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The Myth and Magic of Library Systems

Keith J. Kelley

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About the author

Keith J. Kelley has been managing information technology since he began working full-time, though he always questioned the wisdom of putting a freshman in charge of the college lab monitors. Keith holds a Master of Science degree in Computer Science from Western Michigan University's College of Engineering and is currently working on his PhD in Computer Science. Along the way, Keith has occasionally (and mostly accidentally) written occasional articles and given presentations in the field of library IT. Although he has been working in IT for libraries for more than half of his career, he first worked both full-time and as an IT consultant for various multinational corporations, including customers as diverse as large automobile and airplane manufacturers down to the smallest Internet startups, designing and developing cross-platform software for job sites, ISP system infrastructures, and a variety of other short-term projects. He held the position of Vice President and Chief Strategy Officer for ComAuction, Inc., an e-commerce site of his own design and finalist for a PC Computing Award.

Most recently, Keith was the Director of Systems at Western Michigan University Libraries and was project manager of the libraries' ILS replacement project. He managed the library automation group as well as the desktop computing group. He was also an IT expert-at-large for issues in the libraries' Digitization Center, the Web Office, and other areas of the libraries with complex information technology needs. Keith also assumed the responsibility for using technology to enable teaching and the custodianship of public resources, which added another dimension to his career beyond serving strictly service organizations. Keith has spent 21 years in a service profession finding ways to please people through information technology. Keith is a "computer professional" who rarely sits in front of a computer, because IT is mostly about spending time talking to users. As he is leaving both IT and libraries, he wanted to leave behind some shared observations that he and many other IT people have witnessed and unveil the magic behind library systems.

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Preface

Information technology moves at a fast pace. Libraries have lagged in adopting many IT advancements which are seen as standard in private industry and private life. This sluggishness to adopt new ways of doing things is causing libraries to decay and shrink instead of grow to lead the way into the new view of information literacy appropriate for the information age. This should have been the age of libraries' resurgence in relevancy, but they are having trouble joining the pack, and they certainly are not leading it. One reason for this delayed revolution is that libraries horribly misunderstand "systems" (information systems/technology) and how to manage them to achieve success. In order for libraries to claim their spot as leaders in the information age, they must allow IT professionals to do IT jobs or require more librarians to have IT educations. The complexity of systems requires a better understanding of information technology than what is achieved through today's standard library science curriculum. IT can do amazing and magical things if you let the right people do it, and together with library professionals can help make the transition into the new age.

Temper the things you read herein. It is neither 100% correct nor 100% complete, and if it has had time to be printed several things in it are out of date. Read more books and articles to supplement this information. Don't take them all in equally. Be skeptical. The large majority of what you read will be garbage, but try to take away a few useful points from the things you read (not always possible, but usually you can learn one thing). Also, consensus is no measure of quality, especially since most systems librarians are accidental and lack the professional background and education to be IT professionals, so just because you read it in three library journals (even the peer-reviewed ones) or saw it at two library conferences and Educause doesn't make it true. Also, people who really know the job well don't often have time to publish much, so most of what is published is bunk, and even those who do publish, don't publish 90% of their best stuff.

None of the things in this book are meant to be original or ground-breaking but come from a perspective that isn't too common in library publications because libraries and academia tend to grow their own leaders. This book is contrasting with viewpoints put out there by library professionals because it is more productive than IT professionals shaking our heads and walking away. It is somewhat rare that someone leaves a career leading IT outside of libraries and comes to libraries (it would be a terrible career move, especially financially, but also with fewer career advancement options). When originally conceived, the idea for this book was to include everything about Information Technology in libraries. This idea was quickly quashed with the realization that including everything would amount to many books, certainly not just one. So, the point of this book is not to comprehensively cover all the topics in library IT. The point is to inspire those who are involved or getting involved in library IT to

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challenge their beliefs and introduce them to the contrasting view of IT, its role in relation to libraries, and how to manage it. This book is largely from an IT point of view but also a management point of view; specifics for other audiences are denoted in the following missives.

Fun fact: if you are certain about knowing something you are almost certainly wrong. Because science. Keeping in the spirit of modern communication, the grammar in this book also occasionally makes use of modern grammar. Because Internet. Also, some of the analogies may only be helpful if you are familiar with genre fiction or gaming. The analogies are for everyone; one cannot teach systems librarianship and pop culture in one book.

Occasionally, throughout this book, words will be used like terminal, which is wrong, or station, which is imprecise, or will make use of other end-user vernacular. One of the confusing issues surrounding IT in libraries is conflicting or ambiguous vocabulary. Terminology plays an important part of communicating problems as well as solutions, especially between two specialized fields. Finding a common vernacular between library and IT professionals would bring about quicker consensus and more satisfying interactions between departments. In this book, you will find ways to bridge this communication gap by using terms which are consistent throughout IT and understood across industries, by vendors, and with users of library services (in other words, everyone else). At the end of the book, some commonly confusing vocabulary is tackled directly, but terminology is a common theme throughout, as well as its ability to clarify the myths or demystify the magic.

IT professionals will get less out of this book than administrators and librarians, who will get less out of it than people just starting to run an IT department in a library. What a library school student will get out of it probably depends on where they've been academically and where they are going professionally. Ideally, everyone will see something in a new light, with the curtains drawn back, so to speak. Following this preface are a few missives from the author to specific audiences that will help them get the most out of the book.

That being said, Chapters 1 and 2 focus around library "systems," "systems" librarians, and their relationship to the library and to IT. Readers will get a good understanding of what it means to run systems within a library, how the position relies on a firm foundation of basic IT concepts, and requires a very strong base in information systems, which is not taught within the curriculum of MLS degrees. In today's libraries, the term "systems librarian" has lost its definition out of necessity. Library systems became too large for an unspecialized professional to manage. IT professionals must take the lead in specific technologies, with skilled and properly educated librarians bridging the gap between the disciplines in a business analyst role where appropriate. IT professionals and librarians can and should work together as a team to bring libraries back to claim their spot as the destination for information experts.

In IT, customer service is a central concept. This book refers to users, customers, and patrons as is appropriate for the context (not quite interchangeably). The goal of information technology is to automate and simplify tasks for the users. Without the customers, there would be no goal to reach. Throughout Chapters 3–6, you will find many helpful tips and techniques on how to deal with different customer service

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needs. While IT must keep the needs of all of the customers at the forefront, often times customers are unaware of the big picture, do not share the same vocabulary to report problems correctly, or are in need of training. Within these chapters you will find practical, cost-efficient ideas to communicate with customers in order to resolve issues and identify training needs, creating a self-sufficient customer base and therefore lessening the burden on staff and budgets.

Chapters 7–9 discuss problems, the people who solve them, and how they go about it. Resources can be tight and must be managed with care. Chapter 7 gives suggestions on how to work through difficult problems with limited resources and creative solutions. Chapter 8 explains in depth the skills of specialized IT roles and how it takes all of these specialists to solve a library's problems. Explanations on how each discipline within IT overlaps with other roles within the IT department and how to evaluate job postings and descriptions to get the best candidates possible are given. Once your team is in place, you will learn in Chapter 9 how to analyze problems and the importance of creating and using a project plan to successfully complete complex solutions with explicit buy-in from the customer(s).

IT is about the big picture. Systems intertwine with every aspect of your organization, which causes changes and failures to have the ability to cause widespread consequences. If IT is magic, then how you run IT is your magic rule system. In Chapter 10, the book discusses having an efficient, consistently run system of systems to reduce redundancies and remove single points of failure. Still, failures will happen. You will learn about contingency plans and some tips on how to lessen the impact on your organization. With the ever-changing landscape of information technology, it is wise to follow trends and forecasts to see if any upcoming changes might impact you. Chapter 11 shows how you can use past trends to predict your own future, and will guide you to read some library IT forecasters, surveys and trend-spotting conferences you can attend. One such instance is covered in more depth in Chapter 12. Private industry led the way in cloud computing and libraries are starting to catch up. Replacing your ILS with a cloud-based library platform service requires careful analysis of costs versus benefits. You will also find in this chapter a helpful listing of library-specific software. Understanding the big picture requires understanding all the things. In Chapter 13, tips are shared about how to gather information and use resources available to you in order to come close to knowing everything. The book gives practical advice on how to document your past solutions and utilize modern sources to help you know everyone's job better.

Achieving a life–work balance while working in IT is a struggle. In the last portion of the book you will find strategies for the exhausted person trying to pull off library IT. In Chapter 14 you will learn some practical techniques to increase your productivity, better manage your time, and explore ways to expand your presence through technology. Meetings are important, necessary, and tedious. Chapter 15 gives several tips for handling the many meetings you will be required to attend. Reporting is also another large part of IT management. In Chapter 16 the book explains the different reports available to you, which ones are helpful and which you might want to avoid. Big data has brought information to our fingertips, but at what cost? You will read about the practice of profiling and privacy, and what that means to you.

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The last chapter is full of strategies and tips on how to face the many hurdles you will encounter while working in library IT. Knowing how to create a budget and a technology plan and when to determine one-time funds are discussed. Chapter 17 will also give you strategies on selecting major software, getting a consensus for major decisions, and managing failures, which are an inevitable part of innovation. Finally, you will find a list of terms and phrases you will encounter while working in IT. Vocabulary is essential for successful communication.

Using the information in this book, librarians and library administrators are given a small glimpse through the window into the world of running a library "systems" department. Again, this is not an exhaustive how-to guide, but a collection of topics found to be misunderstood among library employees who lack a sufficient background in IT to understand or maintain the systems as needed. There is a lot to know, so read more books, more articles, more blogs, more tweets, more LinkedIn emails, more magazines, more everything. If you know you don't know, learn it (and put yourself in a position to find out about those unknown unknowns, too). The resources are out there.

