

Ten Necessary and Sufficient Conditions

The bulk of this report explores possible answers to this fundamental question: What are the necessary and sufficient conditions that make a virtual world “ripe” for librarianship? Ten conditions are tentatively proposed. They are outlined briefly here. In later sections of this chapter, several of the conditions are explored in greater depth.

1. **People:** The virtual world needs to have a sizable, growing resident population of avatars. The population probably also needs to have some stable core of resident avatars who keep coming back to that virtual world to work, play, and learn. If the resident population is just an “insect” population that flits fitfully into and out of the virtual world faster than you can develop and announce a Google Group or a Ning community, then the prospects for a meaningful and useful library service in that virtual world may be dim.
2. **Communication Infrastructure:** While all virtual worlds enable some sort of communication (unless some wag has created a virtual world for Leibnizian monads in which no real communication between monads is possible), the range of communication options, the ease with which the communication tools can be learned and used, and the accessibility of the communication options can vary considerably from one virtual world to the next. Most virtual worlds offer some sort of text chatting. Often there is public text chat, so that any avatar within a certain distance of your avatar will see what you typed, as well as group text chat, where the text chat message goes out to every member of a defined group regardless of where they are in the virtual world at that time

(and perhaps the messages can be delivered via e-mail, Twitter, or some other social networking system even if an avatar is not in world when the text message is sent), and perhaps even individual-to-individual text chat. Usually the text chat messages are time-stamped and placed in a single scrollable display of messages, but in some virtual worlds, such as Whyville and Lively, by default the text chat messages are not collocated in that way.

- Many virtual worlds offer voice communication from within as well. Some virtual worlds offer in-world voice communication from the day they are launched, while others, such as Second Life, added voice communication as an enhancement after the official launch.
 - Video is another type of communication offered by some virtual worlds. Some virtual worlds make it easy to stream videos into the world from Web-based sources of video. Some virtual worlds, such as Qwaq, enable individual avatars to deliver personal video streams in real time. For example, in Qwaq an avatar can replace his or her Gumby-like head with a thumbnail live video image of his or her real-world visage.
3. **Transportation Infrastructure:** There must be some means of moving around within the virtual world. Avatars often may walk, run, jump, and fly, and the ability to teleport (i.e., to deconstruct your avatar at one place and then reconstruct it at another place) is a common form of locomotion, too. The ability to transport information objects around the virtual world (perhaps in one’s personal inventory) is another vital component of

the overall transportation infrastructure. Because informative experiential spaces in virtual worlds rely on some form of locomotion, the transportation infrastructure will have a direct impact on the forms of librarianship possible in a virtual world.

4. **Presentation Infrastructure:** Like their cousins, real-world libraries and Web-based libraries, VW libraries present lots of information objects: signs, posters, books, audiobooks, exhibits, etc. The ability to make, modify, organize, present, share, archive, and reuse these informative presentation objects will be a key component of how librarianship develops in a specific virtual world. In addition, the ability to present information objects from other worlds and the World Wide Web is essential to a library's ability to present usable and useful information.
5. **Windows or Portals:** No virtual world is an island. In the near future, many people will be working, learning, and playing in a variety of worlds, including the real world. This makes it imperative that virtual worlds have windows onto or portals into other worlds. Because the World Wide Web currently is a much more information-rich environment than any virtual world, the ability to port Web-based resources into a virtual world on demand is also essential.
6. **Economy and Currency:** Good virtual worlds have some sort of economic structure to facilitate the trading of goods and services. This may include in-world retail outlets, warehouses of useful objects, and other essential components of an economy. Many virtual worlds have already developed their own currencies to facilitate economic activity. Some currencies have meaning and value only in that virtual world (the "clams" currency in Whyville may be an example), while other currencies (such as the Lindens used in Second Life) are "real" currencies in the sense that they can be converted to one or more real-world currencies.
7. **Property Rights and Enforcement:** As in the real world, in many virtual worlds there exist both "real" property (land, buildings) and intellectual property. The better virtual worlds make it clear in their terms of service and other documents the exact nature and extent of property rights in that particular virtual world. Property owners should have some sort of input into the development of property rights rules and regulations. There also should be some sort of review and enforcement group and protocol to settle property disputes.
8. **Zoning:** In some virtual worlds, the resident avatars have the power and right to build. In these worlds, there needs to be some sort of zoning ordi-

nance so that a virtual orgy parlor does not situate itself next to your library.

