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Strategic Thinking and Design Initiative: Extended and Updated Report

Association of Research Libraries

Strategic Thinking and Design Initiative
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**ASSOCIATION
OF RESEARCH
LIBRARIES**

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Elliott Shore (top) and Ann Pendleton-Jullian (bottom), still images from June 2014 video interview about the ARL Strategic Thinking and Design process

Acknowledgments

Prologue

John Seely Brown

All too often I encounter colleague geeks here in Silicon Valley who laugh when I bring up the future of research libraries or even community libraries. They say, "JSB, don't you understand the long-term significance of Google Glass?" "Yes I do," I say, "but what you don't understand is that libraries may well become the center of learning in a world of ubiquitous information because they complement and scaffold all the brand new ways we are learning with and from one another."

Several years ago I was asked to address the Association of Research Libraries on the disruptions that digital technology and the network age might bring to the structure and function of research libraries. I spoke about the challenges we face designing for and working in a new normal—a world of constant change brought upon us by the exponentially increasing powers of the digital age. I spoke about the need to implement systemic change in our practices and in those of our institutions. This report is about how ARL took that talk to heart, reconceiving the very role of research libraries and crafting steps as a system of action to shape this reconception of the research library as a central force in the unfolding digital/network age.

Systemic change is not easy; institutions nearly always get caught in competency traps where their past expertise becomes a significant barrier to change or to even seeing how much the world around them has changed. Confidence in one's success—in knowing what one knows and doing what one has always done well—can keep one from seeing how much, and in what ways, the context is

changing. Because of this, innovation at the cutting edge, is often far from being more than incremental change. Much more exciting is looking around with eyes seriously open, and then simply asking in what ways can past success be leveraged for confidence in one's capacity to re-invent anew—seeking not only to adapt, but to lead.

The effort described in this report is both novel and bold. Bold in the sense that what is invented and implemented here is far from strategic planning or even scenario planning. Novel in that the process uses an expanded set of architecture design practices, crafted and carried out by the architect Ann Pendleton-Jullian, to engage, to deeply listen to, and to stimulate and probe the beliefs, inchoate practices, and needs of more than 360 research librarians. The design team's goal was to construct a coherent model for research libraries in the year 2033 and then an initial set of steps—small, executable steps—to begin to shape forward towards that end.

I want to recognize and congratulate Elliott Shore, the executive director of ARL, and Ann Pendleton-Jullian for their courage in undertaking this kind of reimagining effort at such a grand and inclusive scale and with already demonstrable results. I expect the ideas contained in this report will have major effects both within ARL and beyond, certainly into the universities themselves. We see here ways that both the human and institutional imagination were unleashed and how the results were synthesized into a coherent model. As the readers of this report will see, the push for coherence is not a throwaway line; it is a direct consequence of the world-building methodology used. This fact alone makes this large-scale change effort both systemic and dramatic. I expect it will be widely picked up, elsewhere.

As Ann says in the report, "If we adopt the perspective that we are building the future with every decision made in the present—small or large—then we can design for emergent activity that is aimed at a desired future." This wonderful line helps to explain the responsibility of courage that this undertaking embraced. And why it matters.

Alice Pitt, still images from November 2013
video interview about the ARL Strategic
Thinking and Design process

1
Introduction

This report[1] documents the Strategic Thinking and Design work that the Association of Research Libraries (ARL) engaged in from the fall of 2013 through the end of 2015. Fueled by the deep desire of the ARL membership to rise to the challenges facing higher education in the 21st century, and with grants from the Institute of Museum and Library Services and the Andrew W. Mellon Foundation, the Association engaged in an unprecedented project to reimagine the future of the research library and then reshape ARL, its organization, to help bring that future into being.

This process was unprecedented in that, instead of trying to ameliorate, one by one, the challenges that research libraries face—challenges that are a product of the friction between the research libraries' historical evolution and a rapidly changing context—or seek a silver-bullet technological solution to move the community forward, the process focused on what the research library would be if it were specifically designed for the context of the 21st century—for the digital and networked age. The process engaged more than 360 people drawn from throughout the library community (both within ARL and beyond) and from the academic, funding, and association communities to "world build" the future of the

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1   This report is intended as an extension of the original *Report of the Association of Research Libraries Strategic Thinking and Design Initiative* (Washington, DC: ARL, August 2014) and as an update a year and a half after the first report was delivered. This new report is different in a number of ways from the original: it focuses more on the ways in which the process unfolded and what came out of that process. All too frequently, strategic work becomes an end in itself, not a framework for change. The authors of this report are endeavoring to institute and document the change that the Association of Research Libraries has taken upon itself on behalf of the research library world.

research library. This approach, coupled with deep research into the strategic plans of higher education institutions and their libraries, led to the fashioning of a "System of Action" for ARL to shape the community of research libraries towards the newly imagined future.

The ARL membership examined and adopted that work at the October 2014 Membership Meeting in Washington, DC. Initial work toward implementation has already begun, and the Association plans to assess, consider, reevaluate, and revise its actions on an ongoing basis as it works to support this key part of the world's higher education infrastructure. ARL, the organization, began its task of redesigning itself in spring of 2015 to support these endeavors aimed at shaping the future of the research library. This report is part of that process.

The catalyst for ARL's Strategic Thinking and Design process was John Seely Brown's October 2012 ARL Fall Forum lecture, "Changing How We Think About and Lead Change" (http://www.arl.org/storage/documents/publications/ff12-brown.pdf), in which he warned the audience about the unforgiving inertia of competency traps: a trap that arises from a false belief that the same practice that led to past success will continue to lead to future success. In a context that is changing rapidly and in fundamentally new ways, moving forward incrementally and continuing to do more of what you know how to do well "lands you on the rocks." John Seely Brown challenged ARL to design meaningful experiences that tapped into the imagination, to develop innovative practices around authorized ones with a rhythm that balances the dramatic with the systematic. He challenged the Association to conceive a vision that is compelling, strategically ambiguous, positive, and aspirational.

John Seely Brown's talk coincided with the appointment of a new executive director for ARL, Elliott Shore, who, together with the ARL Board of Directors and ARL leadership,[2] embraced this challenge purposefully and enthusiastically. The Association

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2   Strategic Thinking and Design Work Group members included ARL member directors Susan Gibbons (Yale), Tom Hickerson (Calgary), James Hilton (Michigan), Anne Kenney (Cornell), Wendy Pradt Lougee (chair; Minnesota), Rick Luce (Oklahoma), Carol Mandel (New York), Jim Neal (Columbia), Susan Nutter (North Carolina State), and John Wilkin (Illinois at Urbana-Champaign); David Gift of Internet2; and ARL's executive director Elliott Shore and deputy executive director Sue Baughman.

engaged architect Ann Pendleton-Jullian to design an innovative process of envisioning and action, which brought "world building" and "system of action" design processes to strategic thinking.

In the fall of 2013 ARL embarked upon an extensive, broadly engaging Strategic Thinking and Design process that began by framing the larger question of the future of the research library in terms of its role in the future of higher education, and then focused on ARL's critical role and work in that future. Focusing on these two questions generated a vision and strategic actions that will help the Association maximize its ability to be responsive to rapidly changing priorities and member institution needs.

ARL's mission and those of its member institutions are, by definition and intent, deeply intertwined. In the latter part of the 20th century, ARL and its member libraries were focused on and structured around library functions (collections, access, preservation, etc.). In 2005, a new ARL strategic plan shifted focus toward strategic directions: Advancing Scholarly Communication, Influencing Public Policy, and Transforming Research Libraries. Throughout its history, ARL has also provided enabling resources and support for organizational capacities such as diversity and statistics. Now, the Association's attention turns to a new type of relationship among and with member libraries.

