

Reinvent! Libraries as community innovation centers

by

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Introduction

We live in a period of rapidly accelerating change. Often the pace causes communities to find that change threatening, if not frightening, and their reaction, while understandable is best described by the phrase: “two-steps-forward-and-one-back”. Yet our communities don’t have the luxury of moving at that pace anymore because the cost is high. Libraries can and should serve the role of helping their communities to better understand, adapt and adopt to the changing technological forces and to do so in a smooth rather than a pendulum progression. The University of Oklahoma Libraries and others are demonstrating ideas to help Libraries redefine their roles in their communities as the intellectual crossroads and a center of innovation for new knowledge creation. A place where ideas can be mixed, refined, tested and deployed into the fabric of the university community and society. The results have been impressive with lessons to be learned by all.

What's Happening Out There?

We are living in rapidly changing times. Which have accelerated as time progresses. “By 1900, Teller noted, it was taking 20-30 years for technology to take one step, big enough for the world to become uncomfortably different.ⁱ” Humans, by design, evolve slowly. So change that comes about slowly is more comfortable and allows time for adaptation. However, around 2007, things took a rapid turn. Friedman notes that around late 2006 and into 2007 we saw the announcement of the following technologies:

- “iPhone
- Hadoop (big data)
- GitHub
- Facebook (Sept 2006)
- Twitter
- Google bought YouTube (2006)
- Android was launched
- Kindle released
- IBM released Watson
- Intel released high-k-metal gate microchipsⁱⁱ”

Friedman summarizes it by calling it: “One of the greatest leaps in history”. That was 10 years ago and in that decade, we’ve seen major societal implications resulting from this leap, many of them quite alarming. For instance, we’ve seen: 1) Radical changes in the distribution of wealth, 2) Creation of a “digital divide”,

and 3) Explosion in the creation of new information. Let's examine each of those in a bit more detail.

1. **Radical changes in the distribution of wealth.** As a result of the dramatic surge in new technology, many of the people associated with the organizations behind those technologies became enormously wealthy. To the point that we are now looking at “the richest 1% now have more wealth than the rest of the world combined and the richest 8 people in the world have more wealth than the poorest half of the world population, or about 3.6 billion peopleⁱⁱⁱ”. This is a staggering disparity of wealth and has, in part, come at the expense of the middle classes, which have been flattened significantly.
2. **Creation of a digital divide.** This disparity has also given rise to a “digital divide” i.e., the existence of large numbers of people that do not have access to the Internet from their homes. Today, “67% is the global median^{iv}” of homes that do have Internet access today. Australia, at 93%, has the greatest percentage, and of course, many countries around the globe are so low as not to even appear on the charts. One merely need think about how dependent most of us have become on constant Internet access to understand the problems we'd experience without that access. Yet many around this globe have this experience every day.
3. **An explosion in the creation of new information.** For those that do have Internet access, and the devices that can utilize that access, we've seen and will continue to see that there is an explosion in the growth of information being created. “By 2020, about 1.7Mb of new information will be created

every second for every human being on the planet^v” and furthermore “our accumulated universe of data will grow to 44 trillion Gb.”

It's important to place this in context. The average laptop today has around 500 Gb of storage in it. However Sloman/Fernbach state “most people have on hand, about 1 Gb of information.^{vi}” (Most of human knowledge is achieved through other means). What these factual data points do show is what Eric Teller, CEO of Google X has stated: “The sum of human knowledge has far outstripped any single individuals' capacity to learn.^{vii}” The consequences of this are not handled well by humans. Friedman tells us: “When fast gets really fast, being slower to adapt makes you really slow – and disoriented.^{viii}” Yet workers are finding that “accelerations set loose by Silicon Valley in technology and digital globalization have created a world where every decent job demands more skill, and now, lifelong learning.^{ix}”

Societies at large, and particularly classes, start to feel left behind and begin to feel like they are dealing with Tsunami of change they can't cope with. They're uncomfortable seeing that their station in life, be it economic, education or work is being significantly changed for the worse. The result? “More people can't keep up, and clearly some have reached for leaders who promise to stop the wind.^x” Thus we begin to see leaders like Trump, May, Putin and Erdogan emerge and be voted into leadership positions. Along with them, we've seen the emergence of “alternative facts”, information that is clearly and obviously false,

but yet due to they're appeal in reinforcing beliefs people want to hold, these "alternative facts" become believed.