9. **Record and Archive:** The better virtual worlds offer tools and mechanisms for recording and archiving events and built objects, with the ability to easily retrieve the recordings on demand. Many of these tools are third-party tools developed by resident avatars themselves. One of the most interesting tools of this sort to emerge from the Second Life virtual world is the Holo-Emitter, developed as an open-source tool by Troy McConaghy (the name of his Second Life avatar is Troy McLuhan). The Holo-Emitter basically allows any avatar to select a scene (such as an interactive, immersive information exhibit) from a menu of available scenes, then have it "rez" (i.e., become three-dimensional and functional) on demand. Peters notes, "The Holo-Emitter provides a glimpse of how virtual world libraries can soar beyond real-world libraries in terms of customizability and usability."¹
10. **Creating and Delivering Information Experiences:** Let's not overlook the obvious. One of the necessary conditions for VW librarianship is having the ability and the tool set to create and deliver information experiences in a specific virtual world.

The Necessary and Sufficient Conditions for Librarianship in Virtual Worlds

Virtual worlds are tantalizingly—and sometimes deceptively—similar to the real world. As libraries and library-related organizations begin to explore virtual worlds as environments to practice librarianship, they need to be open to the similarities between the real world and the various virtual worlds they are exploring, but also open to and wary of the differences. Let's summarize some of the main categories of affordances that pertain to librarianship: hardware and software specifications, the user interface, the demographics of the resident population, the built environment, the means of locomotion, the means of communication, and the means for creating and conveying information.

Hardware and Software Specifications

Every computer technology has a set of minimal and recommended hardware and software specifications. In order to even get into the virtual world, you need to be able to meet the minimal tech specifications. For many virtual worlds, the tech bar is quite high right now. You will need a powerful computer, a good graphics card, and a high-speed Internet connection to be able to have a pleasant and meaningful experience in a virtual world.

Another factor to bear in mind as your library or library-related organization prepare your employees for working in virtual worlds is that, when a person is in world, he or she may need to access other software and information systems. That means that the computer will need to be able to run multiple applications while the user is in world.

The User Interface

The user interfaces to virtual worlds probably will emerge into a full-blown subdiscipline of human-computer interaction. A report such as this can only scratch the surface of all the issues related to the interface and usability. One thing worth noting, however, is that not all virtual worlds strive for the same look and feel. Some virtual worlds strive for verisimilitude with the real world, either as it currently exists (e.g., a university's VW campus may mimic its real-world campus), or as it once existed (e.g., virtual worlds that recreate historical times and places in the real world, such as Elizabethan England, Victorian England, or Harlem in the 1920s), or as the real world may be in the future (both utopian and dystopian visions are acceptable). *Amazing Worlds* takes this notion to the extreme, creating what the developers call mirror worlds, which are "informationally enhanced" versions of the real world. Many people thought Google was going to do something similar with a VW edition of Google Earth, but Google's launch of the Lively virtual world in July 2008 seems to indicate that Google is moving instead in the direction of a low-graphics virtual world that tries to tap into and enhance existing popular Web-based social networks, such as Facebook.

Other virtual worlds strive for an otherworldly feel, perhaps sharing only three-dimensionality with the real world. For other virtual worlds, the graphics are intentionally downplayed, such as in the two-dimensional virtual world of Whyville, which has a resulting low tech bar for participation, or the Gumby-esque avatar characters in Qwaq. The user interface and options can range from something as simple as a browser-type interface to very complex end-user interfaces that enable all sorts of views and experiences of a virtual world. As just one example, in *Second Life* you have many choices for your vantage point of a scene, ranging from seeing the scene through the eyes of your avatar, to standing behind your avatar (looking over its shoulder, as it were), to a vantage point far removed from where your avatar is actually situated in a scene. The user interface allows you to hear all the sounds, music, and conversation in a scene either from the location of your avatar or your current vantage point. That creates a mind-boggling set of user interface options and decisions, and that is only one component of the overall *Second Life* experience.