The Strategic Thinking and Design process allowed more than 360 participants to purposefully imagine beyond incremental change, simultaneously honoring the evolutionary path of research libraries and the relevant issues of ARL member libraries, while also focusing on the need to reinvent the research library model within the evolving contexts and issues of the 21st century. The process resulted in a richly textured, descriptive vision of an entire knowledge ecosystem with the research library as a central component, a System of Action that is intended to catalyze and shape change aimed at creating this research library of the future, and the articulation of ARL's role as the organization that will inspire, orchestrate, and manage this path towards change and the future knowledge ecosystem.

This report describes and presents the fruits of this

intensive and innovative process, charting a fresh, expansive path forward for the Association and its members. From the process emerged a vision: **In 2033, the research library will have shifted from its role as a knowledge service provider within the university to become a collaborative partner within a rich and diverse learning and research ecosystem.**

2
Process

The ST&D process was framed by John Seely Brown's compelling articulation of the environment in which organizations exist today. Change is frequent, and previous strategies are no longer effective. He noted:

- The challenges we face are both fundamental and substantial.
- We have moved from an era of equilibrium to a new normal—an era of constant disequilibrium.
- Our ways of working, ways of creating value, and ways of innovating must be reframed.

The initiators of the ARL Strategic Thinking and Design process recognized that they would need a different kind of process to produce a different kind of "plan" for the dynamic environment they saw before them. Architect Ann Pendleton-Jullian translated these sets of observations into a Strategic Thinking and Design approach that became the ARL ST&D process. Rather than creating a static plan, this process acknowledged the changing nature of planning in the context of a contemporary dynamic environment. All recognized the need for a more organic framework that would reflect the agile structure and more active roles necessary for research libraries and for ARL. The word "plan" was consciously avoided and almost never employed: in the minds of those who led the process was the sense that planning— in the sense of setting a fixed list of goals for a fixed amount of time

in a formulaic top-down way—was an artifact of an earlier age.

In a world that is rapidly changing—"an era of constant disequilibrium"—one cannot design for a fixed solution or end-state. Traditional strategic planning processes optimize an end state and then create top-down organizational structures, rules, policies, and procedures intended to implement that optimized state five years out. Five years out is unknowable and, in an era of disequilibrium, unforeseeable. Therefore, the ARL ST&D process used an alternative approach: world building[1] a highly textured, dynamic, living model of the future research library as part of a learning ecosystem, and then creating a system of action[2] to shape emergent activity towards that future. While we can see trends all around us, no one can foresee the future, especially in an era of social and technical change and disruption. If we adopt the perspective that we are building the future with every decision made in the present—small or large—then we can design for emergent activity that is aimed at a desired future. Informed by an enlightened build, one can then imagine concrete components of that world—a federated collection of collections, for example—and use this reimagining to develop a system of action that closes the gap between the present and the future we want to shape.

Closing the gap between the present state and a desired future requires understanding both the current environment and the textured coherent vision. Therefore, the ARL ST&D process had three streams of activity intended to both assess the existing situation and envision the future. These three streams consisted of: content analysis of library and institutional strategic plans; 10 Regional Design Workshops attended by more than 360 participants

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1   World building is a practice borrowed from new cinematic production methods that leads to the design of an imagined world that is vast, detailed, and coherent. Instead of focusing on legacy problems and challenges, or on anticipated disruptions, one is asked to start from a place in the near future and design for that. World building brings together numerous people with diverse expertise in a space of imagination and permission to ask "what if" something were possible and then build it out "as if" it were real. World builders are given permission to relax the rules so that they can imagine something new; to revisit assumptions and create new sets of assumptions. World building together is about using expertise and imagination to design a common desired future as opposed to accepting a default future. Once the world is designed, then one needs to close the gap between what exists now and the desired world. For this, one needs a system of action.

2   A system of action is a collection of inter-related actions and mechanisms that affect the way people do things. Transformative in intent, systems of action affect both explicit behaviors and embedded habits. Systems of action are meant to scale small actions to affect a larger social ecosystem.

(Figures 1 and 2); and five Design Studios at ARL headquarters to give more articulated shape to the vision and to draft a System of Action as a new action-oriented framework for the organization. Ultimately the ST&D Working Group molded the output of the process into a framework for the organization moving forward.

October 1, 2013	Minnesota
October 8, 2013	ARL Fellows in DC
October 17, 2013	Los Angeles
October 23, 2013	Chicago
November 8, 2013	Toronto
December 4, 2013	Washington DC
December 17, 2013	Houston
January 23, 2014	Philadelphia
March 4, 2014	Seattle
April 22, 2014	Boston

Figure 1 — Regional Meeting Venues

150	ARL Library Staff Members
87	ARL Member Representatives
25	ARL Leadership Fellows
14	ARL Member Institution Campus Administrators
1	ARL-Affiliated Organization (CNI)
26	Directors + Staff of non-ARL Academic and Public Libraries
1	Director of a Community College Library
3	Press Directors (ARL Libraries)
16	Library-Related Associations
2	Museum Directors
2	Federal Agencies
10	ARL Institution Graduate and Undergraduate Students
8	ARL Institution Faculty Members
10	CLIR Fellows and Research Fellows
10	ARL Staff

Figure 2 — 365 Participants

Tom Hickerson, still images from April 2014
video interview about the ARL Strategic
Thinking and Design process

3
The Future of Research Libraries Reimagined

The ST&D process used a distant time horizon, 2033, to design for longer-term changes that will shape the evolutionary path forward for research libraries. By using 2033, participants were given permission to not focus on the problems in the current system or the disruption of new technologies alone, but to imagine a desired future state that is aligned with the fundamental changes occurring within society and its systems more broadly. Society and its systems are the context in which the university and its research libraries operate, and societal evolution depends upon the knowledge-construction activities of the university and research libraries, and upon the individuals these institutions serve and shape.

During the Strategic Thinking and Design process, the participants worked with a brief that framed specific shifts and trends in the context[1] in which planning for both the research libraries and ARL—the organization—must be situated. The work that emerged expanded upon this brief by specifically recognizing shifts that are occurring in the role of the research library between now and 2033:

- Within two decades, the research library will have transitioned its focus from its role as a knowledge service provider within a single university to become a collaborative partner within a broader ecosystem of higher education.

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1   See Section 7, "The Process in Detail," for more specifics of this framing.

- Research libraries will be even more intimately engaged in supporting the full life cycle and activity range of knowledge discovery, use, and preservation, as well as the curating and sharing of knowledge in diverse contexts of the university's mission and of society more broadly.
- ARL—the organization—will enable and catalyze research libraries to leverage and mobilize individual assets toward the collective advancement of learning, research, and societal impact.

The ST&D process surfaced a rich array of ideas, analogies, and metaphors to capture the ways that technology and associated changes in research and learning have transformed the research library's role. The language that emerged during the design process spoke to the ubiquity and pervasiveness of knowledge capture, construction, and sharing in contemporary times. Changes within disciplines, requirements for productive research and learning, and societal pressures on the academy are drivers of change. There is evidence of critical evolutionary change within the knowledge environment as the academy moves away from largely disciplinary lines towards more inquiry-driven, individually motivated, and collaboratively constructed teaching, learning, and research. These changes have had and will continue to have profound impact. The compelling ideas, analogies, and metaphors that emerged were synthesized into a richly textured descriptive vision and a concrete System of Action that ARL is now working to transform into a plan for collective action.