A missive to administrators

You need an internal IT structure, because you deal in information, and your parent organization's IT doesn't hold your same priorities and you need to be up to the task of leading in the information age, which you can't do without the right team. You can use your library IT to prevent your library's demise, but most of you are underutilizing them, while simultaneously overtaxing them. First, you should read Chapters 1 and 2 to get an understanding of what it means to run systems within a library. Remember that IT are service providers and everyone else in the organization are customers, and try to respect and follow the rules of the other customers so that your IT team can allocate resources responsibly. You should definitely read Chapter 8 so you can make the best use of specialized roles and capitalize on skills within your IT department. Every King Arthur needs their Merlin, and your library mages should be a fully staffed IT unit. Organizational IT doesn't put library priorities first, which has made a library IT unit with specialized library IT roles necessary, and you should know what they are, what they can do, and how to get them to work for you. Most libraries' IT departments are organized badly and a very large number of library IT leaders are chosen poorly, by the wrong criteria, and Chapter 8 will also help with strategies on how to get the best job candidates. Your library can do all of the things it is doing more effectively (or just as effectively while spending a fraction of the time and money). IT can help you with this. You should read Chapters 15–17 to get a better grasp of how to make the most out of all those meetings you are in, and learn about budgets, Total Costs of Ownership (TCOs), pulling data for data-driven decision making, and essential technology plans and life cycles. Basically, you should really read the whole book; it will expand your understanding of what your IT department does and can do, and the strains put upon them.

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A missive to library IT department heads and library IT administrators

Whether you are an AD for IT, a Systems Librarian, or something else, it doesn't really matter what your classification is (by the way, if your organization has a head of systems and a head of IT that is redundant, you need to take a serious look at restructuring, by which I mean you need to do it because your organizational structure is screwed up), the head of IT is the head of IT. Read every bit of this book. Even if you've read other books on the same topic, I included a few things I've not seen in other related books. Remember, your job is defined from the bottom up; whatever needs doing, that's your job. If you're ever afraid you are overstepping, remember two things: (1) library systems are embedded in the very fabric of every aspect of the library, and (2) "Who Dares Wins."

A missive to new librarians in IT and students

First, there is a lot to learn about IT that library school doesn't prepare you for. Also, unlearn everything you think you know about the role of "systems" in libraries. Even the things library school purports to prepare you for in IT are covered at a surface level so as not to be useful. Undergraduate school only prepares you for these things if you took a full bachelor's in CIS, MIS, or BIS (CS sort of does half the job but is more focused on software development than IT work). I strongly suggest supplementary education if you do not have one of those undergraduate backgrounds (additional undergraduate coursework could do the job, possibly repeating some classes with the same name as your library school equivalents because they lacked depth, but also MOOCs could supplement your education adequately, but probably not webinars).

At some point in your career, probably every chapter in this book is for you, but it is not comprehensive. Read basically everything and then read other things. You will need the more management-focused things before you realize it, but you can probably skip Chapter 15 until you know you need it. Individual sections of Chapter 17 could probably be read on an as-needed basis like Chapter 15, maybe. But mostly, if IT is your career, pay close attention to the courses your undergrad degree probably didn't give you and study on your own. Or get another degree. The best libraries require two Masters degrees from all their librarians, and that's probably a good idea.

A missive to library school faculties and administrators

Your curricula do not prepare librarians to work in IT. Even the ones that try to do so do not teach the fundamentals to understand the concepts necessary with any depth. You are doing both your students and libraries as a whole a disservice. If librarians aren't prepared for the information age, there won't be any more libraries, and so there won't be any more library schools. So if you won't do it for your students do it for your (soon to be jobless) selves.

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Read Chapters 1 and 2, and know what library systems are. You should read Chapter 8 about building an IT team, and also the Appendix. Vocabulary is a huge part of communication, and it fails when the wrong words are used. Do not try to teach the things in this book, but partner with MIS programs or have course prerequisites that teach these things. In addition to tightening up your curriculum and prerequisites, go learn about information from your MIS, BIS, and CS colleagues. It seems appropriate here to recognize the few schools that are already partnering up, and sharing professors and courses between their different information programs.

A missive to IT committee members and other engaged library employees

There is no possible way you can learn enough IT to make informed IT decisions, there's just too much to learn. It's good to use your IT staff as a philosopher's stone, turning a bad situation or pile of crummy resources into a treasure trove of gold or anything else you need. Defer to the experts rather than feel you need to develop and hold a position. Your role is primarily to remind the experts of user needs. Read Chapters 1, 2, and 8 because it is useful to know (and really disrespectful not to know) the differences between what your IT colleagues do; when you treat them all like they are interchangeable, it is hurtful. IT should be your first source for how to do everything you know how to do, but better, and your first source for how to do everything you don't know how to do; you'll be amazed at their different approaches to the same problems. Use them as the resource they are. Do try to learn enough familiarity of issues relevant to understand what's going on. Especially learn about budget issues in Chapter 17, and those words in the Appendix so you can communicate with them more clearly; it's not fair that they always have to be the ones with the burden of translation. You should, of course, read whatever sections relate to your IT governance responsibilities. If you can spare the time out of respect for your overburdened colleagues, you really just should read it all.

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Atlantis wasn't a magical place and library systems are just library IT

1

The text has disappeared under the interpretation.
Friedrich Nietzsche, Beyond Good and Evil

In library organizational charts it is common to see an organizational group called "Systems," "The Systems Office" or "The Library Systems Department/Group/Unit" that is a subgroup of Information Technology (IT). To people outside of libraries, this is dead wrong. Instead, these terms should probably be seen as functionally equivalent (as we will later learn, the irony is that technically IT is a subset of Information Systems (IS), from which The Systems Office gets its name—IT is actually IS minus the people and processes).

Sometimes people will incorrectly assign meaning to words that was never really there. We let the myth replace the reality. Atlantis conjures up images of a living city under the sea filled with mermaids, demigods, advanced human civilizations, and all sorts of magical things. There was possibly a real basis for the myth of Atlantis; however, it probably wasn't a living city, but rather a city that sank into a sea. The name was most likely even wrong. Likewise, "The Systems Office" in peoples' heads is different than the reality. It's not the place some older librarians remember through the rose-tinted glasses of nostalgia where they could find one person who knew everything. It's also not the right name, since it is just called IT by those in the IT profession today and by lay people anywhere other than libraries. It's not really magic either; that's an illusion you'll have to strip away now that you've decided to become part of it. It may seem as though when IT walks in the room everything starts working as if a magic conch shell called everything to order, but there's usually a more reasonable explanation that is perhaps less exciting.

Things are both better and worse than they used to be. No longer can we all believe in a magical city under the sea, nor does a kindly old wizard (or paper clip) hold your hand through every step of using your computer, but on the other hand everything is easier to use, as well as faster, and may indeed be more magical in many ways, since there's so much more going on, and no one person can understand it all.

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1.1 World building and the creation of systems

> *Never build a dungeon you wouldn't be happy to spend the night in yourself. The world would be a happier place if more people remembered that.*
>
> *Terry Pratchett, Guards! Guards!*

In fiction writing (particularly the fantastical), role-playing games, and video game development, there is a concept called world building. The term was popularized by science fiction writers in the 1970s and simplifies the minutely detailed construction of entire universes (Stableford, 2004). Each part works with and enriches the entire world, or system, and creates a cohesive environment with set rules and understandings of relationships between key elements of the storyline. Role-playing and video game creation as forms of interactive storytelling apply the same world-building principles to the creation of the systems by which they operate. In addition to cultural, economic, and ecosystems, these worlds often include complex magic rule systems. This concept of system creation carries through to building successful systems over a broad spectrum; there is even a field of study called "systems theory" which transcends multiple (largely scientific) disciplines. When building a world or system you can come up with almost any rules you want, as long as it is a system of rules that is consistent with itself. These same principles apply to the building of a library IT organization. To simplify, world building is the creation of all the rules by which a fictional world work. IS are the building of all of the rules by which an organization works.

Let's begin with a consistent foundation of common vocabulary. A lot of terminology and organization is being thrown around in ways people outside of libraries don't even think of them. Indeed, one of the keywords librarians and library administrators can misunderstand when it comes to the modern library is the word "systems." As a precaution, let us revisit the meaning of the word "system."

> *System:*
> *NOUN*
> **1.** *A set of connected things or parts forming a complex whole, in particular.*
> **1.1.** *A set of things working together as parts of a mechanism or an interconnecting network:*
> *'the state railroad system'*
> *'fluid is pushed through a system of pipes or channels'*
> **2.** *A set of principles or procedures according to which something is done; an organized scheme or method:*
> *'a multiparty system of government'*
> *'the public school system'*
>
> *Oxford English Dictionary (System, 2015)*

Definitions found in traditional dictionaries lack the depth and breadth of online resources, and you might also find it a good use of time to better familiarize yourself with the terms and breadth of application of the concept of a system by reading the Wikipedia page on "system" (System, 2014).

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A comment you might overhear in a library setting is, "She sees [an issue] from the Cataloging point of view and Systems sees it from the Systems (IT) point of view." That reflects a misunderstanding of what "systems" means. Such a comparison is not really possible, as these are not at all equivalent points of view. The cataloging point of view is a fraction of the big picture and "Systems" has to include all of the points of view by its nature. The IT point of view includes the cataloging point of view, as well as the circulation point of view, and the reference point of view, so, by necessity, the IT professionals are more organizationally aware than any other employees. They, and the systems they build, are the glue that holds the organization together and makes the organization work. IT has to understand the needs of every area of the library in order to do their jobs, and those who work in IT understand, even more so perhaps than the library administration (who can, by the nature of their position at the top be somewhat out of touch with what happens on the ground), how one area impacts another.

One of the reasons IT professionals are in charge of the things that make a library go is that they are likely in charge of the helpdesk system for all of the things, which means at the very least they have triage responsibility for those things. The next reason is that no one but IT professionals know where things stop being a software thing and start being a hardware thing, when things stop being a printing thing and start being a network thing, when things stop being a web thing and start being a digitization thing, when things stop being a software thing and start being an employee thing, or when things stop being a vendor thing and start being a workflow thing.

The term "systems" is, if you go back to Descartes, essentially a synonym for the big picture, as one way of looking at a system is to break a problem down into its separate simple elements (Bertalanffy, 1972). A system is everything, how it interconnects, all the inputs and all the outputs. It is abstracted to whatever level is appropriate. Abstracting is a required skill for IT professionals, as is metaphor; the two are closely related and necessary, or IT professionals wouldn't be able to think in terms of file directories, we'd have to think in ones and zeros, which is not really a skill anyone possesses (an IT professional can do binary addition but only in a trivial way; they cannot tell you which stream of ones and zeros pass through your CPU when you maximize a window or choose an item from a file menu).