Accessibility is another aspect of the user interface that must be considered when selecting a virtual world for your library's efforts. Earthlings may be physically challenged in terms of sight (blind or visually impaired), hearing (deaf or hard of hearing), or motor skills (fine motor skills or gross motor skills, temporary or permanent challenges).

Demographic Vistas of the Resident Population

Although bots and other animated automated sentient beings in virtual worlds may become increasingly important in the future, for the moment we need to remember that behind nearly all avatars in virtual worlds are real flesh-and-blood human beings. The demographics of virtual worlds can be mapped to real-world demographics, with their familiar categories such as geographic location, nationality, ethnicity, sex, age, real-world income, and real-world formal educational attainment.

Most if not all analysts of VW populations predict that the overall population of virtual worlds will increase significantly in the coming years. If the majority of the core real-world service population of your real-world library are not currently involved in one or more virtual worlds, the majority may soon be, and they may be clamoring for library services in the virtual worlds they inhabit. Barnes quotes Debra Aho Williamson from the market research firm eMarketer, who estimates that the number of children who are members of a virtual world will increase from approximately 8.2 million in late 2007 to 20 million by 2011.²

As mentioned in Chapter 2, the truism that any librarian should "know thy community" in order to serve that community well is as true for virtual worlds as it is for the real world. Getting to know the warp and woof of a virtual community can be a challenge, however, because there can be a cloak or curtain between an avatar and the person behind the avatar, because the population often is worldwide in nature, and because people join and leave a VW community with ease. If you check the Web site of a virtual world, you may get a sense from the mission statement and other information of the types of people each particular virtual world is trying to attract. For example, *Teen Second Life* specifically limits participants to teens who are 13 through 17 years old. The teens theoretically can come from anywhere in the world, but once they turn 18, they "graduate" to the adult *Second Life*. As another example, Whyville generally attracts "tweens" between the ages of 8 and 14, although apparently there are no formal age specifications, and Whyvillians do not "graduate" when they turn 15. Whyville, like *Teen Second Life*, is open to kids worldwide, although, according to representatives from Whyville, the majority of active Whyvillians come from the United States and Canada.

Other virtual worlds place strict or de facto geographic limits on who may participate. Some virtual worlds seem to be populated exclusively by Koreans, or Asians in general, or Europeans.

When investigating the demographic aspects of the resident population, you will want to differentiate between the type of people the virtual world is trying to attract, the demographic characteristics of the people who register avatars for that virtual world, and the demographic characteristics of the people who actively use the virtual world. Of course, an active resident of any virtual world can be defined in various ways. It may be a person who spends at least one hour per month in the world, or anyone who owns something in that world, or anyone who has built or contributed something to the world.

Take Second Life as an example. It is open to adults age 18 and older worldwide. In reality, however, Second Life seems to attract many more people in their 30s, 40s, 50s, and older than it does late teenagers and 20-somethings. As of mid-July 2008, Second Life had over 14 million registered avatars according to statistics provided by Linden Lab, the company that owns Second Life.³ Even if we “de-dupe” the number of avatars to take into account people who have more than one registered avatar in Second Life, we are still talking about millions of people.

In reality, however, at any given moment the number of avatars who are in world usually ranges from 40,000 to 60,000. That’s a “rolling population” in the sense that the 50,000 people who are in world on a Wednesday may be substantially different than the 50,000 people who were in world on the previous Monday. As of mid-July, 2008, Linden Lab reported that approximately 495,000 unique avatars had been in world in the previous seven days, approximately 626,000 in the past fortnight, approximately 848,000 in the previous 30 days, and approximately 1,210,000 in the previous 60 days.⁴ Again, we would need to de-dupe those numbers to get a reliable estimate of the number of Earthlings who had been in Second Life in a given period of time. With over 14 million registered avatars, it seems safe to conclude that some avatars are very infrequent visitors to the virtual world, were stillborn (i.e., created, but never actually used), or are moribund (once active, but no longer so).