This vision is summarized below and can be found in more detail in Section 8. Noticeably, expanded collaborative roles, which are made possible through new information technologies, are a prominent theme for the future of the research library.

In 2033, the research library will have shifted from its role as a knowledge service provider within the university to become a collaborative partner within a rich and diverse learning and research ecosystem.

And if one assumes that:

- The research library of the future will be a mega-library at different scales; it will aggregate vast amounts of data, text, and media-rich content.
- Local collections and expertise will be increasingly valuable.
- Technology will be ubiquitous and will function in a more seamless interaction between humans and machines; physical and virtual spaces will be more responsive.
- The research library can and will increasingly broaden its role from a predominantly service role within a single home institution.
- The research library has less inertia than the university. It can and should assume a leadership role in the evolution of the larger university system, which is also undergoing transformation.[2]
- A new financial model is necessary.

Then—in shifting their roles from knowledge service providers to collaborative partners, research libraries become increasingly valuable knowledge and service partners for their universities while extending them beyond single sites and responding to the trend of exponentially increasing connectedness (the mega-university in sight), which means that the research library of the future will take on new roles and other partners. These roles scale from the individual student/faculty/researcher, to their home university, to the mega-library, to communities. These research library roles are (Figure 3):

- **An Augmented Information Lens for engaging and empowering individual users:** downloading for personalized information access and use and uploading with provenance and enriched contextualization; the Augmented Information Lens mediates the "above the library" services—material

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2   This transformation was assumed as a shifting:
- From stocks to flows—from courses to information on demand
- From push to pull—from 4 years x 8 courses to endless content on demand
- From content to context—from generalized to specific and contingent
- From certainty to ambiguity—from facts and optimized methods to inquiry
- From robustness to resilience—from domains to mega-disciplinary collaborations

Augmented Information Lens

Mega-Library
Ecosystem

Open
Symposium

Knowledge Trust
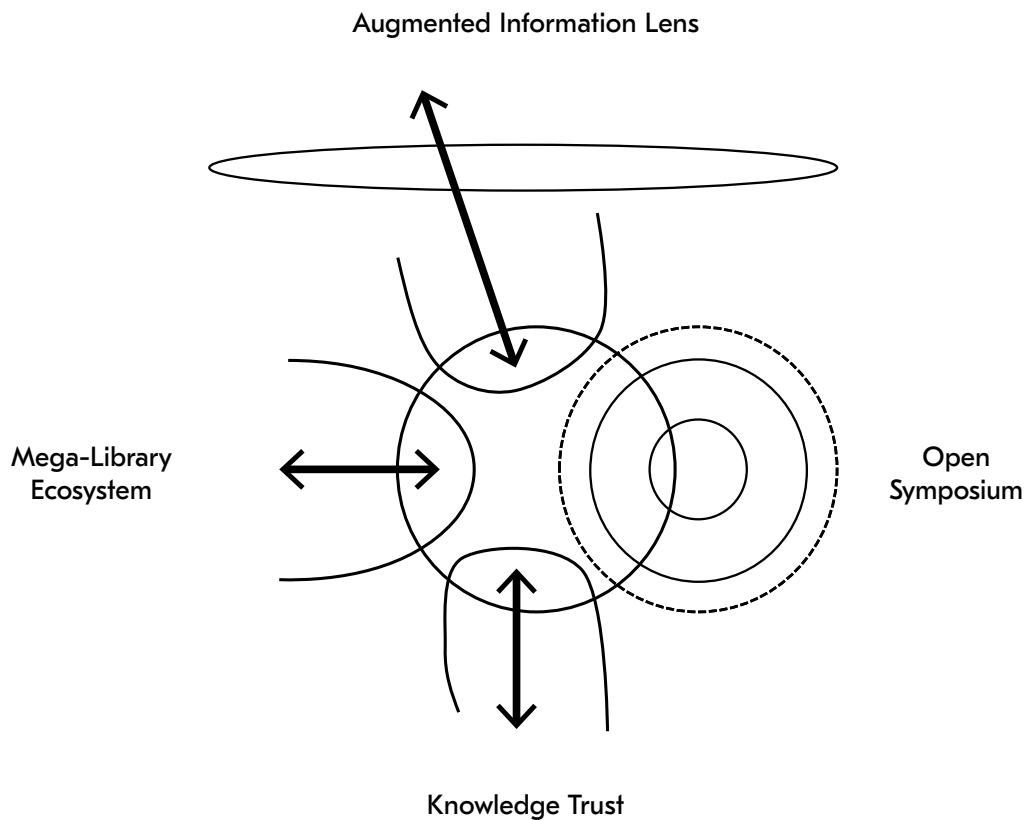
Figure 3 — Library Services as Four Layers of Interaction

and services held at a super-university level.

- **An Open Symposium for facilitating and empowering exploration and exchange within an academic community:[3]** an inspiring host, an engine for interchange, an active stimulator of conversations and projects; providing space, technology, valuable sensemaking and knowledge-building tools, and orchestrating strategic partnerships.
- **A Mega-Library Ecosystem for building powerful collaborative capacity:** the open symposium at the

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3   This was first, and most often, framed as the research library as "salon." The word "salon" refers to an assembly of guests common during the 17th and 18th centuries. A salon usually took place in a drawing room of a large house and consisted of the leaders in society, art, politics, etc., who were convened by an inspired, and inspiring, host. The word "salon" is problematic because it implies a certain social class. It was useful, however, because it implies engaged intellectualism in an intimate social setting orchestrated by an inspiring host. Other vocabulary and metaphors associated with this theme included "boundless symposium," "sanctuary," and "the research library as Switzerland."

scale of an ecosystem with a diversity of alliances from other research libraries and their home institutions, to think tanks, to cultural organizations, governmental offices, media, journalists, independent scholars, etc.

- **A Knowledge Trust for providing enduring, barrier-free access for all research inquiry:** reinforcing and amplifying the broader social function of the research library for individuals and groups of individuals who are unaffiliated with a university, dispersed, and locally situated.

To set the shaping of this future in motion, six initiatives were identified as the generative beginning of a System of Action. They are summarized below and can be found elaborated in Section 9.

- Collective Collections
- Scholarly Dissemination Engine
- Libraries That Learn
- ARL Academy
- Innovation Lab
- Open Symposia

Wendy Lougee, still images from April 2014
video interview about the ARL Strategic
Thinking and Design process

4
ARL Strategic Framework 2015+

ARL has historically played the role of enabling individual research libraries to operate more effectively within parent institutions. The Association's programs have helped inform and educate the membership and stimulate advocacy within individual institutions and within contexts ranging from scholarly communication and publishing to public policy. In initiating and convening the ARL ST&D process with the goal of reimagining the future of the research library, ARL took on a more active role of responsibility for its members. Believing that unprecedented changes in knowledge acquisition, construction, and sharing challenge the very nature and practice of research libraries and their universities, ARL leadership took on the task of enabling, not only the effective operations of member libraries, but also the evolution of the roles, capacities, and operations of research libraries more broadly.