Of course, for us as Librarians, this becomes quite alarming. As the "keepers" of the record, historical and cultural, 'alternative facts' undermine trust, a tenant upon which all of human knowledge rests. We also know that contextually, we've been warned about the possibilities of this trend emerging. Those warnings range from when George Orwell published his work *1984* (published in 1949) and as part of the storyline stated something that now seems so fitting that it can only raise further alarm: "The party told you, to reject the evidence of your eyes and ears. It was their final, most essential command." Later writers also forewarned us of these trends. Postman stated: "Whatever else we bring into the new century, we will certainly feature the greatest array of propagandistic techniques in the history of mankind.^{xi}" As Librarians, this has all the markings of a three-alarm fire for our profession. Indeed, we're seeing Librarians joining political protests in countries, an action that while not unknown, is certainly not common.

What can we really do about these problems?

Portman also provides some solid starting advice for dealing with too much information: "I define knowledge as organized information—that is embedded in some context, that has a purpose, that leads one to see further.. to understand

something about the world. When one has knowledge, one knows how to make sense of information, how to relate information to one's life and, especially knows when information is irrelevant." "The problem is how to transform information into knowledge and how to transform knowledge into wisdom. If we can solve that problem, all the rest will take care of itself.^{xii}"

This goes well with what Librarian leaders of today, like David Lankester, tell us: "The mission of librarians is to improve society through facilitating knowledge creation in their communities.^{xiii}" Yet, knowledge creation today is somewhat in peril for reasons that are obvious, but that we probably do not devote enough attention. Portman points out: "The knowledge we have is a result of our asking questions; indeed, that question asking is the most significant intellectual tool human beings have. Is it not curious then, that the most significant intellectual skill available.. Is not taught in school?^{xiv}" Portman is right of course, we've moved towards teaching facts/skills needed to pass prescribed tests, rather than the skills needed to create knowledge. Sloman/Fernbach point out: "We've all heard young kids ask: why? Children implicitly understand the complexity of things and explaining at a deeper level prompts more questions. Parents answer with: "because". We have made a decision to stop probing because we think we understand how things work more deeply than we do.^{xv}" Yet, as Librarians, we need to realize that this is not what we should be doing. In fact, we should be teaching our communities to question everything, because questioning is at the heart of re-invention and will help us rebuild trust in facts.

This is precisely what we're starting to see Librarians do. For instance, in dealing with "alternative facts" many librarians are starting to develop LibGuides on News Literacy and/or how to live in a Post-factual society. The American Library Association now has a page on their website where Librarians can find a rich listing of resources available for dealing with fake news (<http://www.programminglibrarian.org/articles/fake-news-library-round>). Others like Google are also moving rapidly to deal with this frightening trend developing technology to identify and stop the spread of this kind of information.. At this URL: <http://searchengineland.com/google-flag-upsetting-offensive-content-271119> one will find the latest efforts being employed by Google.

What we're doing at the University of Oklahoma

Librarians, as we all know, are embedded in their communities and in many cases offer a front-line engagement with their communities. It is therefore logical for us to help our communities deal with the tsunami of change and to help people to live their lives better by facilitating the creation of knowledge using new ways of acting, thinking and serving those communities. At the University of Oklahoma, this author has been part of a team of such librarians and we're seeing some very positive results. Let's examine some specifics about how this library is being re-invented.