1.2 How IS turned into IT

Let's do a "bad" thing together and use Wikipedia to find some definitions. We all know that Wikipedia is a good starting point for many topics, but is generally not considered to be a good stopping point for any topics. An IT professional might argue that for IT topics, and some others, it is not only a good source, it is one of the best. Traditional general-purpose dictionaries do not often have definitions for the terms we seek, and even in specialized dictionaries, like business dictionaries, the definition is likely to be wrong or inadequate and there's no way someone can come along and fix it before you read it. As a result, a traditional reference not only lacks currency, but is perhaps less likely to be correct (we already know Wikipedia was at least as correct as Britannica years ago (Giles, 2006)). While a wiki will give a comprehensive view

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that is reviewed by many people, a traditional resource will give you a view filtered through one person, reviewed by perhaps a handful. So, when writing about the information age, it is probably best we use information age tools. Let's try it.

Imagine you have been hearing the terms Information Systems and Information Technology for years and finally decide to make sense of them. Like any reasonable person trying to familiarize themselves with a new topic in the information age, you start to browse Wikipedia and find a dizzying web of information-related terms.

The term IS is not defined by traditional references like the previously cited Oxford English Dictionary. In order to find a modern definition (there are many), one must venture into information age resources. We will start with a specialized online dictionary and move on to Wikipedia to further our understanding of the term.

> *Information system*
> *Definition*
> *A combination of hardware, software, infrastructure, and trained personnel organized to facilitate planning, control, coordination, and decision making in an organization.*
> *BusinessDictionary.com (Information system, 2015a)*

That's a pretty decent start, but for a more complete view we go to Wikipedia, which on the day of this writing defines IS as "the study of networks of hardware and software (see information technology) that people and organizations use to collect, filter, process, create and distribute data" (Information system, 2015b). Then of course it goes on. We can see that it's a meta-discipline, encompassing a half dozen other disciplines, much like Information Science, which many readers might be more familiar with. You might also glean from this page and the linked pages that it is also the bridge between business and computer science and uses the theoretical foundations of information and computation.

It might be news to some practitioners of Information Science that there's a theoretical foundation for information. It is worth noting that information theory is not referenced on Information Science pages in Wikipedia, nor is information theory a part of the definition of information management in the ALA Glossary of Library and Information Science terms (Levine-Clark and Carter, 2013). The ALA standards for accreditation do not mention information theory (American Library Association, 2008). Top library school programs often have courses called "information organization and access" (or some variation) whose course descriptions also do not mention information theory (University of Illinois, 2015a). IS are built upon Computer Science, which is in turn based on Information Theory. The implication here is that there's a lot of science to learn about information, that while it is not even introduced in library curricula, it is in practice in library systems (or IT).

As the Google ngram viewer (Google Books Ngram Viewer, 2015) in Figure 1.1 shows, and as you may have noticed over the years, the term "information systems" has largely been replaced in common language by "information technology," perhaps because "information systems" is thought to be too closely related to software and "information technology" is seen to be the broader term. That's not what the definitions above said, so let's check what IT is. Even the ALA Glossary of Library and

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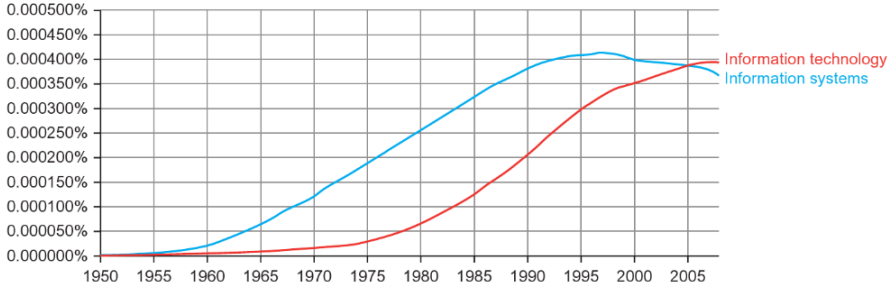

Figure 1.1 Google Books Ngram Viewer.

Information Science (Levine-Clark and Carter, 2013) defines "information technology department" as "See systems department."

> *Information technology:*
> *NOUN*
> *the technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data.*
>
> *Merriam-Webster.com (Information technology, 2015)*

That's a much narrower definition than IS, so why do some library organizational charts tend to have systems as a subset of IT? If you look long enough for a definition of a library systems office you'll find there is no standard definition of library systems. You may find simple enough definitions for the software, but not for a "systems office" (as it is often styled); a typical example might be something like this one from the University of Michigan:

> *The Library Systems Office, a part of the Library Information Technology Division (LIT), develops, enhances, and maintains systems and processes that support core library operational functions (acquisitions, cataloging, circulation, course reserves, the Mirlyn public catalog, etc.).*
>
> *University of Michigan (2014)*

If you were to then browse the catalogs of universities and colleges, you will often see Business Information Systems degrees, Computer Information Systems degrees, or even the previously more common Management Information Systems degrees; and perhaps more often in community colleges, but also in universities, you'll find IT degrees. However, if you browse these same institutions' organizational charts, you are more likely to see IT as a department in their business units. Technically, IT originally just meant software and hardware, where IS meant everything, but IT has come to be the predominant term in common usage for IS as a profession.

One of the advantages of conforming your definitions of IS and IT with the rest of the world is ease of hiring new people, and the transportability of the skills to new jobs, giving them a career path forward. You want to divide your units so that IT directors, IT managers, and IT specialist positions can be filled without requiring

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special library skills. To allow this, you do things like making a unit that contains all of your library-specific skillsets instead of having each person in your IT staff learn one library-specific skill, thus greatly increasing the candidate pool you have to draw on when you hire. What if you didn't, and hired the only out-of-work librarian in your area with IT skills, how would you fill the next position that opened? Meanwhile, there may be a dozen people in your area who know nothing about libraries, but can manage PCs and networks expertly.

Another advantage of conforming to the common definitions of IT and IS is that the people who have the authority and responsibility for something have been prepared by their career training for that authority and responsibility. You then don't end up with an Art History major who also went to library school responsible for architecting a network and you don't end up with a Business Information Systems major responsible for your library catalog or your digital image collection. Neither is prepared for the others responsibilities, so you split responsibilities up logically in such a way that people understand the things they are managing.

1.3 Library systems are IT minus two things plus those same two things

Your IT organizational chart itself needs to be a system of cohesive, coherent structures, rules, and communication methods that allows for complete coverage and distribution of responsibility and authority for all aspects of IT. Many configurations exist in libraries and many are valid. Most libraries probably started with IT as a single unit called "Systems" or some variation thereof (though more modern institutions may have a single IT librarian or have reorganized without a systems unit) and when the WorldWide Web became a significant force, broke off a "Web" department or group. Then, as libraries got into scanning for preservation and/or access and the implied associated project management and metadata, library administrations added a unit called something like "digitization" (to everyone else this is just called scanning to avoid confusion with other types of digitization). As IT dependency and responsibilities grew in libraries, many diverse and often incompatible setups were created with additional organizational divisions created, such as:

- Software development
- Systems engineering
- Computer or IT operations
- Networks or networking services
- Application or desktop or user support
- Digitization and web together or separately with or without "services" or "strategies"
- Digital initiatives
- Enterprise systems
- Hardware support
- User experience (UX)
- DevOps
- Server and network management

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- Experience design
- Library applications
- Instructional technology
- IT infrastructure
- Software or web applications development
- Web and software development
- Digital development or production services
- Online strategy

All of these groups can be part of valid configurations of library IT, so long as the division of labor, responsibility, and authority are relatively even and completely distributed. The result of a less designed and more evolutionary approach to IT organization is that "Systems" as a unit is often an artificial local construct defined by what it is not to a library, rather than being defined in a standard way as IS (as it would have been the name in an old business unit). It is often defined sort of vaguely as all the systems minus the web systems, or something to that effect. A common configuration might be systems minus web minus digitization plus the hard parts (system integration, server administration, programming, etc.) of those two things. The IT organizational chart should be built specifically designed to meet the needs of the library. Some libraries have more recently designed organizational charts (Muir and Lim, 2002), and more should.

Details on building a well-rounded IT team can be found in Chapter 8 of this book. Below are some valid examples of library organizational charts similar to some in use today by major university libraries.

A good org chart starts with the head of IT as part of library administration. A bad org chart would have IT/Systems as a subdepartment of technical services. As technical services is a major customer of IT, that allows an abuse of power by the head of technical services. IT must be independent of technical services, public services and everyone else, allowing them to be impartial.

One of many valid examples of a fleshed-out library IT organizational chart might be:

University Librarian
Associate University Librarian for Digital Initiatives
  Library Applications and Publishing
    ILS Group
    Web Group
  Computing Infrastructure
    Infrastructure Support Group
    Infrastructure Design and Administration Group
  Digital Imaging

Note in the following perfectly valid example two things: (1) Web and desktop are provided by the organization rather than the library so there is no listing for them. (2) The completely unnecessary overuse of the word "service." All IT is service.

University Librarian
Assistant University Librarian for Information Technology Services
  Discovery and Core Services
  Data and Visualization Services

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Digital Projects and Production Services
Digital Repository Services

The following examples include desktop computing inside libraries' IT.

Library Director
AD for Discovery and Technology
IT Operations
Desktop and Application Services
ILS and Discovery Services

Dean of Libraries
Associate Dean for Information Technology
Digitization
Web
Desktop Computing
Library Automation

As mentioned above, there are many valid ways to organize your library IT (just as there are many invalid ones), but these are a few ways that avoid pitfalls, like overlapping areas of responsibility and abuse of power, putting all of the pieces in place to manage information like the leaders in the information landscape that libraries should be.

1.4 Library roles are specialized today, so are IT roles

Librarian specialization is arguably on the rise, but the specializations are not the same as they once were. There are few authority librarians or bibliographers left. Many of the traditional librarian jobs are almost gone. Generalist degrees are in (Gordon, 2005), but if you're in management in IT in a library, while it is good to be a generalist, it still might be considered unreasonable to expect one person to be a generalist in management, librarianship, and IT all at once.