Following on the work of the ARL ST&D process for reimagining the future of the research library, a working group was tasked to create a new Strategic Framework for the Association and its roles and operations. Several principles guided the working group's progress toward a new ARL Framework. The framework should recognize the emergent roles and historic strengths of the organization and its membership. The framework should articulate a vision for the organization (in the context of the future of research libraries and their institutions), and it should reflect new, more active roles for ARL. As noted by one member of the working group during the process: "ARL

is our vehicle for getting things done together with key partners."[1]

The proposed ARL Strategic Framework 2015+ takes the Association's organizational roles to a more active level, facilitating work across institutional boundaries, enhancing impact, and improving efficiency by making ARL's limited resources work better for member institutions. ARL's engagement is not singular; rather, ARL's actions will be increasingly collaborative with other kindred organizations and stakeholders. Collaborative roles for research libraries are a prominent theme for the reimagined research library and they are for the ARL Framework 2015+ as well. The Framework recognizes the deepening engagement of research libraries within each of the expanded roles libraries play, from working with the individual user to society at large.

These emergent roles are supported by a System of Action that ARL will implement in different ways: the Association might **inspire, introduce,** and **catalyze** efforts to improve the research library ecosystem; in some cases, ARL might **broker, connect,** and **mediate** partnerships; or it might **facilitate, scaffold, structure, support** new developments; or it might work toward **shaping, designing, influencing,** or even **building** new coalitions or new infrastructure that it might **manage, run,** or **spin off** (Figure 4). These new roles will be balanced on the bedrock of the Association's historic strengths in policy and advocacy, diversity and leadership, and statistics and assessment.

The guiding principles for creating a Framework for ARL include both enduring and new Essential Capacities. The enduring elements reflect the roles and the core values that are the historic strengths of the organization, while the new capacities reflect the intentional move to collective action in areas of critical importance to the higher education community.

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1   Wendy Lougee, university librarian and McKnight presidential professor at the University of Minnesota and former ARL president (2012–2013).

Inspire	Broker	Facilitate
↓	↓	↓
introduce catalyze encourage	connect liaise mediate	scaffold structure support

Shape	Manage
↓	↓
design influence build	run and/or spin off
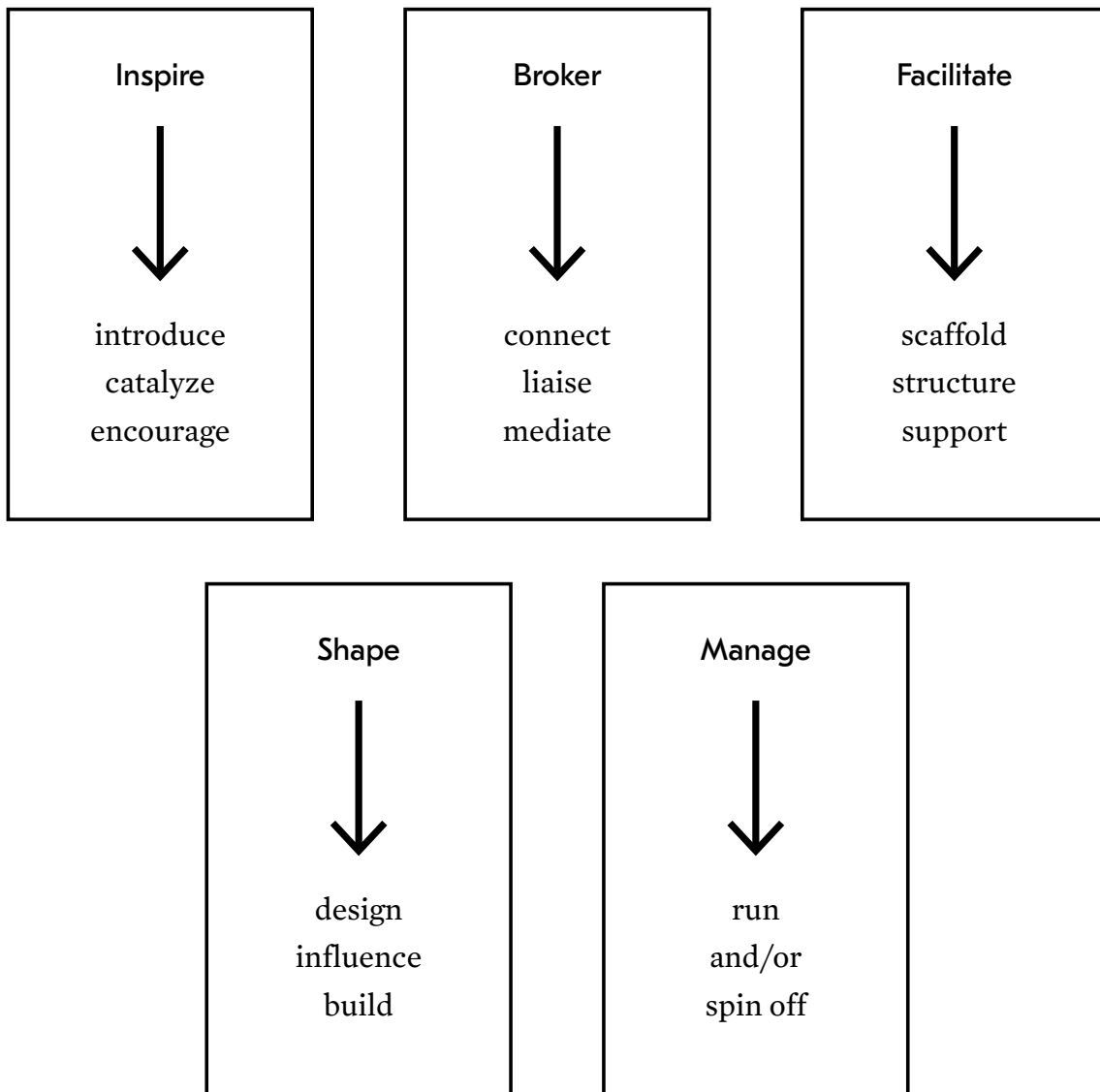
Figure 4 — Possible Roles for ARL

5
ARL Essential Capacities

Essential Capacities serve as the foundational elements that support ARL's future directions. These capacities reflect work that must be done in order for ARL to successfully implement current and new activities. The capacities are not stand-alone in scope and action; rather, they will be considered and integrated into future initiatives.

The Essential Capacities are:[1]

- **Advocacy and Policy** covers a wide and expanding range of activities that advance and promote research libraries and their growing portfolio of roles. While this capacity includes analysis of legal and legislative public policy issues, it also encompasses advocacy for issues of timely importance to the research library and higher education community.
- **Assessment** incorporates existing and new strategies that support ARL's work. This capacity collects data that offer information and support decision making (e.g., annual statistics). Assessment also creates processes for collecting and disseminating analytics and metrics. Some ARL initiatives will include a research and development element that will be instituted in this capacity.

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1   Since the writing of this report, the terminology the Association uses to refer to these capacities has changed somewhat. As of going to press in June 2016, these are called "Enabling Capacities" and have been restructured to include Advocacy and Public Policy, Assessment, Diversity and Inclusion, and Member Engagement and Outreach.

- **Communication and Marketing** is an ongoing activity of ARL that will be strengthened. This capacity includes basic activities such as the ARL website and communications disseminated to ARL members and the larger community. Marketing will further fuel the organization's advocacy potential in new realms.
- **Issue Incubator** recognizes ARL's role to surface trends and opportunities of importance to research libraries, leveraging expertise and early intelligence of strategic partners, such as CNI and SPARC, as well as other organizations.
- **Membership** is critical to the Association's success, and the roles that members play are likely to evolve over time as members set the direction of the organization. The scope and criteria for membership in ARL may change over time as the ecosystem of research continues to expand.
- **Partnerships,** including higher education, library, and other scholarly and research organizations, play an important role in ARL's success achieving its goals. Partnerships will be developed based on the scope and parameters of initiatives. The ongoing development and nurturing of partnerships is a responsibility of all ARL members, the executive leadership, and staff.

