. Linux provides an environment where everything is customizable and the process of customization is transparent – most often, it is as simple as editing a plain text file. This is in direct contrast to proprietary systems, where only certain features of the system can be modified, and customization requires a knowledge of interfaces deliberately obscured from users. The take-away message from learning how to customize a Linux environment is clear: you ultimately decide what a computer can do. Why would this be important if a librarian never touches Linux again? We argue that this mindset – that a computer is not a black box; that it is possible to customize one’s desktop environment down to the last pixel; that if you can reason it, you can make your computer do it – instills a confidence about technology that is critical for librarians working in the digital age.

Consider the librarian negotiating with a database vendor. A librarian must have the confidence to tell a vendor that an interface be designed so that it best serves the needs of the library community. This includes negotiations about design elements and methods of access. Without a certain level of confidence about one’s understanding of technology, it may be easy for a librarian to simply accept that certain features of an interface can not be changed. This should never happen – a librarian should never feel that a lack of technical knowledge precludes him or her from negotiating for features the library needs. This confidence comes from an understanding of the possibilities of technology, which are clearly demonstrated in the Linux environment. Alternately, consider the librarian who has an idea for a new digital service for the library. The librarian’s first instinct should be to find out how to make this service possible, rather than assume it would be too complicated. Working with Linux often means encountering the complicated – but ultimately, the message is that “complicated” rarely means “impossible”. Librarians should have the confidence to say to their IT units, “Yes, this may be complicated, but it is possible.” Linux gives librarians the choice to not

take no for an answer.

Open-source software is abundant and easy to find: Linux distributions will include built-in utilities for searching through extensive open-source software repositories. Most importantly, the majority of it is available free of charge. By working with Linux and having a large number of free open-source programs readily available to install and test, a user quickly learns several important lessons: if one piece of software is not suitable for a particular task, another program may exist that better fits the need; it need not be expensive nor difficult to install many programs and compare them side-by-side; searching for newly developed programs is part of the process of maintaining a system. This is an approach to software and computing that is qualitatively different than the approach fostered by curricula that stress training students to use a specific piece of software. The following approaches are indispensable to today's librarians: there is never a reason to passively accept the limitations of a specific program; it is critical to learn how to evaluate software and technology on its own merits, and not feel restricted by how things have been done in the past; and that curiosity and exploration are integral to the process – if a certain program doesn't exist today, it may exist tomorrow, or the next day, and librarians can influence its creation because they can dream it.

Libraries and librarians should never feel compelled to keep a system that is not adequate for their needs simply because of historical precedent, or an unwillingness of an IT unit to change. Additionally, librarians should feel comfortable enough to take ownership of the software in their environment. Librarians should not simply hand over control of all new software acquisitions and decisions to IT units, but rather be participants in the process, ensuring that their needs and concerns are heard. Experience using a Linux system allows the librarian to feel comfortable with this process of exploring and comparing software, so they will be more willing to take an active role in shaping their digital work environment.

Linux gives users the opportunity to use a robust command line environment, which teaches them that it is possible to automate processes on a computer. Consider a task of changing the file extension on a particular file on a machine. This is relatively straightforward to accomplish using a graphical interface, but what about changing the file extension on fifty files? Five hundred files?

Five thousand files? The command line provides the tools required to perform this task in one line of code. Even if the student forgets the names of the specific commands needed to effect this action, the memory of it is not quickly forgotten. The purpose of teaching about the command line is not to force students to memorize obscure commands, but to remind the student that computers are designed to perform repetitive actions so individuals don't have to. Librarians need not be afraid of the sheer size or possible mind-numbing repetition of any task if their first instinct is to automate. In the digital age, librarians are dealing with a quantity of data and information that is unprecedented. Consequently, many of our services will require the manipulation of large quantities of data. Consider an RSS feed for newly-cataloged books, or including collection statistics on a library's webpage – by understanding that automation is possible, librarians have the opportunity to be more creative and adventurous when proposing new services.

To get the most out of the experience of learning Linux, the learning environment should be highly collaborative. Students should take ownership of their own computing environment, but should be encouraged to talk with their peers about their methods, their own learning process, their successes and their failures. It is imperative that librarians be comfortable with talking about technology with their colleagues. In order to accomplish this, students need more than a lecture setting; they need to practice speaking about computers and technology. Learning Linux provides librarians with the opportunity to practice using a specialized technical vocabulary, which will serve to bolster their confidence about such matters.

Just as library education isn't about the component roles in a library (reference, cataloging, etc.) but is about principles by which to think about being a librarian (service, information organization, information manipulation) so too should a librarian's education about technology not be about specific skills or tools, but rather over-riding principles that inspire fearlessness, creativity, and an "of course we can" attitude about technology in the service of a library community.