First and foremost, all librarians must ensure they are supporting the goals and objectives of the larger organization of which they are part, whether that is a public government, private school or public education institution, it's important to ensure that the goals created for the library as part of it's re-invention, are supporting those larger goals. At the University of Oklahoma, our administration has defined these specific goals as items to be measuredly increased:

1. Student Success
2. Faculty Impact
3. Community Impact, and
4. Brand Equity

The University of Oklahoma Libraries Strategic Plan developed by the University Libraries team supports these goals through five pillars:

1. **Library experience.** "OU Libraries seeks to create a library experience that extends beyond a repository of resources to become an active participant in knowledge creation through a variety of strategies. We are reimagining our facilities to provide a comfortable and engaging environment for students to perform research, study and interact. We are investing in technologies and digital resources to enhance students' access to information and allow them to explore concepts in new ways. Working toward a more comprehensive library experience allows us to engage with students and faculty to ensure that the

facilities and services we provide will offer the best benefit to creating more knowledgeable and empowered leaders.^{xvi}”

2. **Special collections.** “The University of Oklahoma Libraries’ Special Collections include the History of Science Collections, the John & Mary Nichols Rare Books and Special Collections, the Harry W. Bass Business History Collection, the Bizzell Bible Collection, the Chinese Literature Translation Archive, the Daniel J. & Ruth F. Boorstin Collection, and the Western History Collections. The Special Collections provide students, faculty, researchers and visiting scholars with a wide range of unique primary and secondary resources. In many instances, these resources are one-of-a-kind and found only at the University of Oklahoma. From rare books, manuscripts, maps, photographs, sound recordings and artifacts, the collections represent the possibilities of understanding the past to impact the future.^{xvii}”
3. **Campus research.** “OU Libraries is charting a new role for scholarly communication at OU by innovating and supporting campus research. Collaborative partnerships, both across campus and with international academic organizations, continue to provide new ideas and facilitate resource sharing that enables OU Libraries to remain at the forefront of knowledge creation in addition to resource access and conservation.^{xviii}”
4. **Scholarly communications.** “Open access to academic resources has become a goal of the entire university. OU Libraries is extending

that goal through helping faculty create and promote open educational resources and content. Further, the development of the SHAREOK online archive allows any OU faculty, students, staff or contributor the ability to submit digitized content from a wide range of academic resources which are collected and curated in a manner to digitally preserve and allow easy access and dissemination of OU's intellectual content.^{xix}

5. **Skills and capabilities.** “The is no better measure of the strength of an organization than that of its personnel. Through investing in the OU Libraries team we are rewarding excellence, attracting new talent and supporting professional development. We ensure that the OU Libraries’ core values of collaboration, diversity, engagement, integrity and organizational agility are internalized and represented in all things. Just as we seek library excellence with our facilities, collections and resources, our employees strive to be excellent ambassadors, experts and community members.^{xx}”

When this strategic plan was in place, the Libraries began the implementation. One of the first things undertaken was to build a digitization laboratory in order to begin digitizing the vast special collections so they could be further leveraged by the other plans. In particular, our collection of Galileo’s 12 first editions books was high on the digitization list for reasons you’ll read about shortly. While that effort was underway, we began the process of planning a “collaborative learning

center” space. One floor of one building in the library was identified as ready for renewal, and through a lengthy planning process that involved students, faculty and staff across the campus, a plan was drawn up for this new space. At 1,858 sq. meters, the space featured movable, diverse seating areas, bookable work rooms, conference rooms, technology enabled rooms and recording studios, as well as a Digital Scholarship laboratory that was designed to serve faculty and graduate students exclusively. These new spaces were opened in 2013 to popular reviews and heavy usage. In fact, the Libraries won the *Great Inspirations Award* for the space at the 2015 Creativity World Forum.