The day of the subject specialist is possibly on its way out, and for academic libraries to try to keep up with a growing number of academic programs with a shrinking number of librarians is a losing battle. There are too many programs and not enough librarians with not enough diversity in their educational backgrounds (it is common knowledge that a preponderance of librarians were humanities undergraduates). Librarians can make a much greater impact in their libraries spending most of their time as role specialists. For example, if you've followed the job openings in recent years you've probably noticed an uptick in the following positions:

- Fundraising librarian
- Marketing librarian
- Data management librarian
- Data analysis librarian
- Web instruction librarian

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- Emerging technologies librarian
- Collection management librarian
- Metadata librarian

There are several others outside of the traditional domain of reference librarian (for example). If you go to conferences or follow the lists, you can probably think of several other positions libraries are creating; if this book is more than a few months old as you read it there are no doubt some brand new ones. Libraries are not just adding librarian positions left and right; they are able to do these things because they are dropping specializations that are no longer as relevant (perhaps reducing the number of business librarians). Libraries are making room for the future by replacing legacy positions.

While some overlapping skills are present, each specialized library position serves customers best by utilizing the specialized knowledge each librarian position brings. The same is true among the IT professionals. People are always asking the systems librarian in charge of library automation questions about Microsoft Windows, installing a Bluetooth peripheral or software, or about a blue screen of death, even when the position is held by a systems librarian with an English degree (for example) and that is not remotely their job or background. The desktop manager or server administrator is in turn asked Integrated Library System questions. As far as they know, MARC is a guy who works in serials and arranges Library Happy Hour.

Of course, "Systems," no matter what you call it, is much more about people and communication than it is about technology and devices. Everyone's most important skills are their people skills, but when it comes to technical skills, the specialization in IT roles is highlighted. While some IT positions are closely related, some are so unrelated they are impractical to even cross-train due to the differences. In Chapter 8, a more in-depth look at what each specialized IT position does for your organization and how their skills might overlap will help with understanding these similarities and differences.

IT professionals might be experts in their specialized fields, but a systems librarian is an expert in neither systems or libraries. Modern libraries have expanded their IT requirements to such an extent that one person cannot do it all, and the collective of people who can must have the knowledge and training in IT to do it.

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Creatures of ancient myth: The Titans and the systems librarian

2

The Wheel of Time turns, and ages come and pass, leaving memories that become legend. Legends fade to myth, and even myth is long forgotten when the Age that gave it birth comes again.

***Robert Jordan*, The Eye of the World**

At the dawn of the information age, the systems librarians were the IT gods. When the Internet was new, there was one person you could go to who could do all the things. Need to know how to use your cataloging software? The systems librarian could help. Need to set up a desktop computer? The systems librarian could help. Need to connect to the network? The systems librarian could help. As certain skills, like connecting to the Internet, became obsolete, and clearing a paper jam became skills for everyone, millions of new things came along and praying to the systems librarian for every little thing became a thing of the past as well. Some things you do for yourself, some things you go to one of a complete pantheon of technology gods. Before the dawn of the age of man, the Titans were the gods. It certainly won't surprise many people to find out that the IT professionals both in libraries and everywhere else tend to see themselves as gods. That makes the systems librarians the Titans, to the more recent pantheon of Olympians. For those not familiar, the Titans were powerful beings that came before the gods in Greek mythology. That is to say, they were gods, but before the Olympian gods in Greek (also Roman) mythology. They were the children of Mother Earth and Father Heaven (the first "gods" in Greek mythology). There were a total of 12 Titans, and their king was Kronos, God of the harvest, who fathered Zeus, who in turn fathered and was king over the Olympian gods, including the new goddess of the harvest, Demeter. If you need help following the analogy, Kronos was the old-style systems librarian, and Demeter the new "systems" (read: automation) librarian, while Zeus is now the head of IT, whatever combination of words you use to label them (Assistant or Associate, Dean or Director or Head, Systems or IT). It takes nothing away from the early gods, the Titans, who held great power, but replacing them, there is not just a pantheon of twelve, but also lesser gods, each with their own specialty, because there's just so much for each one of them to be responsible for, and the god in charge just can't focus on the harvest any more. The goddess of the harvest went from being in charge to being just one of the pantheon. Now, there are librarians and non-librarian IT professionals and their domains are not the Hunt or the Underworld, but automation, or user experience design, or emerging technology, or electronic resources, or the harvest (maybe there is not a librarian of the harvest, possibly; details).

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Not so long ago, there was a once a systems librarian who was the head of a systems office of a few people. The person before her was the first systems librarian, who created the systems office and then became the web librarian and created the web office. The original systems librarian probably had a hand in creating the first digitization office as well. Basically, she was a one-woman IT shop, and was able to be all things to all departments. If it was digital, the original systems librarian did it. Back in the olden days, one Titan was enough. After all, at one point there was only one terminal for "the library system" to be responsible for. Legend has it she ate her children, no wait, some of her children imprisoned her in Tartarus. No wait, maybe they just took her out to lunch, but then some of her successors pushed her out, so that part is the same. There's no room any more for one person who serves as the one and only all-powerful being, and hasn't been room for such a person for a long time.

2.1 In the land of the blind, the one-eyed librarian is king

… If a blind man leads a blind man, both will fall into a pit.

Matthew 15:14

The future is already here, it's just not evenly distributed.

William Gibson

Systems librarians know a bit about IT, but sometimes, knowing a little about something means knowing just enough to be dangerous. In many environments, knowledge is a wonderful thing. In an IT situation, sometimes a little knowledge is also a dangerous thing, or put frankly, a liability. Knowing "just enough" about the intricacies of highly specific software or the relationships between the parts of the entire library system can have long-lasting detrimental effects on the department for years. This false confidence can lead to costly and unnecessary implementation of procedures which will often end in failure and misappropriated manpower to maintain or correct. Technology advances at uneven rates (otherwise we'd all be living on the moon or flying around with jet packs) and so does learning about technology, which is why being a computer savvy user doesn't mean much when it comes to overall capability with Information Technology. Also because savvy users are dangerous, but mostly because it causes you to assume competencies in your savvy users that aren't there. In many ways, rather than being an IT professional, your systems librarian can be your savviest and most dangerous user. For example, a semi-adept Unix user, with access to the root administrator account, can wipe out the whole system in an instant with a single command "rm - rf /" that a complete novice would never type on purpose (or by accident) because typing any variation of that would never occur to them. Likewise, a systems librarian with DBA access to the ILS could wipe out all your cataloging records by forgetting to add a where clause to their "delete * from bibliographic_records;" SQL command; or it might be as simple as knowing to buy a fancy new piece of hardware or software but not having any idea that it takes two professional staff to maintain it.

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I have a well-deserved reputation for being something of a gadget freak, and am rarely happier than when spending an entire day programming my computer to perform automatically a task that would otherwise take me a good ten seconds to do by hand.

Douglas Adams, Last Chance to See

Once, a librarian was hired for her coding skills. She was tasked with a few successful projects, and her skills gained in popularity among the people. The people took advantage of her knowledge and requested she code more marvels. One customer in particular asked for an ILS add-on for call slips, which he called 'holds,' which was redundant because the ILS package could already perform that function, but he did not understand that it was what he wanted because it was called Call Slips (in this particular system all holds were on-shelf holds). The systems librarian had just enough knowledge of the ILS, but apparently not enough, as she went on to code an entire add-on to perform a function already available out of the box. The customer had confused her with incorrect terminology; had she clarified with and trusted the IT staff, who intimately understood the capabilities of the system they supported, a lot of time and effort could have been saved. But in the end, it was done, and unfortunately, at the apparent success of the first add-on, a similar unnecessary add-on was requested and delivered, both of which caused graduate assistants to be hired for many years to provide support for the badly engineered and badly tested code which resulted in many service requests, ultimately reducing customer service levels for all the people in the library. The over-zealous systems librarian/amateur programmer also created another add-on to do something the acquisitions module did, but luckily that one never caught on and continued support was not needed. As should be evident from this tale, when naive customers and capable but under-trained systems librarians get together it can create big problems. If it is only one or the other, the problem can be solved before it is created, but when no one at the table really understands what the system can do or how it should or shouldn't be changed, they make uninformed decisions with long-lasting consequences and the organization and the people suffer. There are some solutions to this situation, other than trusting your IT department to give expert guidance. One is to be educated in analysis. Another is to have a policy of working with the software instead of trying to modify it. People with little programming skill think they can rewrite the world. Some knowledge, experience, or restraint can stop this tendency.

These days, systems librarians are like camera phones, so ubiquitous and ambiguous as to become meaningless. It's this term that came about during a transitional period before camera phones grew to be smart phones and generalist systems librarians had to grow into a proper specialty (systems is not a specialty any more, it is bigger than librarianship). Both terms now sound quaint. For a long time, the book *The Accidental Systems Librarian* (Engard and Gordon, 2012) was all the rage among some librarians. Here's the thing about that book today: the job of "systems librarian" should no longer be a thing, if it ever should have been. "Systems" as a term in libraries should no longer be a thing, if it ever should have been. It is needlessly specialized library jargon for Information Technology (IT); you will not find many "systems" specialists outside a library, it's just too broad a concept. Now, the traditional roles of the Systems department should be split into something like: automation, desktop

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computing, and cloud services, or another meaningful, logical separation (more details on the possibilities are covered in Chapter 8). Meanwhile, the help desk should probably be in the Reference department, where all the rest of the triaging to subject experts happens. Information on how to split the workload of the IT staff is expanded upon in later chapters.

There are popular books out there about faking like you're an IT professional as a librarian, but let's be clear: these books are about faking it. A systems librarian of this ilk is by definition an impostor; if impostor syndrome ever subsides for these people, it should not have. As a systems librarian, the most you should aspire to be is the chief customer, and a business analyst for the IT professionals and customers (a translator, basically). Without adequate training in IT fundamentals that comes with years of focused study, such a person will never have the depth of knowledge that a trained IT professional has. They can fake it, maybe, for the customers (the blind), but any IT professionals who work with them will see through that thin veil. For instance, a reference interview can make for a decent way to take support questions, but if you don't understand how TCP/IP works (for example) and you don't understand how data structures work, or you don't understand operating systems, you're not really on the same level as everyone else in an IT role and you are much less likely to solve or even see a variety of problems.

Step one to success in IT is knowing what you don't know. It sounds trite (like everything attributed to Confucius), but the roles within IT are so specialized that sometimes 90% of what you do is finding the expert, because you're not it for that particular thing. If you haven't put in many thousands of hours on a topic and you think you are the expert, you've already failed. Which is not to say that just putting in time is enough, because that time teaches you nothing if no one ever taught you the fundamentals.