When investigating and evaluating the demographics of any virtual world, you also need to think in terms of the number of avatar-hours spent in world and how those avatar-hours break down in terms of the usual demographic distinctions, such as age (of the person, not of the avatar, although the age of the avatar can be an informative and useful piece of demographic data), sex (again, of the person, not of the avatar), geographic location, etc. For example, Linden Lab staff members have been often heard to state that Second Life is gender-balanced, not only in terms of the people who create and register

avatars, and not only in terms of the people who are actually in world over a given period of time, but also in terms of the number of avatar-hours spent in world. In other words, avatars created by women spend at least as many avatars-hours in Second Life as avatars created by men, at least as reported by Linden Lab.

When attempting to convert or translate real-world demographics in virtual-world demographics, a few potential problems arise. First, any real-world library contemplating becoming active in virtual worlds must appreciate the distinct possibility that many Earthlings will work, learn, and play in multiple virtual worlds. It will take a complex matrix to chart who from a library’s service population in the real world is active in which of the dozens or hundreds of virtual worlds that are available to them. Some virtual worlds may function strictly as fun places, while others may be strictly for formal and self-directed learning, and others will be used strictly for work. This roving and interlocking population of avatars who are spread across multiple virtual worlds may or may not be currently active users of your real-world library, even though they fall squarely in your core service population as defined in your mission statement. In other words, you may be able to use librarianship in virtual worlds as a way to reach out to potential users whose use of your real-world library has been low or nonexistent. These may be highly educated, high-income opinion leaders in your real-world service region.

Another potential challenge hinges on the fundamental difference between real-world library populations and the demographics of virtual worlds. In the real world, a library’s core service population usually involves some geographic boundaries, especially for public and school libraries. The core service population is defined as the residents of a library district; the students in a school district; the current students, faculty, and staff of an institution of higher education; or the current employees of a corporation. Rarely, except in the situation of school libraries, is the population to be served defined along age ranges. Most public libraries serve, at least in theory, everyone in their geographic region from cradle to grave.

Most virtual worlds flip this situation on its head. They often serve anyone in the world who falls within a certain age range and who possesses the financial and technological wherewithal to be in that virtual world. From a standpoint of providing library services and experiences in virtual worlds, it is unfortunate that virtual worlds are being demarcated along age lines, with separate clusters of virtual worlds for children, tweens, teens, and adults.

Often librarians profess to want to be where their users are. That may entail opening a storefront library in a strip mall or at an airport, or it may involve creating a Web or Facebook presence for your library. This may be, and often is, an argument used to garner support for

the library developing a presence in one or more virtual worlds. Unfortunately, that is putting the cart before the horse (although in some situations that may not be a bad or unwise thing to do). As an organization, a library cannot simply declare that it wants to be in virtual worlds because that's where its users are. Largely, that is yet to be determined. There are a few corporations (IBM and Sun Microsystems come to mind) that seem to have a significant percentage of employees active in one or more virtual worlds, and there may be a few universities (perhaps primarily in the United Kingdom) with a sizable percentage of students, faculty, and staff active in one or more virtual worlds as well, but for most libraries, organizations, and corporations, the population statistics are not yet there to create a compelling argument for creating a presence in a virtual world.

This situation does not necessarily lead to the conclusion that a library would be prudent to adopt a wait-and-see attitude. Many libraries and library-related organizations are just beginning to dabble in various areas of VW librarianship. They collectively are exploring the possible affordances of VW librarianship. Knowledge gained now probably will serve them well in the future, regardless of which virtual worlds rise to lasting prominence and utility.

In addition to studying the facts, fluff, and trends in the demography of one or more promising virtual worlds, librarians will also need to ask this basic question: What is the principal activity of this virtual world? The question is reminiscent of the second sentence of Henry James's novella, *Daisy Miller*, where, in the little town of Vevey, Switzerland, "the entertainment of tourists is the principal business of the place." Some places in the real world (Gary, Indiana, for instance) are mainly about work, while others (Ann Arbor, Michigan) are mainly about learning, and others (Aspen, Colorado) are mainly about recreation, even though work, learning, and play occur in all places in the real world.