At the same time the Library team was building out the new collaborative space, plans were actively underway to underscore the idea of the Libraries being the “intellectual crossroads of the University”. The 125th anniversary of the University was to occur in 2015, and the Library team us the opportunity to underscore library branding by featuring an exhibition of the rare Galileo works (now digitized) as the centerpiece of a campus wide exhibition. The plan involved numerous colleges from across the campus participating in various roles and events, with a remodeled floor in the Bizzell Memorial Library, where the Galileo collection is housed, as the focal point for the anniversary. The exhibition was housed in 20 exhibits in 7 locations across 3 campuses. Other goals established for the exhibition included:

- Bringing the University together around the exhibit.

- Ensuring everyone, anywhere would be able to see the exhibition (physically or virtually, now and **far into the future**)
- Making it appealing to scholars, public and youth, and, finally,
- Showing the importance of science and that knowledge builds on knowledge.

One of the most important college collaborations in supporting the exhibition was the College of Engineering, which sent a team of students to Pisa, Italy to study the Tower of Pisa (which of course has a storied role in Galileo's work), take pictures, and gather paint samples, then to come back to design and build a 6 meter tall replica of the tower, complete with an operating ball drop with timings reported by radar measuring, in the large lobby of the library. This was done and serves as an immediate attention getter for all entering the library. From there, it is easy to direct people to the 5th floor of the Library where the main exhibition is housed. This exhibition also earned the Libraries 3 awards for excellence from the Oklahoma Museums Association.

Because of the size of the library and the location of the Galileo's World exhibition, a unique opportunity was realized to help guide people using the cell phones in their pockets. An navigation app was developed that used a combination of GPS and Beacon technologies to provide users with a detailed guide through the exhibit, and, once they left the building, to the next location on campus to see the next exhibit, all using their cell phones. This technology was entirely new to education, previously only being used in airports and football

stadiums, and again proved successful on several fronts. First, because it helped users realize the full exhibit experience, and secondly, because it brought a great deal of press attention to the Libraries. Stories appeared in ComputerWorld, local newspapers and in Campus Technology, which went on to award the Libraries with the 2016 Campus Technology Innovator award, calling the Libraries an “Education Futurist”. Overall, the Galileo’s World Exhibition and associated technologies resulted in over 1500 visits per month to the 5th floor special collections of the Libraries, which represented an 1100% increase over the previous year.

One of the outcomes of the Galileo’s World exhibition was the realization that one of the Virtual Reality (VR) exhibits we had incorporated in the exhibit was so successful that the Libraries should expand the use of VR into more research and pedagogy across the campus. A laboratory called the Innovation @ the Edge was launched using a room of 23 sq meters to house the VR laboratory as well as 3D printing, microcontroller use and basic software courses. Specifically, the lab is aimed at being a:

- Combination of Maker-Space/Fab-Lab/Startup Incubator, Classroom, Seminar Room, Laboratory, basically applied workspace.
- A culture (or mindset) of experimentation and knowledge creation with the latest hardware and software.
- Community
- Collaboration

This innovation space, in a little over a year, has brought the library extended opportunities to be embedded across the community, campus and profession in wherein we're seen as being leaders in reshaping pedagogy and research. At the end of the first year of operation of the Innovation @ the Edge, the Libraries has seen 20 courses requiring students to do technology based coursework in the space, over 400 3D print jobs completed, 286 workshop participants, and has resulted in 36 tours devoted exclusively to this space. Based in part, on the success of this space, the campus administration decided to build a larger 4642 sq. meter innovation space in the University's research park, located about 3200 meters south of the library on the main campus. This \$4M USD facility, features higher end equipment and serves as a natural migration destination for those who've started out their work at the Innovation @ the Edge.