6
ARL Leadership and Team

To embark on a strategic process that was a radical departure not only from past practice at ARL, but from that of its member libraries and the universities and government agencies in which they are embedded, was not a step taken lightly. The resonance which the work of John Seely Brown found within the ARL membership at the October 2012 Fall Forum was critical, but taking the path that he hinted at, and that Ann Pendleton-Jullian designed and developed, was not an easy or straightforward process. As stewards of some of the most significant repositories of the story of human civilization, library leaders are by the nature of their work sensitive to the long-term responsibilities that they carry: shepherding these carefully crafted institutions into the future while being mindful of their crucial legacy. How do libraries move forward with all of the possibilities and opportunities that linked information technologies afford while bringing along all of the significant library functions that society has treasured? How do librarians convince themselves and their colleagues that taking the risk to refashion and move ahead is a better choice than moving incrementally forward?

The ARL Executive Committee and the entire Board engaged with the executive and deputy executive directors—in consultation with Pendleton-Jullian—for three months to define the exact parameters of the work. The back-and-forth of this conversation resulted in a good mix of engagement: careful and bold, quantitative and qualitative, ARL and wider library and higher education

communities. This deliberate process resulted in a plan of action that suited the organizational culture of ARL well and strengthened the outcome of the work of the Design Studios. Most significant was the development of a group of three member representatives of the Association who constituted the coordinating group: Wendy Lougee, then immediate past president of ARL and chair of the group; Tom Hickerson, member of the Board; and Susan Nutter, also a past president of the Association. Lougee was involved in a material way in the Design Studios and led the work that resulted in the report to the membership and the shaping of the implementation framework. Throughout the process, all of the leadership team worked to keep the radical edge of the work sharp, while being mindful of the need for a large constituency both inside and outside of the Association to understand and accept the path forward.

Design Studio, Washington, DC

Regional Design Workshop, January 2014, Philadelphia, Pennsylvania

7
The Process in Detail

The ARL Strategic Thinking and Design process was designed to respond to the changing nature and rhythm of research libraries' contemporary context in a manner that harnessed the pragmatic imagination of an entire community of practice, putting it to work to take on the challenges and opportunities of dynamically evolving methods of knowledge acquisition, construction, and collaborative use.

Rather than creating a traditional strategic plan—static and top-down in nature—the process was after a more organic framework that would reflect the agile structure and more active roles necessary for research libraries and for ARL. And it was specifically developed to engage several hundred voices in a process of design that captured each and every voice, seeking patterns of convergence and the creative anomalies that sparked substantial innovation. The process did not seek consensus, but coherent texture that came from highly productive diversity. That diversity included ARL membership and other members of the higher education community.

The process had three streams of work, which informed one another in a nonlinear manner. From the outset, the process was prepared to recalibrate methods, tasks, and goals as emerging work would inform the rest of the playing field and as tasks and work from one stream would influence those of another stream. Principally what differentiated the three streams was the degree of engagement

of the participants. A team of research fellows[1] conducted significant data gathering and analysis for the ST&D initiative, and the ARL membership and associated stakeholder communities were engaged through a series of Regional Design Workshops and Design Studios that took place at the ARL offices in Washington, DC (Figure 5).

Work Stream 1: Research (July 2013–March 2014)

The ARL research fellows team data mined strategic plans, interviewed directors of collaborative projects, and created a taxonomy of the stories that were collected in the Regional Design Workshops.

Work Stream 2: Regional Design Workshops (October 2013–April 2014)

ARL member library directors, staff, and other stakeholders interested in the future of research libraries engaged in vision ideation and world building. Each of the 10 workshops had a different group of participants.

Work Stream 3: DC Design Studios (October 2013–February 2014)

A smaller group of ARL member library directors, staff, and other stakeholders engaged in vision ideation, world building, and the synthesis of all design activities into a draft System of Action. Participants in the Design Studios were asked to attend as many of the five studio sessions as they could. In addition to participants that were identified in advance, these studios also included individuals identified from the Regional Workshops as having unique and valuable perspectives.

The three work streams merged at a retreat held during the February 2014 ARL Board Meeting, where the vision and world building ideas were articulated. The Strategic Thinking and Design

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1   The research team consisted of four fellows: David Consiglio of Bryn Mawr College, Lori Jahnke of Emory University, Dawn Schmitz of the University of North Carolina at Charlotte, and consultant Elizabeth Waraksa.
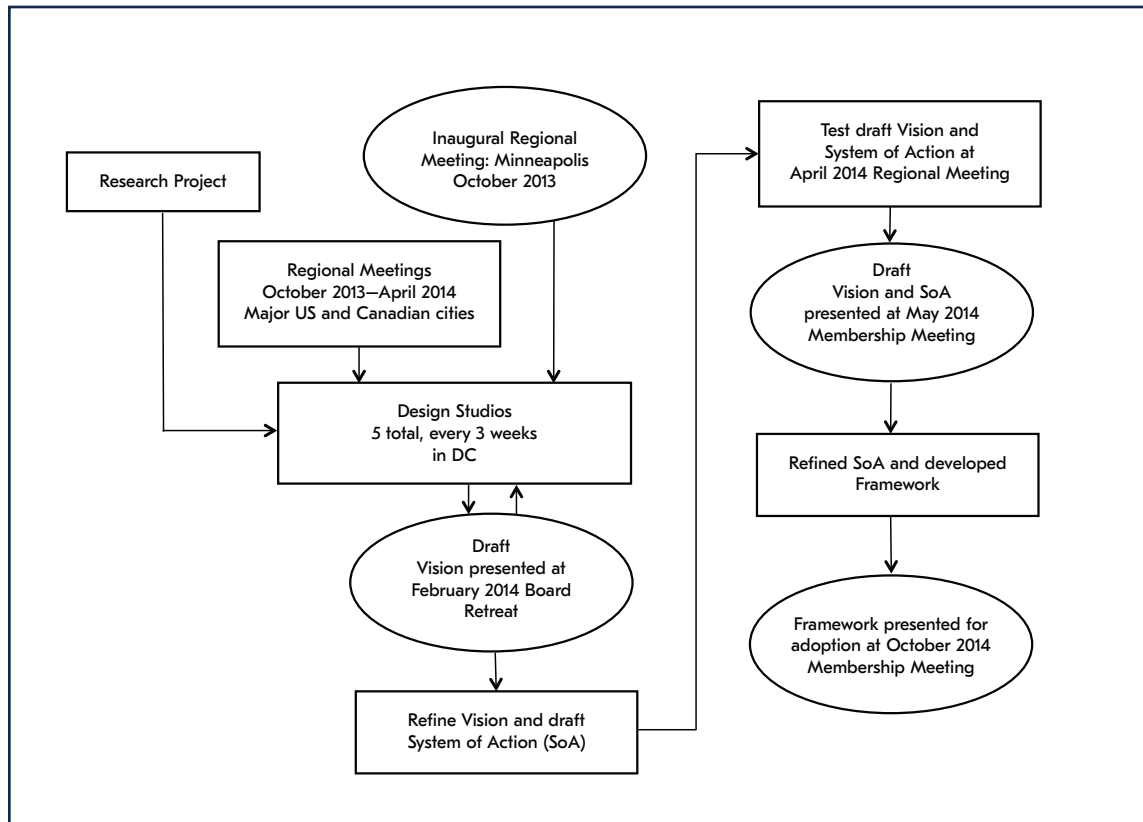
Figure 5 — Strategic Thinking and Design Process

endeavor was further elaborated at the May 2014 Membership Meeting
with the presentation of a six-part System of Action that will both
guide ARL forward and position it within the research ecosystem
as an engaged and valued partner in the future of research libraries.
The System of Action was revised in June 2014 by the ARL ST&D
Working Group and was presented for examination and adoption
by the membership at the October 2014 Membership Meeting.