Everyone can agree that on the scale of things, a systems librarian is still a fairly new thing (the last couple decades), but in the fast-paced information age, it may well be a thing that is already outdated. In the foreword to *The Accidental Systems Librarian*, Eric Lease Morgan states that "[systems librarianship] is only going to increase in importance and not going to go away anytime soon" (Engard and Gordon, 2012, p. xv). Unfortunately for those who hold this point of view, systems librarianship came out of a time when computers were becoming very popular and there were not enough qualified IT professionals to meet demand, so unqualified end-users become accidental systems librarians. This was bound to be temporary from the start, until the workforce caught up and enough IT professionals had been educated. Since that time IT has become a dominant professional field with opportunities for formal education everywhere. You can't have two professional careers, two vocations, at once, so you can't really be both fully a librarian and an IT professional at the same time. You will fall behind in one or both callings. Side note: If a doctor/lawyer ever wants to perform surgery on you, run away, far and fast.

The acknowledgments of *The Accidental Librarian* (MacKellar, 2008, p. xvii) praise the work of all the accidental librarians throughout the years. Let's stop and think about that for a moment. This is a profession that unlike most professions does not require some sort of testing or certification, or bonding, and depending on who

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you ask, does not even necessarily require a particular degree. In a lot of professions, it would be illegal to even call yourself that without the required credentials. Imagine how tragic an accidental civil engineer would be? Would someone be allowed to just fall into a profession building bridges? Now, let's compound this with the fact that just as many people fall into IT in the first place (questionable, but at least they usually come from technical fields with similar foundations). If you're a systems librarian (or some other kind of librarian whose main job is something other than being a librarian), you may very well be simultaneously doing two professions you never qualified for. How scary is that?

A common myth that helps librarians believe that they are uniquely suited to the special role called a systems librarian is that a librarian is inherently a better communicator than an IT professional or "techie" as they often condescendingly call them. Another is that they are perfectly capable of managing people who have IT skills. This is some sort of weird mix of elitism, stereotyping, and geek-shaming that has no place in the modern world. Instead, both parties need to come together and share the responsibility of using proper vocabulary and terms so there is no confusion. Bad communication leads to bad solutions. When an IT consultant is hired by a library for a project, it is important to use precise specifications to detail the actual needs of your department from the perceived needs (more is written on analyzing customer requirements in Chapter 9). Even if systems librarians assume they have enough background in IT to fully understand the scope of the issue at hand, they do not. There are too many specialties and constantly changing solutions for them to be aware of, hence the hiring of an IT consultant. If the library incorrectly specified what they wanted done, and the solution was built to their specification yet did not address their problem, the arrangement will surely end unsatisfactorily for both customer and provider, as such assumptions about communication skills and knowledge should never be made. A better outcome is much more likely when the IT professional knows when they are communicating with an end-user, and the end-user knows they are an end-user.

It seems obvious that if you are a librarian in a full-time technology role you will spend more time educating yourself about technology than you would otherwise, but if you are splitting that time trying to keep up on librarianship as well, you are not an IT professional, or at least not a full one. Just as people trying to learn Linux cannot keep both a Linux machine and a Windows machine during the learning period lest they use the latter as a crutch, so will librarianship keep you from learning IT. While books like *The Accidental Systems Librarian* (Engard and Gordon, 2012) try to make the case that "A library background is crucial to doing effective systems work in libraries," the opposite may well be true, as IT professionals are experts in doing their job among customers whose jobs are not their own, and being part-customer means that you are not fully an IT professional. Within the journal of the Library Leadership and Management Association, the following statement gives supportive evidence to this. It states "… in public libraries hiring non-MLS librarians is common practice and in academic libraries, this type of hiring is gaining momentum …" (Simpson, 2013). IT/Systems in particular, along with positions like "web librarian," are not positions that library directors consider an MLS to be essential education for.

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2.2 Even specialized MLIS programs don't provide IT fundamentals

Never attempt to teach a pig to sing; it wastes your time and annoys the pig.
Robert A. Heinlein, Time Enough for Love (The World As Myth)

Librarians and IT professionals aren't a case of pirates versus ninjas (though IT staff might tell you they have strong kung fu, they are referring to magic, not combat skills), they need to recognize and rely on each other's expertise rather than fight amongst each other.

IT staff are involved in servicing people's information needs in different ways and on different scales than librarians typically would (compare gate counts to website visitors). IT professionals will come up with solutions that might never occur to a traditional librarian, in part because of the IT professional's broader understanding of systems, but also because of their IT training and experience with solutions outside the domain of a librarian's experience. There is room for one librarian in IT, called the automation librarian, who is a business analyst.

The term "systems librarian" today is meaningless because that should encompass all of information "systems" (Engard and Gordon, 2012), much in the same way a transportation czar would not just be in charge of boats, but all transportation. At one point, "systems" was more limited in scope and application and was manageable by one person. Now, for most organizations, it is not. So, either "systems librarian" becomes a generic, fairly meaningless term like "technology" or people start naming the positions currently named "systems librarian" with a little more precision. This works in the same way that science librarian is a much more useful descriptor than reference librarian or acquisitions librarian might be a more meaningful designator than Technical Services Librarian I, and rare books cataloger is a more descriptive title than Library Clerk II.

Some have even claimed that every librarian is a systems librarian in a way because every librarian uses a computer to carry out their work (Engard and Gordon, 2012, p. 12). In the information age, that is an extremely naïve view of technology. Being proficient with using a computer merely makes someone an end-user like everyone else with a white-collar job in the Western world (and most of the rest of the world as well). Though even student employees can be used to relate to the users in a more comfortable and tech-savvy way, many librarians now lack the fundamental knowledge users expect them to have in today's academic environment. The bar has been raised, and to be considered an expert in technology is no longer an easy thing. Everyone you meet is probably an expert in multiple technologies, even if those technologies are the YouTube search box and Candy Crush Soda.

Educational standards within library science must advance with the information age (or, rather, catch up with it). Technology has replaced tradition in many instances and new librarians (and current librarians!) must be prepared to work with these new and ever-changing methods. Several universities have now developed programs with systems or IT specializations and these universities are producing better prepared classes of graduates (others have data science specializations, but apart from a couple

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of basics, that's a different field of study). For example, two of the top five library schools in 2013 according to US News and World Report (2013), specifically the University of Illinois (University of Illinois at Urbana-Champaign, 2015b), and The University of North Carolina—Chapel Hill (University of North Carolina, 2015) have specialized programs. The University of North Texas, which in spite of being one of the more forward-thinking programs ranked at 21 has integrated more technical studies into their Master of Science Library Science (MS-LS) programs (University of North Texas, 2015). The number four school, Syracuse, has a certificate you can get simultaneously with your degree to advance studies in specialized areas (Syracuse University, 2015). The University of Washington has a systems analysis course, probably the most useful of all. Arguably, people shouldn't be allowed to even work in library IT without that course or something similar.

These days, a Bachelor's in IT would be a better undergraduate education for librarians than something like an English Lit. Degree (especially in the IT unit, but also in technical services and public services). A minor in CS or CIS/BIS is better than nothing, but by no means sufficient. See elsewhere in this chapter for a few recommendations on essential courses you might have missed. To complicate matters, the names and coverage of courses in CS, CIS, BIS, MIS programs and so on are not the same. Even if you find two classes named the same, the chances that their coverage of concepts is the same is slim. For example, you might find an introduction to Java programming that is 1 credit and teaches you hello world or you might find one that is 3 credits plus a 1 credit lab that teaches you data structures, diagramming, analysis and project management.

Unfortunately, overall, not enough schools are requiring any emphasis on systems or IT curriculum to prepare new librarians for working with information in order to bring libraries back to the forefront as information experts. Many do not even allow much opportunity to study for those interested. Most that do have courses limit their focus to practical applications without ever teaching fundamentals (no doubt to prevent the need for remedial prerequisites). This won't do if libraries want to thrive in today's world. Every librarian should be required to take data structures or any database class that covers data modeling in order to have the foundation to understand metadata. Every librarian should understand networks because that is how almost all of the library's information and services are delivered. Every systems librarian (and many others) should understand web development, because every IT person and others who work with information technologies should know how to code simple HTML and JavaScript blindfolded, especially in a library, since that is the interface for most information tools in a library. It shouldn't require a web librarian to understand web delivery systems, and a web librarian in turn shouldn't have to go to a web developer (or other programmer) to understand how to use web APIs. The new generation of cloud system actually gives librarians web APIs to use themselves, so that should be a skill held by most librarians. Sadly, as of today, not many librarians can make simple widgets without help. If these concepts are not made basic to library and information science courses, at the bare minimum, the systems librarian should take supplementary courses to get this knowledge, since the library school programs and scholarly communication in library science are not providing them with the essential knowledge they need.

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You may have found yourself a systems librarian or on the path to becoming a systems librarian, without knowing some of these things, and you may now be wondering how to correct your course, while the library schools and establishment are not really set up for you to do so. Unfortunately, it is not as simple as taking a webinar or an online course on "website creation" or some such; before you do anything you should school yourself in the fundamentals so you can get the most out of any targeted courses you do take. Don't worry that for the entirety of a course on data structures you don't understand why you are taking it, none of us did. Ditto for database management systems, which can be powerfully dull. Or get yourself a whole IT undergraduate degree (actually, an associates might do, but a minor is not enough). In addition to learning the basics, find yourself a mentor not just on the library side, but get yourself an IT mentor, who can help you figure out what you don't know. Live your new IT profession: study in your "spare time" harder than you ever would have for school; seriously, when you go to the bar with your friends you should be discussing neat tricks you can do with grep. As a systems librarian your free time is now forfeit. While all information professionals have their professions to keep up on, a systems librarian's professional obligations tend to be almost uniformly more time consuming.

2.3 You meant automation librarian, didn't you? Say yes

Call him Voldemort, Harry. Always use the proper name for things.
J.K. Rowling, Harry Potter and the Sorcerer's Stone

Since library schools do not really give an education adequate to preparing someone for the task of being in charge of a modern IT unit, and the world we live in requires that these things be addressed, it is prudent to have appropriate people in charge of each IT specialty. If you're going to have a librarian with systems responsibilities, they will most likely be tasked with library automation. Automation isn't really a term that is used much elsewhere in IT any more, except with scripting keyboard and mouse input, and then rarely, so automation librarian would be an appropriate and better title for most "systems librarians"; the latter is too broad, like calling all your sales, marketing, and support people "talky persons."