Conclusion

Societies across the globe are facing challenging times. Forms of government are under severe duress and being tested past their limits by the speed of change that is occurring. We're watching people react in forecast ways and for understandable reasons. Libraries need to see this as the siren call it represents and provide an alternative path for our communities of users in dealing with rapid and continuing change. The University of Oklahoma Libraries has provided one such pathway utilizing numerous ideas and techniques that can be readily adapted to other libraries. These have included:

- Teaching communities of users how apply critical thinking skills in questioning, testing and placing information in its proper context.
- Showing the value of collaboration and cooperation in knowledge creation and ways to leverage that cooperation for maximum benefit.
- Demonstrating, through exhibitions and use of innovative technologies, how knowledge builds on knowledge and the importance of being able to trust information in creating new knowledge.
- Packing these experiences in compact, more readily consumed formats (Software Carpentry, exhibitions, short, library based instruction courses)

As Librarians we have an obligation to fulfill to our communities in order to help them learn how to deal with the explosion of information, how to test, verify and apply that information and how to create new knowledge for the future. As with the communities we serve, we too must deal with change, filter out the tools and ideas that will be most effective to deal with those needs and apply them as quickly as possible. As is being shown in some libraries, it can be done with great effectiveness.

ⁱ Friedman, Thomas L. (2016). *Thank you for being late*. New York, New York. Farrar, Straus and Giroux. Page 29.

ⁱⁱ Ibid. Pages 19-22.

ⁱⁱⁱ The Rules. (June 18, 2017). *An update to The Rules 2013 Global Inequality Video*. Retrieved on June 18, 2017 from <https://therules.org/update-global-inequality-video/>

^{iv} Breene, Keith. (March 22, 2016). *This is the extent of the digital divide*. Retrieved on June 18, 2017 from <https://www.weforum.org/agenda/2016/03/this-is-the-extent-of-the-demographic-digital-divide/>

^v Marr, Bernard. (Sept 30, 2015). *Big Data: 20 Mind-Boggling Facts Everyone Must Read*. Retrieved on June 18, 2017 from <https://www.forbes.com/sites/bernardmarr/2015/09/30/big-data-20-mind-boggling-facts-everyone-must-read/#3710fb6c17b1>

^{vi} Sloman, Steven and Fernbach, Philip. (2017). *The Knowledge Illusion*. New York, New York. Riverhead Books. Page 26.

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- vii Friedman, Thomas L. (2016). *Thank you for being late*. New York, New York. Farrar, Straus and Giroux. Page 33.
- viii Ibid. Page 32.
- ix Friedman, Thomas L. (May 10, 2017). *Owning your own future*. Retrieved on June 18, 2017 from: https://www.nytimes.com/2017/05/10/opinion/owning-your-own-future.html?_r=0
- x Ibid.
- xi Postman, Neil. (1999). *Building a bridge to the 18th century*. New York, New York. Vintage Books. Page 164.
- xii Ibid. Pages 92-93 & 98.
- xiii Lankes, David. *New Librarianship*. Retrieved on June 18, 2017 from <https://davidlankes.org/new-librarianship/the-atlas-for-new-librarianship/threads-2/mission/the-mission-of-librarians-is-to-improve-society-through-facilitating-knowledge-creation-in-their-communities/>
- xiv Postman, Neil. (1999). *Building a bridge to the 18th century*. New York, New York. Vintage Books. Page 161.
- xv Sloman, Steven and Fernbach, Philip. (2017). *The Knowledge Illusion*. New York, New York. Riverhead Books. Page 35.
- xvi University of Oklahoma Libraries. (2017) *University Libraries Website*. Retrieved on June 18, 2017 from <https://vision.libraries.ou.edu/initiatives/library-experience>
- xvii University of Oklahoma Libraries. (2017) *University Libraries Website*. Retrieved on June 18, 2017 from <https://vision.libraries.ou.edu/initiatives/special-collections>
- xviii University of Oklahoma Libraries. (2017) *University Libraries Website*. Retrieved on June 18, 2017 from <https://vision.libraries.ou.edu/initiatives/campus-research>
- xix University of Oklahoma Libraries. (2017) *University Libraries Website*. Retrieved on June 18, 2017 from <https://vision.libraries.ou.edu/initiatives/scholarly-communication>
- xx University of Oklahoma Libraries. (2017) *University Libraries Website*. Retrieved on June 18, 2017 from <https://vision.libraries.ou.edu/initiatives/professional-development>