If all intentional, waking human activity can be categorized as primarily either work, play, or learning (with reproductive activity occupying the interesting intersection of those three spheres of human endeavor), each virtual world could be categorized as primarily a work space, a play space, or a learning space, even if all three fundamental activities are indiscernibly intermixed in the actual activities that occur in that virtual world. For example, although Second Life developed an early reputation as being essentially a play place (sex, gambling, and dressing up your Barbie or Ken figure, mainly), that early reputation may have been erroneous a few years ago, and almost certainly is now, as the work and learning activities have gained market share in Second Life.

The Built Environment

The primary admonition here is to simultaneously remember and forget everything you know about built environments in the real world. Certain needs of the built environment in the real world (the need for load-bearing walls, HVAC systems, and restrooms) have little or no bearing (pardon the pun) on how a library space could or should be built in a virtual world. Nevertheless, users will carry a load of expectations about what a library space should look like from the real world to virtual worlds. That may be one of the contributing reasons why many of the early library buildings in Second Life and other virtual worlds looked very solid and stolid. They often looked like a basic Carnegie library building or like some specific real-world library building.

This raises the fundamental question: Why do we even need library buildings in virtual worlds? Avatars and information materials are not subjected to or damaged by the elements.

Another key affordance of the built environment in many virtual worlds is its basic mutability. The built environments in most virtual worlds are much more flexible than is the built environment in the real world. For example, if you do not like having your library building face one direction, you can easily turn it so that it is facing a different direction. You usually can easily change the location of your library, too.

When investigating the affordances of built environments in any virtual world, you will want to discover who has the power to build, and who actually is doing most of the building. In some virtual worlds, only the overall owners of the VW platform do the actual building. In other virtual worlds, just about any resident avatar could build a local environment.

The Means of Locomotion

Another major affordance of any built environment is how avatars and other sentient beings are able to move around. The means of locomotion will affect where your library users are, how they move about, how they tend to congregate, and where the likely information-transfer and information-service occasions arise. The situation is not that much different from in the real world. You want to have your library located close to where the avatars are, or at least near a high-traffic area. How many bricks-and-mortar branch libraries can you think of that are located on quiet, low-traffic cul-de-sacs in the middle of a residential neighborhood?

Locomotion in virtual worlds can take many forms. It can include forms that are familiar to us from the real world, such as walking, running, jumping, swimming, and dancing. Often in virtual worlds there are forms of locomotion that are not possible in the real world, such as

flying unassisted and teleporting. In planning your VW library, you will need to consider not only location, location, location, but also how people are going to locomote in and near your library. For example, in Second Life, for some reason staircases from one floor of a building to the next often are curved or angled. These can be deucedly difficult for the average avatar to climb or descend.

Teleportation has its uses not only for traveling over long distances in a virtual world, but also for moving over short distances. For example, some buildings in Second Life are set up so that avatars actually teleport from one floor to the next.

Lively, the virtual world from Google, has an interesting way to move an avatar. You can use the familiar “drag and drop” mouse action, where you left-click and hold, drag, then release the mouse button when your avatar has moved where you want him, her, or it.

The Means of Communication

The available means of communication within a virtual world will have a direct effect on how your library is able to deliver information experiences and services. You will need to consider and investigate how both individuals and groups communicate in each virtual world.

The Means for Creating and Conveying Information

The cluster of affordances that comprise the means for creating and conveying information obviously will have an immediate and important impact on the development and deployment of library services in a virtual world. This may be the most difficult set of affordances to wrap our minds around and align ourselves and our library organizations into position to exploit. We bring so many experiences and assumptions about information experiences from the real world that it is difficult for us collectively to imagine how we might productively interact with information in virtual worlds.

One of the first assumptions about creating and conveying information is that such activities always express themselves in the creating of information objects. In the real world (both the analog and digital aspects), whenever someone creates content, what is created is some sort of information object. It may be a digital file or a handwritten manuscript, but it is an information object, which then can be copied—always mindful of who has the right to make copies and in which circumstances—and thrown into the raging torrent of information objects.