The automation group's main job is to define library workflows in the modern era by automating everything that isn't worth a library employee's time any more. A systems librarian might typically lead this group (though, again, automation librarian would be the more precise term), and the MARC skills are *so* much easier to learn for an IT person, which is just not true in the opposite direction, in spite of some people alleging the contrary (Engard and Gordon, 2012, p. 6). IT people have the fundamental skills of data storage and data management to build on, thanks to a sound basis in data structures and database management, and librarians would have to go back to undergraduate school to get the equivalent of at least an associate's degree to have that knowledge to build on.

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The only place it is responsible to have a librarian in an IT role is where specific library knowledge is needed, otherwise it is a waste of salary and education to mismatch backgrounds and duties. Primarily, for most libraries, that's the library automation system (whether that's an ILS or a cloud services platform or something else). They need to specialize on that while other IT people handle the other standard IT tasks that they've specialized in. Once, a library could have a one-person IT shop, but now that just requires too many skills, while a reasonable subset of those skills is required to run library automation. To run library automation you don't have to know much about networks, you don't have to be an expert in web development, and you don't have to know much of anything about operating systems. So, with some knowledge of data structures and systems analysis and limited knowledge of the web, networks, office computing topics like operating systems and application deployment, you can competently or semi-competently manage an integrated library system or library automation group. Some knowledge of project management would be good too. It's the only common IT job in libraries that requires specific library knowledge and possibly the only IT job that library school, when the right courses are taken, remotely prepares a person for. Most libraries of a decent size have offloaded the real IT work on to real IT people, so automation librarian would be a more fitting title for most systems librarians' current duties. Well, except those that are in charge of everything, and they are either at very small libraries or are just people out of their depth.

More details on how to structure your IT department can be found in Chapter 8.

2.4 The disappearing act: Making your own position obsolete

> *There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.*
>
> *Douglas Adams, The Restaurant at the End of the Universe*

Since efficiency is the goal of every IT person, the ultimate logical conclusion is to obsolete themselves. Librarians (especially systems librarians) should also seek to make themselves obsolete. The systems you put in place or the improvements you make to them should, one by one, take away your menial tasks (in addition to those of others) as you find automated ways of performing those tasks. If your job is automation, and you've automated all the things, you've succeeded.

Arguably, cloud systems have taken many of the menial administration duties out of library IT work (a centralized place out in the "cloud" handles it all and benefits from economies of scale doing things once instead of at every library across the world). Cloud systems has made it easier to focus on main functions of the department, like making the finding and delivery of information easier. Ideally, through changes to the interface so that less information literacy training is needed. Then, once that bit is

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conquered you do more value adds that help the library complete its missions. Then you're done. You make it so the user (including the librarians) never needs a librarian and you've won the game. If you leave and they actually need to replace you, you've failed. If you're still doing the same job after 2 years, you have also failed. You should have moved on to new objectives.

Ultimately, sometimes, you reach a point where things can't be automated, and that's when workflow engineering comes in, and you make new workflows so you don't end up like the Jetsons and have each person press a single button, instead consolidating and removing positions (by attrition, unless you're an awful person). Later, in Chapter 8, we'll look at how, while mostly IT looks at creating efficiency outside IT, even IT positions can sometimes be automated or combined.

While some people will tell you that systems librarian is a position that is going to grow in importance and not go away any time in the near future, this position is already obsolete in many ways. The position is a remnant of a time of early growth in reliance on computers, when libraries could afford to have non-IT professionals in charge of their computers. Now there is so much knowledge required you cannot expect a person to straddle the divide between the professions. They will necessarily fall down on the job. The things you need to know are not taught in library school and can't be learned from a single book. Now, if you want to be really generous about the term systems librarian, you could have a team of systems librarians (as some libraries have done); as we've seen, there's just no reason for anyone working on your public computers or your office computers or most other technologies to be a librarian at all. They have real IT specialist librarian positions, like one who specializes in Java and so on. Each position is narrower than just systems, and requires more specialized training. They know about programming or PCs or anything else expanded on in Chapter 8. They are true, specialized IT professionals. The main person who needs that kind of domain-specific knowledge is your automation librarian. Until ultimately, 1 day, through cloud services or other technologies, those duties can be turned back over to the heads of the functional areas that use the systems, then the systems librarian will have finally succeeded in becoming an IT professional, by no longer needing to be a systems librarian.

Remember, it's the patrons and the customers that matter, and if we can serve them more efficiently, even if it's by not being there at all, we should, because it's not just about the systems and the people who run them. IT is there to help fulfill the library's purpose.

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Customers, patrons, users, and unruly mobs

3

I'm sorry, Dave. I'm afraid I can't do that.

2001: A Space Odyssey

There is often disagreement among the people who work in libraries about how to refer to people who use libraries. As with any service-oriented organization, our roles are largely defined by the needs of our customers.

In a lot of ways, IT professionals are the spiritual descendants of librarians. In the print world, libraries organized and managed information; in the information age, people with Management Information Systems or Business Information Systems degrees and other IT professionals fill that role. Since they build the indexes and databases, they know best how to search the indexes and databases, and they know the best methods for delivering that information to the patron (how to design and use the applications that do so). But still there are librarians, so now it is a partnership. As in an adventure party, which will be discussed in full in Chapter 8, the library has its team members who can handle people en masse, and it has its team members, the librarians, who can best handle people one on one. An IT professional with a website or a web-based service is like a wizard with an area spell or even like Fezzik in *The Princess Bride* (1987), sometimes less able to deal with customers one on one, but proficient at handling mobs of customers, which is the more critical situation. Even when dealing with customers one on one, IT may not do it in the way that a librarian would, because, like Hal 9000 in *2001: A Space Odyssey* (1968) (but hopefully to better effect), IT staff may need sacrifice some customers' needs for the library's mission (unlike Hal, not their actual lives though).

Everyone who has ever worked on an IT helpdesk has had the following experience: while dealing with a single client's issue as if it was the most important item of the day, something major crashes, suddenly crippling the activities of many users. Things have now changed for the person at the helpdesk; the way they deal with a customer at that point is not the same, because now they are not dealing with one customer, but an unruly mob of a thousand. All IT departments have had an experience where a thing crashes, nothing works, and all the phone lines light up at once, emails flood in, etc. You deal with a mob not by treating everyone as a special flower that needs your attention, but you say "yes, thank you, we know, someone is working on it" and you hang up and move to the next one. Holding one person's hand is not as useful to your organization (or the customers) as giving ten people the minimal amount of information. That is the difference between individual customers and unruly mobs, the amount of time you spend with them and the attention you pay them. In a crisis,

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individual customers become one of the unruly mob and must be dealt with differently, though they always remain users.

As previously discussed, libraries tend to use archaic and ambiguous terms which create unnecessary confusion. The argument of the difference between patrons and users is something that is very library specific. Outdated connotations of these terms have complicated the language needlessly. Library users are not customers, as they do not pay for any services, nor are they students of librarians (some of whom believe they are teachers who should give the users what they need not what they want). These terms are not quite right. Thus, the one best, most correct thing you can call your library user is users.

When the term patrons is used in this text, it is used to distinguish between internal customers or users and external customers/users of the library. When the term patrons is used, it is referring to library users, because it is only one word, and distinguishes them from library employees. Also, external customers in IT might not be users of the library at all. It is shorthand for external customers who are also customers of the internal customer.

There is a myth among librarians that exists (perhaps by people who lived through a time with a different common vernacular than most of us?) that concludes library users should not be called users because that made them sound like "druggies" and should not be called customers because they aren't paying for librarians to give them a service. The only time the term customer should be used is when you are talking about customer service. Because this book is dealing with IT, which heavily involves customer service, the term customer will be used when necessary. But they use the library services. They use the technology. They use the library. They are users. It is easy to understand that once upon a time "users" had a negative connotation because its most common use was for drug users. That's the great thing about English, modifiers make terms mean different things, but most users these days are (any other modifier) users, such as computer users or library users.

One thing they definitely are not, of course, in the classical sense is patrons; no library user is necessarily supporting financially the libraries' creative endeavors; that is just a bit of library jargon that probably never made any sense, but certainly doesn't now. Bars and nightclubs are the main establishments who call their customers patrons, which sounds like a 12-step program is necessary to rehabilitate. Ironically, the term patron conjures up the same negative slant as "user" yet with a different substance. Patron is library jargon that isn't quite right because there is no patronage going on, though some of them (a small minority) patronize the establishment; the term patron obfuscates meaning in exchange for political correctness (avoiding the terms customer and user lest the user or the librarian be offended). Patron is not usually even correct, and remains as a traditional term which is misleading. The homeless person at your public computer did not supply you with a trust to supplement your budget. He is not a patron (the bar won't let him in). He is no more a customer than speeders are customers of a local government that gives out parking fines. He is obviously a user of your public computers though. Because he, you know, uses them. Verbs. Nouns. Things mean what they mean.

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3.1 Ignorance, repetition, and conflicting priorities: Why the customer isn't in charge

She told me that if magic gives people what they want, then not using magic can give them what they need.

Terry Pratchett, Equal Rites

Customers do not always know what is possible in the realm of technology, and sometimes that stops them asking for things they should, while, perhaps more often, it makes that ask for things that just can't be done. This is not to suggest that we try to teach them what is and isn't possible, that's just not realistic; they shouldn't know or be expected to know what is possible. IT professionals go through many years of training to gain the skills necessary to keep entire systems working smoothly and have an understanding of the nuances of technology at a level far above an average user. The reason the customer is the customer and the IT professional is the IT professional is so that the one who knows things can keep the one who doesn't know things informed, whether that's about what's possible or just about what's going on.

Even with all that training, one of the most important tools used in customer service is communication. In a crisis, for example, or when a user has an open request, giving the customer a steady stream of status reports for them to feel confident the issue is being resolved in a timely and targeted way is a useful strategy to placate the louder customers so your department is allowed the time and resources to fix the problem. This is low effort and tends to satisfy most members of the unruly mob. Communication with customers will be explored in more depth in Chapter 5.