The ARL Strategic Thinking and Design website (http://www.
arl.org/about/arl-strategic-thinking-and-design) was created to keep
the ARL membership and the library community apprised of ongoing
activities and discussions. Additionally, a series of video interviews
discussing the process and outcomes were posted to the website.

A couple of months into the Strategic Thinking and Design
process, Alice Pitt, Brian E. C. Schottlaender, and David Gift—three
participants in the Regional Design Workshops—shared their thoughts

on the significance of the process itself and on the potential outcomes (http://www.arl.org/strategic-design-interviews-nov-2013).

In preparation for the May 2014 ARL Membership Meeting in Columbus, Ohio, ARL interviewed Susan Gibbons, Tom Hickerson, and Wendy Lougee, three members of the Strategic Thinking and Design Working Group, asking them to reflect on the strategic process and how it will help ARL and research libraries build their desired future (http://www.arl.org/strategic-design-interviews-april-2014).

To fund the Strategic Thinking and Design process, ARL was awarded grants from the Institute of Museum and Library Services (IMLS) and the Andrew W. Mellon Foundation to support the various work streams that would not normally be part of a standard strategic planning process. The ARL Board of Directors approved the use of additional funds from ARL's agility fund to cover costs that were not covered by grant support.

Work Stream 1: Data Gathering and Analysis

The environmental scan included an analysis of library, IT, and university mission statements and strategic plans of ARL institutions; background research and interviews with key leaders from selected library collaborations (e.g., Digital Public Library of America, DuraSpace, Europeana, HathiTrust); a review of recent conference proceedings, publications, and reports from ARL and other relevant entities; and a qualitative analysis of stories related at Regional Design Workshops (Work Stream 2).

The Data Gathering and Analysis research team conducted an environmental scan of current issues and challenges in research libraries and higher education. Findings from the research team informed facilitators and participants in the Regional Design Workshops and the DC Design Studios (Work Streams 2 and 3), and assisted participants in developing recommendations for the future goals of the Association. The Data Gathering and Analysis work stream was supported by a grant from the Andrew W. Mellon Foundation. This work used conventional as well as new data-

mining techniques to find similarities and differentiators among research libraries, common trends and local adaptations.

Key Research Team Findings

The research team reviewed the strategic planning documents to determine the distinguishing characteristics that separate one research library from another. IT and institutional strategic plans were reviewed as complementary documents to provide context for the library findings. The analysis took two forms: a qualitative data analysis to identify strategic priorities, and text mining to identify commonalities in language employed. The results showed a high level of agreement of strategic priorities and language within each analytical category. These findings informed ongoing design meetings and suggested collaborative opportunities exist across many strategic priorities.

Additional components of the research team's environmental scan included a qualitative analysis of 125 of the stories narrated over the course of the Regional Design Workshops (Work Stream 2). This analysis resulted in two documents, a "taxonomy"—a structured classification—of the themes and concerns surfaced, and a taxonomy of the stories as a whole. To generate the taxonomy of themes, a research team member tagged each story with up to seven thematic tags as a means of capturing the story's major thrust. The tags were then tallied and visualized for each Regional Workshop and compiled as a whole. The results of the taxonomy revealed a particular focus on collaboration, as well as deep concern for library collections and faculty and student users. These results complemented the research team's analysis of strategic plans.

The taxonomy of story types takes a broader approach, dividing the stories narrated into "Stories that surface a problem," "Stories about productive steps taken" to address a problem, and "Cool stories" that present innovate ways to address library concerns. Stories identified as "Cool stories" were placed within thematic categories (Library-faculty/library-student engagement, Library space, Technology or data, Staffing, and Administration) and are included in the thematic

taxonomy report as these may serve as examples of successful strategies or food for thought for research libraries facing similar issues.

Driven by the emergence of collaboration as a critical theme in the ST&D process, the research team conducted background research on major collaborative projects in the research library world (e.g., Digital Public Library of America, DuraSpace, Europeana, HathiTrust) and telephone interviews with pivotal persons involved in the formation and ongoing work of those projects. Research team members interviewed seven key individuals to gather their insights as to what makes for successful collaborative inter-institutional projects. At the conclusion of the interview process, the research team compiled an anonymous set of "Words of Wisdom on Collaborative Projects" that presents a wide-ranging collection of practical and philosophical advice for institutions considering initiating a multi-institutional project. The results of Work Stream 1 are included in the Appendices.

Work Stream 2: Regional Design Workshops

The second work stream of the Strategic Thinking and Design process, the Regional Design Workshops stream, was developed and led by Ann Pendleton-Jullian with the goal of surfacing people and ideas that would inform Work Stream 3 (the DC Design Studios), and would inform and be informed by Work Stream 1 (Data Gathering, Analysis, and Stories Taxonomies). These sessions, a total of 10 held at venues throughout the US and Canada, were open to interested librarians and individuals from higher education from the regions in which the meetings were held. The meetings included librarians from non-ARL libraries, as well, in order to capture a picture of the context and communities within which research libraries are engaged. Additionally, ARL staff members were invited to participate in the meetings and to report their experience on the ARL website (http://www.arl.org/strategic-design-meeting-reports). The majority of these meetings were supported through a grant from the Institute of Museum and Library Services.

The process for the Regional Design Workshops consisted

of five different components that were used selectively, given where the team was in the process at the time:

- Stories: "sharks in the water" and "cool cats"
- Framing the design problem: context and goals
- Envisioning charrette for imagining what the research library could be in 2033
- World building to give detail to what the research library could be in 2033 across multiple domains
- Designing "artifacts"[2]

Each Regional Design Workshop consisted of a series of creative exercises in which each participant was asked to contribute thoughts, ideas, and visions for the future of research libraries through considering the question "What is the role of the research library for the ecology of knowledge in 2033?" Pendleton-Jullian led the participants through several steps that provoked and

Figure 6 — Sharks and Cool Cats

2   An artifact is anything that is a product of its environment. In this case, it is a product of the research library of the future. It could be an object, or service, or intervention, or app, or anything that exists because of, and to assist the functioning of, this context. In this exercise, the teams were asked to design an artifact that would be found in the year 3000 as something coming from the research library in 2033. Artifacts are about details. They represent much more than what they are but they are easier to design, as implying larger systems, than designing the systems themselves.

scaffolded imaginative activity, and then tied this activity to the diversity of expertise and experience in the room to blend both imaginative and pragmatic responses to this question.

For the first exercise, participants were asked to collect, curate, and tell two kinds of stories based on their professional experiences: "Shark in the Water" and "Coolest New Thing" (or "Cool Cat") stories (Figure 6). Participants broke into groups of three; each individual told one of each kind of story to their group; and then the group decided on three stories (of the six) to tell back to the full workshop. The only other criteria were that they had to be stories—not analytical observations or theories; as stories, they had to be personal, entertaining, and able to be told in two minutes within the full storytelling session. The storytelling exercise was designed to surface critical issues that research library directors are facing today and innovative work already begun. Stories—as opposed to analytical observations or theories—capture the texture and detail of these issues and innovations in their contexts.