All of our information systems are designed to ingest, deal with, and serve up information objects. This is true of shelving, filing cabinets, and file servers. We also convey this sense of an object-oriented information universe to the users of information systems, expecting them to search for, retrieve, cite, and use specific information objects.

In VW librarianship, this may all shift away from object-oriented information systems to experience-oriented information systems. In some of the more interesting instances of creating and convey information in virtual worlds to date, the goal of the creative process is not to create an interesting and engaging information object, but to create an interesting, engaging, and immersive information experience.

Now, an immersive information experience in a virtual world may be more akin to an immersive experience in the real world than it is to “book larnin’.” Consider, for example, an autumn walk through a real forest. Although you may stoop occasionally to pick up an individual leaf, what you really are focused on is the immediate gestalt experience: the myriad of colors, the smell of the drying vegetation, the sounds of the forest, the play of the autumnal sunlight, etc. Information experiences in virtual worlds may be trending toward similar gestalt experiences, where the overall impact is more important than finding and ingesting individual information objects.

This does not mean that the creators of these immersive information experiences in virtual worlds do not need to pay attention to individual information objects and sweat the details. Like the designer of a theme park ride, you need to think about how the sequence of events and impressions is going to create an overall sense of delight, thrill, or even fear in the consciousness of those who experience the ride.

Given what seems to be this “new world order” for librarianship in virtual worlds, we may need to shift our organizational focus a bit. Collections, collection building, and collection management as they have been practiced for thousands of years in the real world probably will not be the *raison d’être* for libraries in virtual worlds. Rather, libraries will focus on exhibits and events because these will be the immersive information experiences that avatars in virtual worlds crave. By exhibits, we do not mean static displays of carefully selected information objects lovingly arranged. The potential for information exhibits in virtual worlds is a very fertile field of endeavor with broad limits. In general, however, the emphasis appears to be on kinetic, interactive exhibits where the avatar-user enters the exhibit environment, either singly or in groups. Perhaps an avatar’s experience of a VW information exhibit will temporarily or permanently change the exhibit, just as the experience hopefully temporarily or permanently changes the worldview of the avatar.

If VW librarianship will be more about exhibits and events than about collections, collectively it may take us some time and some trial and error to wrap our minds around the possibilities. We may be able to collaborate with and learn from other disciplines as well. Museums in the real world also are big into exhibits. It may be true that, overall, museums are deeper into the theory, science,

and art of exhibit design than are libraries. The designers of theme park rides also have a dog in this hunt for the next big thing in VW exhibits.

Stated differently, until the emergence of VW librarianship, most human interaction with information was two-dimensional. Although books and other printed materials are three-dimensional, usually we experience them—usually via reading—two-dimensionally. Granted, some e-book technologies enable the reader to rotate an embedded image as if it were a three-dimensional object, and sculpture as a form of three-dimensional art and “information transfer” can be experienced from various angles. These may be the rare exceptions that prove the general rule that, before the emergence of virtual worlds, we almost always experienced information objects two-dimensionally.

The digital revolution, including the emergence and broad acceptance of the Internet and the World Wide Web, did not really change the basic two-dimensional nature of our interaction with information objects.

Most virtual worlds are obsessively three-dimensional. For example, you can fly around and through a large molecule, skip through a sculpture garden that conveys both visual and auditory information, experience a tsunami or other natural disaster, or blast off in a rocket ship. You can easily change your perspective of an information space. You can experience the scene in the “third person,” where you see your avatar in the scene, or you can “enter the head” of your avatar and get a first-person view of the experience. You can move your line of sight without moving your avatar. For example, an instructor in a virtual world can have his or her avatar standing before the seated class, yet his or her perspective on the formal learning environment may be from the back of the virtual room, where the desultory slackers hang out.

Notes

1. Tom Peters, “Holo Emitter: Cool Tool for Virtual Libraries,” *Smart Libraries Newsletter* (November 2007): 7.
2. Brooks Barnes, “Web Playgrounds of the Very Young,” *New York Times* (December 31, 2007).
3. Second Life, “Economic Statistics,” last updated July 10, 2008, Second Life Web site, http://secondlife.com/whatis/economy_stats.php (accessed July 14, 2008).
4. Ibid.