Unfortunately, communication can be tricky in an IT environment. Even a simple work ticket requires a bunch of time because people don't send in the right information and aren't equipped to understand even the answers to simple requests for information without a great deal of time being spent distilling it into something they can understand. Simple requests for information that "don't require work" may be the worst. Especially from people who think they are savvy enough to send in requests that you must investigate thoroughly, as they will make huge leaps of logic and cling tightly to what they think they know. A completely ignorant user will accept a simple answer, but a halfway knowledgeable one will require detailed explanation, often resulting in an unending conversation. Some questions can throw us because they are so basic that no one has had to explain it to anyone for years and it requires educating the end-user on fundamentals that no one has thought of since their freshman year. Even for a simple troubleshooting ticket we have to reproduce the problem until we see exactly what they are seeing in the context they are seeing it. This will be discussed in full in Chapter 4.

Sadly, when presenting an idea to internal customers like librarians (for whom words are their stock in trade), you may find you need to use a lot of words. From the point of view of an IT professional, or perhaps any non-academic, it may seem as though librarians always use too many words. It may be a little bit horrifying to any mind adapted to the twitterverse, but the language of libraries is so thick with jargon that they don't all understand the same words that are used by each other. This means,

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when referring to an idea that isn't completely pervasive, whether it be an IT concept or a library concept, you may find it easiest to use all of the words that might apply, as some will resonate with different parts of your audience strongly, whereas the same word for a different segment of your audience will blow right by them without notice. If you don't have a common terminology, it can just be more expedient to use all of the words than to go back and answer dozens of clarifying questions or, worse, have people pretend they understand when they don't.

Some customers have a tendency to keep repeating their request until they get their way, or will go to someone else to get the answer they want to hear, much like a child playing its parents against each other. If you leave a group of customers in charge of IT, eventually they will be worn down, or worse, the insistent customer might end up as one of the decision makers. Not everyone is prepared professionally to deal with this kind of onslaught from their colleagues (especially in a situation involving something like a tenure review by their peers).

When dealing with a disgruntled customer, it can sometimes be useful to put them in charge of the situation (in a controlled fashion) to do what's best for the organization or for the other customers. They may come to the decision you want them to, but that doesn't happen all the time. Explain the constraints under which you are working and you may well get the outcome you want (be careful with this, a toddler will still want the candy). Then, of course, if they make the wrong decision and it's important enough, you can override them; it requires being a bit disingenuous, or at least second guessing yourself, but oh well, sometimes it works out and the customer will gain some understanding of the big picture.

Another way to deal with disgruntled customers is to say no in the form of yes. Can I give you a wireless CRT? Yes, of course, I can provide you a cable wrap that cleans up that mess of cables on your desk.

Disgruntled customers always think they are in charge, but the customer can't be in charge of IT. It simply is not their role. The customer isn't really in on your strategy as a unit; they don't know the impact decisions have on resources and on other systems or on the library as a whole. Customers will often fixate on details, largely the ones that impact them, refusing to look at the big picture. Of course, this may be true of anyone who isn't in IT or administration, as they aren't accustomed to looking at the bigger picture for every single decision.

Examples of the kinds of conflicts you have when you make individual customers a part of the decision-making process form a pattern pretty quickly. A librarian whose primary duties are in instruction may prioritize a problem with the classrooms. A librarian whose primary duties are in reference may prioritize a problem with the public computers. A librarian in resource sharing may prioritize a problem with the interlibrary loan system. None of them may particularly care about a problem with the backup system that is not directly affecting customer service at this time, but the correct order of prioritization might be backup, ILL, public computers, classrooms. This is based on usage statistics and risk assessments that show how many people are affected to what degree, and it is not a matter that is up for debate by customers, it just is.

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3.2 Don't ignore 10,000 people to serve one person

Fezzik: I just figured why you give me so much trouble.
Westley: Why is that … do you think?
Fezzik: Well, I haven't fought one person for so long. I've been specialised in groups, battling gangs for local charities, that kind of thing.
Westley: Why should that make such a … difference?
Fezzik: You use different moves when you're fighting half a dozen people, than when you only have to be worried about one.

The Princess Bride, *screenplay by William Goldman*

Dealing with one customer is very different than dealing with an unruly mob of customers. Librarians have a customer service ethic that doesn't serve them well in today's world. They tend to go for one big win. They are like gamblers that way. But customer service today isn't one on one like Westley and Fezzik, it's more like Fezzik and the mob. If you really want to have good customer satisfaction, you should strive for uniformly good service across the board, not over-the-top excellent service for each individual. Generally, you have more things you could be doing for your customers than trying to satisfy just one customer. Unless you have one librarian per patron who needs help (or one IT person per librarian who needs help), it is probably not a great idea to spend so much time on one person, because one or more of your customers is probably receiving terrible service right now, and that's what really hurts your organization (Dixon et al., 2010).

This is a well-studied area. If you want library users who come back, you won't get it by spending a lot of time with them. Overall, you'll get them to come back by reducing the amount of time it takes them to get what they need. Focus on more customers, not one customer. For example, people would like a contact form more than an email link, because it is less effort than typing in an email from scratch. They would rather have an email link right now than a phone number they have to call later, when they have the time, attention and quiet to dedicate to a phone call. Focus on service with a lower barrier to entry, not the sort of in-depth personal touch you might think people want. Personal attention is out. They don't really want that. We could speculate that librarians perceive what they do because the field is largely full of baby boomers who remember a time when people did want the personal touch, but if that was once good customer service, it's not now.

The age of the Internet means that most of your customers are engaging you remotely, usually on a scale of multiple orders of magnitude more than the number who are engaging you in person (100 times? 1000 times? More?). Every IT person in charge of a web server or web service knows that for every patron that walks into the library for an hour there are 100 or 1000 or 10,000 more using the library online. A library may (and likely does) spend 80% of its money on electronic resources versus print, but that same library may produce 98% of its customer engagement online versus the 2% via its brick and mortar services, if you track the physical visits versus the amount of time spent on website visits (including all web applications, not just the

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website, which is not really a service but a portal to real services like the catalog or the ILL system or the paid online databases). What's more, there are all the patrons with items checked out, who are not currently actively engaging the library, but who may need courtesy notices or other forms of outreach. Thousands of them, who deserve the best service possible, or at least as good as the person in front of you. So should you be redrafting the courtesy notices or paying attention to a problem that is an aberration experienced by one patron currently complaining at a desk? The answer should be self-evident.

When you lack unlimited resources, you can either prioritize communication with one customer or concentrate on fixing a problem for all 10,000. True customer service considers the best use of your time for all the customers, not just one. If a customer won't respect your time when you have more important things to do, you may even have to be rude and insist for them to leave you alone, ironically, for the sake of good customer service, so the issue can be solved without constant interruption.

A note on priority enforcement: it's pretty much up to the individuals who work in IT. In principle, your library's leadership may agree about your top priorities, but then one and two and twenty more top priorities are added and priorities become meaningless, or someone decides to be the squeaky wheel and squeaks to the people in charge. Also, whatever priority scheme is chosen, exceptions will be made. The decision-makers "on the ground" have to make the call as to what is going to impact service the most.

By the way, the real top priority should almost always be keeping things running or preventing disaster. It is unsexy, and isn't seen as good customer service to focus on infrastructure when you have unsatisfied users, but imagine if you let the infrastructure fail (do imagine that actually, because sometimes that can be a useful learning tool for your end-users and decision-makers). For example, servers are more important than desktops; the impact is greater because the number of users is greater.

3.3 Dealing with problem customers

> *You have attributed conditions to villainy that simply result from stupidity.*
>
> *Robert A. Heinlein*

> *Never attribute to malice that which is adequately explained by stupidity.*
>
> *Robert J. Hanlon*

A problem customer can come in several varieties; occasionally they are just demanding people, occasionally they are genuinely mean, but mostly they are just ignorant. Two things you can't hold on to as a library manager, especially in IT, are the ideas that the customer is always right, and the idea that you can or should avoid conflict (Gordon, 2005, pp. 3–5). Some people will always turn to compromise immediately when faced with a conflict with a customer or colleague. It makes one wonder, why is compromise thought of as a good thing when the most common sayings associated with the word compromise are about losing your soul or your moral standing? Try these statements out and see how you feel about compromise: compromising your

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beliefs, compromising your vision, compromising your ideals, compromising your faith, compromising your integrity, compromising your values, and compromising yourself. Maybe this is not the first thing we should turn to.

Compromise is the opposite of what you need to do as a leader, especially in IT. Remember this phrase? Give them an inch and they'll take a mile. Compromise is the enemy of boundary setting. Never compromise with a problem customer, as it just sets a new, weaker line for the problem customer to attempt to cross. Compromise is the hammer that people who never learned to make hard choices use for every nail. It is really just one tool among many, and in a long-term customer/provider relationship should be used sparingly; the customer will use it to get you to commit to increasing service levels you can't fulfill, creating a condition where it benefits the customer to lie about their minimum service level assuming they will get half of what they ask for, and where it benefits the service provider to lie to the customer about the level of service they can provide with given resources.

Working in customer service requires a great deal of patience and a calm, steady demeanor, which can be difficult to maintain. Often, the issue is not with the technology, but with the user. While in a commercial setting it can be wise to completely withdraw service from a particularly nasty or inept customer, when your customers come from within your organization you must find better ways to handle each instance in a consistent, friendly, and respectful way. This is not always so easy, and disengaging from the situation for a while is sometimes even necessary.

Start by respecting all people equally. Certain people will gradually earn your lack of respect over time through their own lack of merit. This is part of why, when engaged in a customer transaction, users cannot be treated like colleagues. They really do not know what they are talking about, but they want to be treated like you respect their pretend knowledge and competence that they have not yet shown. You can respect them as a person, but as a user, they must prove themselves by merit, or at least by not showing repeated incompetence and an inability to learn, as some will.

That is not to say the burden of the customer/provider relationship is entirely on them. There are many negative ways to influence customers. Being insincere, lying, and manipulating people are easily done, but are not the best choices when dealing with others. While these tactics might work quickly, with less effort, and will certainly get the job done, it is undesirable to create bad morale and an uncooperative work environment, and engaging these shortcuts could make you feel bad about yourself later. Below are several ways to interact with customers which allow everyone to walk away from the experience feeling as if the problem was resolved in a positive manner.