The second part of the Regional Workshops was a framing of the design problem by Pendleton-Jullian. The specifics of this framing can be found in Appendix A (sample PowerPoint presentation of the ST&D process, work, and results) at the end of this report. The framing was intended to set the context of the problem, specifically asking, "What are we aiming at?" This question kept the focus on envisioning the future instead of trying to ameliorate, one by one, the challenges that research libraries face—challenges that are a product of the friction between the research libraries' historical evolution and a rapidly changing context; or accept the inevitable "disruptive technologies" narrative; or seek a silver-bullet technological solution to ameliorate challenges, problems, and disruptions. The framing acknowledged these elements as important to keep in mind, but it was specifically articulated to expand thinking to a larger context—the 21st century as the dawn of the digital and networked age and to create a space of permission for the participants to imagine a desired future.

The third exercise in the Regional Workshops was the envisioning charrette, in which small groups of four or five participants were asked

to envision the research library of 2033 in words and graphics and then share their work with the larger assembly. A charrette is an intense time-constrained burst of creative activity. The ARL ST&D charrettes were 45 minutes long and they were done on large sheets of drawing paper mounted to the walls. The charrettes were conversations with pens that were meant to record as many ideas as possible from the most pragmatic to the most audacious. Participants were given permission to not seek consensus. In fact, difference and even friction were encouraged. Each participant had a different colored pen and rule #1 was that every color had to appear in the work of the group. There was no single scribe for a group. Sometimes disagreement led to the fracturing of a group, with each subgroup staking out different territory on the wall-drawing real estate they had been given; but each time, as work progressed, words and arrows from the work of one subgroup would find their way across the divide stitching the ideas back together. This was always the most productive work.

After the 45 minutes of creative work, each group reported out and a full group conversation was orchestrated around the work. This was not a show-and-tell but, in the manner of architectural critiques, a conversation aimed at interrogating the question at hand using the work as content for that conversation. Common language began to appear; certain themes emerged but with disparate language that represented diversity of specifics within commonality of concerns; and anomalies that represented highly novel ideas, which would normally have been dismissed because of their unique/strange-ness, were surfaced for discussion.

As the Regional Design Workshops progressed, behind the scenes, every wall "drawing" was photographed and every word and sketch from these "drawings" was transcribed in order to look for patterns in the themes and trends, and to discover possibly productive anomalies. These were carried forward from workshop to workshop. They were introduced into the framing sessions and the group critiques at the end.

By workshop #4, the ST&D team was able to collate and sort the many tactical ideas and themes into three separate categories: (1) those that were obvious and necessary to all; (2) those that

had emerged in various versions and represented essential and fundamental work to do; and (3) those that were novel ideas, less tactical, more systemic, usually working off of metaphor and narrative.

By workshop #5, the team was able to collate all of the ideas into three coherent vision propositions framed as "what-if?" statements. Each proposition had emerged from a different recurring concern or theme: one was about the library's role relative to information; a second about its legacy as a social, intellectual space; and a third
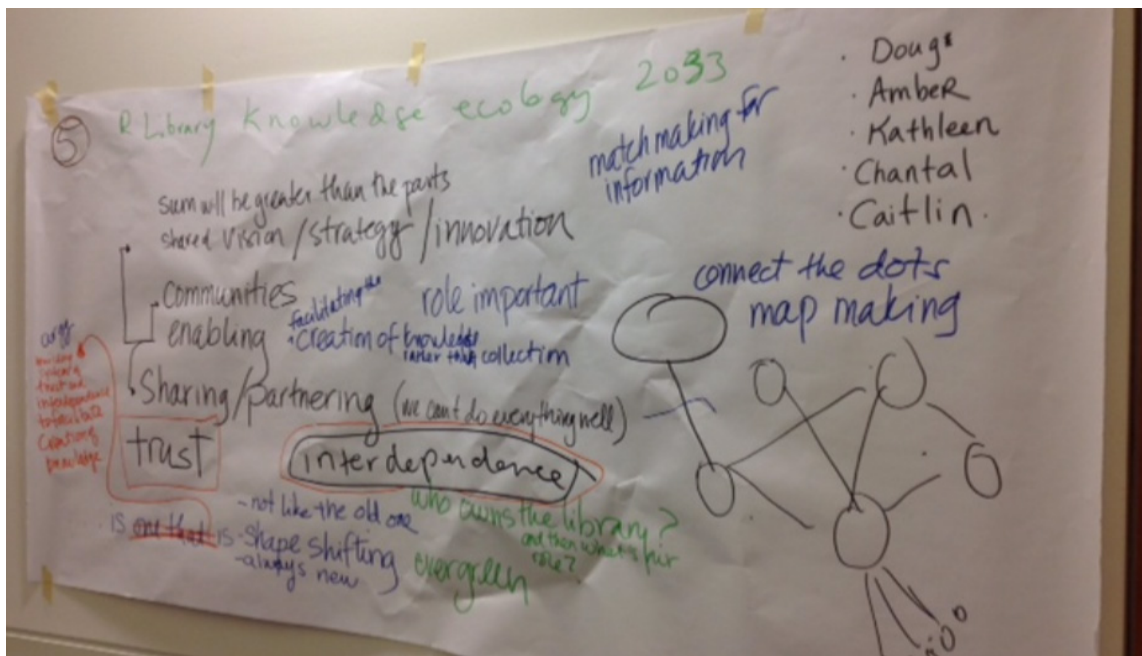
Figure 7 — Work from a Regional Workshop

about its operations. They were different, but not incompatible, propositions that participants could then begin to world build around.

World building begins with "what-if?" propositions or "what-if" scenarios. Participants in the ARL ST&D process had these three "what-if"s to play with. In the world-building segments of the workshops, beginning with Regional Workshop #6, participants were again divided into teams of four or five for conversations with pens (Figure 7). Each group picked one of the three "what-if?" propositions

and collectively built out their image of that 2033 research library scenario across multiple domains. To do this they asked a range of questions around: content, services, people, space, and budget models. The iterative nature of this process allowed for the emergence of provocative questions, trends, and assumptions (a.k.a. "logic points").

World building in the workshops fed into world building in the DC Design Studios (stream #3), and by Regional Workshop #8 and DC Design Studio #4, the three "what-if?" scenarios began to merge into one rich and coherent world build.

Work Stream 3: Design Studios

As noted before, the ARL ST&D process used an alternative approach: world building a highly textured, dynamic, living model of the future research library as part of a learning ecosystem and then creating a System of Action to shape emergent activity towards that future. Informed by an enlightened build, one can imagine concrete components of that future—a federated collection of collections, for example—as a System of Action that closes the gap between the present and the future one wants to shape. The two major activities of the DC Design Studios were world building— scaffolding or building out the image of the research library of the future across multiple domains related to content (collections and their use, acquisitions, local specialized content), services (library services, personalization of content for use, sensemaking, new technologies), people (students, faculty, researchers), space (physical space, social space), and budget models—and creating a System of Action for the future of ARL and its members.

The final goal of the DC Design Studios was to culminate work in the design of the ARL System of Action, which took place at a retreat in February 2014.

While the Regional Design Workshops described above were single "one-off" workshops of larger groups of individuals, the DC Design Studios were meant to consciously build on each other and therefore were smaller groups of sustained participation

by consistent partners over the majority of the sessions. While the Design Workshops were meant to be expansive—collecting as many ideas, experiences, insights, and concepts as possible from diverse participants—the DC Design Studios were meant to be synthetic—finding and designing convergences.