Just as important as it is that librarians learn about principles of technology that work for the library, so too is it important that anyone working in an IT role in a library have a foundation in librarianship. We want to emphasize, before we continue, that we don't see this as a crisis or a rift, or that one group provides better expertise or service than the other. We hope, instead, to

explain the differences in the professional trajectories – what IT folks can learn from librarians, and to emphasize not just that librarianship is a very carefully-crafted profession, but that the library itself is a historically-situated place that serves a unique and special purpose that requires appreciation and training.

IT-trained persons don't necessarily understand the librarian's model of support, that is, the reference interview. While a reference librarian enters every patron interaction fairly confident that he or she won't know the answer to the question right away, IT staff have a "burden of support," that is, they assume that they will be responsible for maintaining or supporting every piece of technology under their aegis. Thus, while librarians are trained to say "yeah, let's figure this out," IT staff are trained to be cautious and aren't afraid to say no.

IT concerns are, of course, justified. Just as our brick and mortar collections (paper and cloth collections, as it were) require care – preservation, restricted access from users, weeding, protection from environmental threats – so too do digital assets require protection. Who is going to make sure a new technology is maintained and patched? What if there is a security problem? Who is responsible for it?

There is no reason for this to be a power struggle. Ideally, this is an open conversation, where not only does a librarian come to a technology professional with a need and a question, but both of them help identify possible risks, restrictions, solutions and opportunities. While it is often the case that librarians perceive IT concerns as saying no, both librarians and IT professionals can use core reference skills to make the interaction go more smoothly. Here, IT staff can learn from librarians. A difficult reference question isn't met with a litany of reasons why the question will be difficult or perhaps impossible to answer – rather, the reference librarian is optimistic and explains the process by which the patron and librarian will persevere to find the best answer that they can. For instance, if a patron came to a reference librarian asking "how many midwives are there in Washtenaw county?" a reference librarian could very easily reply "well, I don't know. I'm not sure that anyone collects that kind of data, it will be difficult to talk to the people involved, that information is probably aggregated at the state or national level, we're not sure that it will be reliable, this is going to be tricky." Of course, a reference librarian shouldn't answer that way, even

if all of these facts are true. A good reference librarian conveys obstacles with a spirit of optimism. So too is an IT professional justified in enumerating the myriad reasons why new technological projects may compromise the delicate balance of a systems environment, but should approach the request with a spirit of shared inquiry and a willingness to explore the possibility.

So, while IT professionals should be exploring the obstacles inherent in making new projects possible with a spirit of explanation and optimism, librarians should also be more informed when they propose these projects. Indeed, from the other side, librarian education has an obligation to make sure that librarians know enough to be equal participants in this conversation. Librarians need to be conversant in principles of scalability, maintenance and security so that conversations with and concerns of IT staff aren't read as un-supportive.

This is the most obvious way that IT professionals benefit from a librarian education – however, other core principles of librarianship are also integral to IT work in a library environment. Cataloging teaches us that finding information in a rigorous, predictable and robust way is tricky and must be precise, and that setting and keeping standards, while still being flexible as new formats emerge, is the key to scalability. IT professionals working in any environment are missing a valuable way to think about these problems if not given the opportunity to think about what cataloging is and what it does. For IT professionals working in a library environment, the degree of precision with which the discipline of cataloging is applied to library assets, physical and digital, is indispensable.

No one is better equipped than librarians to deal with issues of information literacy. An understanding of how to select sources and credential information is essential to IT functions such as integrating new components to a networked environment from a variety of choices, and crafting documentation for support, procedures and policies. In a library environment, selecting resources and using them properly is central to our mission.

The principles of public programming help all library professionals, including IT professionals, to keep the real needs, desires and priorities of one's community paramount to one's practice. This can help address the tensions of what's best for the system, what's best for librarians and what's best for the community, and keep them in perspective. Librarians are instilled with the idea that "books are for use" and that all resources should serve the library community, IT professionals

should apply the same ethic – systems are for users – when approaching their mission and work.

What we've been trying to explain here is not only that librarians and IT professionals share a set of job functions, and parallel ways of approaching them, but that each would be far more complete, particularly in a library environment, if they approached their work with the basic principles instilled in the other's profession. For librarians, these principles include a can-do spirit of service, precision when manipulating resources, the inclination to develop services that address the needs of the community, and an intelligent method of keeping intellectual control over vast amounts of information. For IT professionals, these principles include a proclivity to automate, a spirit of exploration and discovery in relation to the vast possibilities of what a computer can do, the inclination to invent task-relevant functions in a computing environment rather than being restrained by perceived limitations of particular tools, and critical thinking about scalability, maintenance and security over time.

Libraries are about making resources work for real people – the tools of connecting resources to people are just tools, the point is to provide resources that make truly great work possible, support scholarship, expand horizons, to produce work that is creative and unique to the user's needs. We, IT professionals and librarians, are just facilitators. The real magic happens once we've stepped away, when the patron is connected to a masterwork novel, to the latest study about lupus treatments, when the patron knows how many midwives are in Washtenaw county.