- Apologize (it doesn't matter for what or whose fault it really was)
- Use people's names (though for some savvy people, this might mark you as insincere)
- Exchange pleasantries
- Phrase a "no" so it sounds like "yes"
- Buy people food (maybe a simple candy dish or a coffee, or maybe something more elaborate if you've got a full users' group meeting complete with pitchforks)
- Tell small lies to spare people's feelings (sure, other people have totally done that dumb thing you did)
- Ask for help from them in order to help them

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- Thank people (even for things they are obligated to do)
- Over-communicate (or try, it's not really possible)
- Solicit input even when it's irrelevant
- Own a problem all the way through until the customer is happy
- Send thank you notes (let's be honest, emails; no one sends notes)
- Be inhumanely patient (sometimes, just sit back and think of something else)
- Do not be condescending (or not in such a way they can tell)
- Be humble while simultaneously being omniscient
- Read body language (it's not very reliable, but sometimes, see the superpowers chapter)
- Do not act dismissively (even though you are actively dismissing their completely impossible ideas)
- Say "please" and "thank you" and "you're welcome" (instead of "no problem," etc.) but otherwise use whatever language makes them feel at home, probably casual language, but not always
- Give people options with obvious conclusions so they feel like they made the decision
- Ask leading questions and steer conversations to let people come up with the ideas and solutions you know are best
- Do not be defensive (even though people will often be quite rude)
- Give unearned respect (or, you know, appear to)
- When dealing with decision-makers, use pretty pictures, not valid arguments
- Use emotion, not logic, to win people over to the right choice
- Underpromise and overdeliver (yes, like every engineer on Star Trek).

An example of the ways in which working IT is the same everywhere is that IT people know that if a service is down, the best way to placate the unruly mob is to keep them well informed by communicating at every new development (Engard and Gordon, 2012).

3.4 Your IT unit is a therapist's couch and priest's confessional

If you want to keep a secret, you must also hide it from yourself.

George Orwell (1984)

Man is not what he thinks he is, he is what he hides.

André Malraux

Users will reveal to their IT support (sometimes directly and sometimes indirectly) things that they would only otherwise tell to their priest or therapist. The IT professional knows how each person wastes their time at work, who each person communicates with (sometimes who the user is having an affair with), occasionally the contents of those communications, the websites the user browses and often what type of pornography the user likes. The IT professional will see a side of every person that no one else will. They also see many users at their worst in their personal interactions. How does the person treat "the help"? How does the person handle frustration, inconvenience, or other forms of adversity? Is the person patient? Are they passive

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Reading users' minds

4

No storyteller has ever been able to dream up anything as fantastically unlikely as what really does happen in this mad Universe.

Robert Heinlein

Customer service in IT is sometimes nothing short of mind reading. Everyone uses technology, and its ever-evolving nature makes it difficult to keep up with the latest and greatest. This leaves most users at a disadvantage, because they do not have the time or motivation to educate themselves on exactly how the things they use every day work. Unfortunately, this leaves the IT professional to divine causes of service disruption and software glitches with missing or incorrect information by reading minds and gathering clues from the surroundings. It could be the user lacks the knowledge to be helpful, or they are unaware the information they have is actually helpful. Or perhaps they lack the vocabulary, basic knowledge, or technical communication skills to communicate the issues. Or sometimes people simply lie about what occurred to raise the importance of their issue, out of embarrassment of doing something stupid, or even just pure laziness. Intentionally misleading or not, it is best to verify facts before wasting time fixing nonexistent issues, but first, using a few tricks to read the minds of customers will save time and resources. Common problems tend to have common solutions, but the tricky situations dictate a more hands-on approach, and might require fitting unseen pieces of the puzzle together.

While this chapter is concentrating on divining solutions and tracking commonalities between problems and resolutions to expedite service, Chapter 9: The Ritual: Analyzing Problems, Providing Solutions is more about beginning new projects and business analysis for creating workable solutions for the customer. Helpdesk versus consultant, basically.

4.1 Divining what happened from incomplete information

A problem well stated is a problem half solved.

Charles Franklin Kettering

Sometimes, users give so little information, while simultaneously using the wrong terminology, that you actually try to repeat the wrong thing in the wrong program or even on the wrong computer. Some users just have no comprehension of what they are doing, they just repeat the motions of their job day in and day out, so when it comes time to describe what they did, they can't, because even when it was working they

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You can't provide perfect service to all your customers. Using resources to provide excellent service to some customers means providing subpar service to others. This means in order to keep everyone equally satisfied, service must be shared among everyone to meet the needs of the organization as a whole. The exercise in Figure 5.1 exhibits the difficulty in providing good service levels with inadequate resources.

One way to increase perceived levels of customer service is to balance your use of resources. Another is to lower expectations. Politically astute administrators will say "manage expectations," but let's face it, that's like pretending right-sizing isn't downsizing. Either way you call it, the important thing is to make sure that it is clear to your customers, whether internal or external, what they can expect of you. What will you do, and what won't you do? You can even make them happy about doing the things

Customer Service Exercise (simplified)

Instructions:
Satisfy the customer needs.
Take either 10 or 15 stars.
Fill in one star per box from left to right on each row.

Resources:
For our old service level: 15 units (hours, days, FTE) of service employee time
For our new service level: 10 units (hours, days, FTE) of service employee time
For a good service level: 25 units of service employee time

Customer Needs	Mad	Unhappy	Mildly Dissatisfied	Satisfied	Fully Satisfied	Happy (above and beyond)
1. New Service Request or customer specified solution						
2. Investigate and Fix a Problem Report						
3. Preventative Maintenance (to prevent 2 problem reports)						
4. Security Compliance (to prevent 1 problem report and one service request from OIT)						
5. Training (to prevent 5 future problem reports and 2 future service requests)						

Figure 5.1 Customer service exercise (simplified).

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you won't do if you teach them to help themselves. You are empowering them, giving them more freedom and independence. Also, you are getting them off your back.

5.2 [insert thing] as a service

The sea is endless when you are in a rowboat.
Adolfo Bioy Casares, The Invention of Morel

Once upon a time, IT companies wanted to sell everything as a "solution" (this often let them tack on an extra fee or value-add to an otherwise ordinary retail product). Now, everyone is selling everything in IT as a "service" (this lets them sell everything to you repeatedly instead of only once to each customer, guaranteeing a steady income stream): Platform as a Service (PaaS), Infrastructure as a Service, Software as a Service, etc. (even Adobe Photoshop). In many cases, the things themselves have not even changed, but it is indicative of something. Labeling everything "as a service" does not necessarily change much of anything about it (except how often you receive a bill), but it does highlight something that was always true. Every time you let something out the door, there is continued service on that thing until it becomes obsolete. This new model of selling things in IT has given us a large array of new acronyms and phrases (Platform as a service, 2015) to confuse customers with. For everything as a service, there are often subtypes of that thing. An example is the four main types of software as a service that make up cloud systems, which are discussed in more detail in Chapters 8 and 12.

In the commercial sector, it is largely a sales and marketing tactic to get you to pay every year for things you used to pay for once. Internally, it is actually a good reminder that your organization is already paying continuously for all the things you use on your computer in terms of manpower and infrastructure. A good example of this commercial change is Microsoft announcing their Office as a service product (Office Online, 2015) six years early before the market was ready, to the derision of everyone, but never letting go because it meant so much revenue. Only within the last year did it become not a joke to sell desktop software that way (sadly, for consumers everywhere). Online games have been subscription based for much longer, leading the way for others to follow (consumers didn't like it then either, but if you're not in IT it costs money to pretend to be a mage).

5.3 Tiered helpdesk, just like tiered reference

What's in a name? That which we call a rose
By any other name would smell as sweet.
*Juliet (*Romeo and Juliet*, William Shakespeare)*

An IT helpdesk and a reference desk have a lot in common, maybe more than any other two kinds of service desks you could compare. In both cases, you have naive

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users coming to subject experts with questions that range from the simple to those requiring lots of research. That is why the tiered helpdesk model works so well in a library and one imagines why Brandeis stole it as the new model for reference desks back in the late 1980s (Herman, 1994). So, if you are a librarian who learned about reference even remotely recently, you are already familiar with how to run a helpdesk. If you are not familiar with tiered reference, your MLS has expired and you should seriously update your education. More recently, software has highlighted the similarities, as reference desk "answer" systems like LibAnswers were released that look just like primitive helpdesk systems.

You should use your helpdesk software to track everything. Because if you didn't write it down, it didn't happen (you'll not have a record for future reference for similar problems, resource requests, annual reports, etc.). You'll wish you had when you have to explain why you need a full-time person to do (*x* random thing) or why you need more people in general or why you are behind. You will also want that record so that you know how you solved a problem that comes up a second time, or why solving a problem took 10 times longer than you think it should.

You'll want to make sure that every ticket is categorized well, which a well-configured helpdesk system can help you with. One thing a helpdesk system might have that an answer system might not (but should) is a type and a subtype and a category to allow you to classify requests. The former helps make sure the request is assigned to the right specialist. This also ensures that reports can be generated to tell you what kind of work is being done in what proportions (for resource requests or reports to administration, etc.). Of course, counting tickets of different types is not exactly comparing apples to apples, as a desktop support ticket is not the same "size" (person hours, cost of employees) as a digitization ticket in terms of how many resources it takes to fulfill the request; nonetheless, it is an indicator that is better than nothing, and a good helpdesk system will allow you to track person-hour costs as well.

More than keeping track of how much work you do for your higher ups, keep track of resolutions to problems so that you never have to solve the same problem twice, as expanded later on in this chapter. Make sure everyone updates technician notes as they try to solve a problem so that you know exactly what is going on with a ticket if someone quits or gets hit by a bus or is simply out sick or on vacation before it is complete. It will also help if you need to escalate a ticket for the new person to know what has already been tried and where it may have gone wrong. You must keep track of hours spent as you close tickets. You must also keep track of the staff member that actually closes a ticket to keep track of workload properly so that you know how your positions should be allocated.

It is difficult to make your user base behave when submitting requests. If you have an environment where people request things in person or on the phone, you should assign tasks in person inside your office so that people get in the habit of creating their own tickets for requests on behalf of requestors. For tracking purposes, you should even assign yourself tickets from meetings and set the requestor appropriately. If you have ticket notifications, this will remind the user that they should have requested things through proper channels (this can be useful for providing the customer communication you don't have time to, even if it's not as good as if you had time to do it in

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