The DC Design Studio work stream was a creative and iterative process that used all of the methodological components of the Regional Workshops with the addition of a full group session to design the System of Action. The Design Studios combined the activities of storytelling, conversations with pens, and critique with free-form speculative conversations that were captured on video. This process nurtured both divergence and convergence in a spiral of increasing richness. New ideas were generated and integration was achieved through collecting divergent provisional ideas and directions of inquiry.

The entire design process—all three streams—worked by incorporating new information as it was introduced along the way, through:
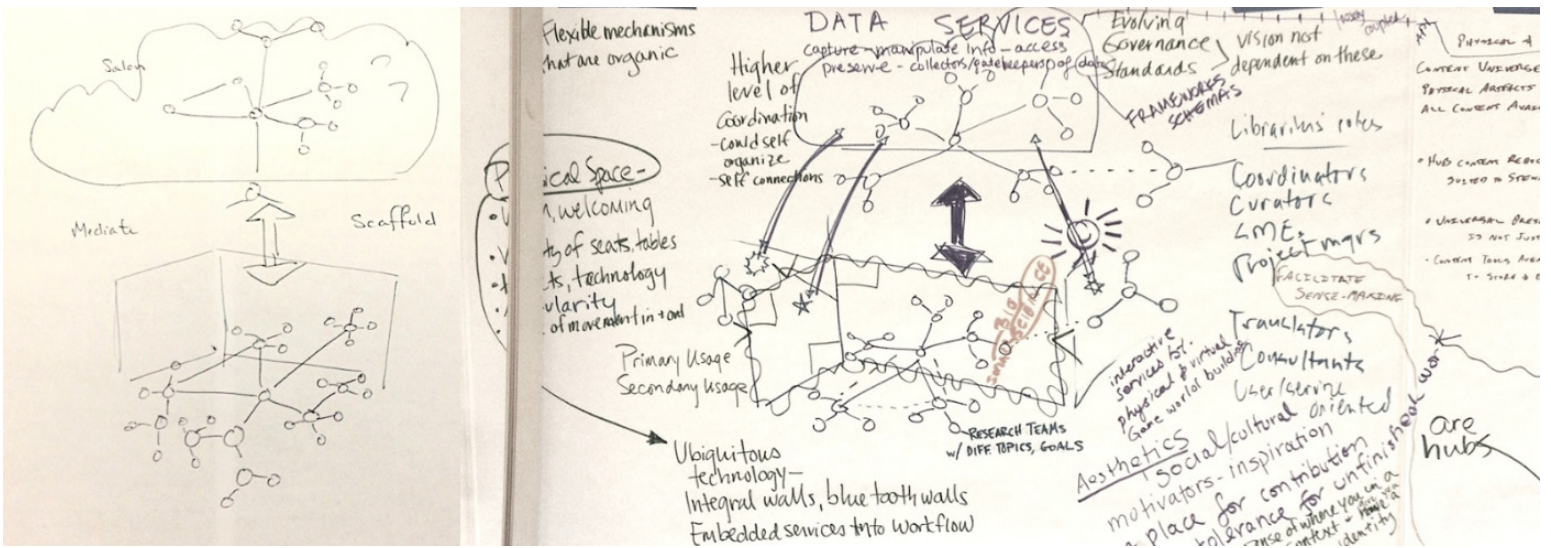
Figure 8 — Work from a Design Studio

- Analysis of the existing state of the research library and innovative work that has been done in the past
- New questions that are raised by provisional what-if scenarios
- Asking what the relationship of past work is to the emerging vision and goals
- New stakeholders who were pulled into the process

Information gleaned in work streams 1 and 2 informed the DC Design Studio team that consisted of a core group of 12–15 members who were identified at the start of the initiative by the Strategic Thinking and Design coordinating group and the ARL Board of Directors, as well as several stakeholders who were invited from the Regional Workshops to join the process as it evolved (Figure 9). What follows in the next section (Section 8) is a summary of the vision, concepts, and world building that emerged. Further remarks on the vision as it relates to ARL, as well as the System of Action components developed in the last phase of the design process, are presented in the System of Action section (Section 9). Select illustrations of the work produced in the design meetings can be found in the Appendices.

Regional Design Meetings

Prototyping stories **0**

Vision, stories + vision goals **1**

Stories + vision charrette **2**

Stories + vision charrette **3**

Design Studios

Stories + vision charrette **4**

1 First conversation

Stories + vision charrette **5**

2 Worldbuilding starting

Worldbuilding **6**

3 Worldbuilding

Worldbuilding **7**

Worldbuilding 3 "what-if"s **8**

4 Worldbuilding 3 "what-if"s

5 Worldbuilding 3 "what-if"s, System of Action

Retreat 2/20/2014

6 System of Action

Figure 9 — Timeline of Early Stages of the Process

8
The Future of the Research Library Vision and Design in Detail

When Pendleton-Jullian asked participants in the Regional Design Workshops and the DC Design Studios to answer the question, "What is the role of the research library for the ecology of knowledge in 2033?," she was giving the group permission to world build—bringing participants into a "problem space" where they were asked to collaboratively engage in deep reflection, thoughtful suggestion, and speculative design of the research library of the future. Out of these iterative and interleaved design sessions, three critical and provocative questions surfaced that served to focus the work:

- In an era of instantaneous, effortless access to information, what is the role of the research library?[1]
- What is the symbolic legacy of the research library and how do we update it for the 21st century?
- How do we rethink the economics of the research library so that it can optimize its own evolution?

These three questions dealt with different roles of the research library: the first with its role relative to mediating information and the individual; the second with the research library as a social space and a place that scaffolds intellectual freedom, a "third

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[1]   This question emerged in the Regional Workshop at University of Southern California, originally as a throwaway question of exasperation: "Why are we discussing the research library's future when we have Google Glass?"

place" and the "fourth estate";[2] and the third question recognized the need for a new operational model—while it was aimed at the economics of the research library, it was meant to catalyze thinking about new relationships, not just address budget concerns.

These three questions evolved into three "what-if" scenarios for the future of research libraries: What if the research library of the future is:

- an augmented information lens?
- a convener of "conversations" for knowledge construction?
- a global entrepreneurial engine?

Each of these "what-if" scenarios generated a cascade of provocative questions across diverse domains.[3] In addition to the foundational scenarios, design speculation and conversation surfaced assumptions that participants held and trends that they were able to articulate through discussion. These were taken as logic points or assumptions for world building the research library of the future and the ARL System of Action. These logic points are described in Section 3 of this report.

Working from these assumptions, and the recognition that not just the library, but the university, of 2033 will be very different, the DC Design Studio participants honed in on the vision that opens this report:

In 2033, the research library will have shifted from its role as a knowledge service provider within the university to become a collaborative partner within a rich and diverse learning and research ecosystem.

And if one thinks about unbundling libraries from single

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2   The "third place" is a term introduced by the sociologist Ray Oldenburg in the early 1990s; it refers to a space that is distinct from domestic spaces and from work spaces. Third places have been spaces in which a community interacts socially to develop and retain its sense of cohesion and identity.

The "fourth estate" refers to the independent press or media, which, sitting outside of the established power structure, is meant to provide an independent voice of analysis and critical reflection on the actions of the other three estates: the clergy (first estate), the nobility (second estate), and commoners (third estate). Although contemporary society no longer conforms to a medieval hierarchical structure, the same concept of an independent voice that comments on the actions of the established power structure is even more necessary today.

3   See Section 7, "Process in Detail," sub-section "Work Stream 3," first paragraph for a list of these domains.

Augmented Information Lens

Mega-Library
Ecosystem

Open
Symposium

Knowledge Trust
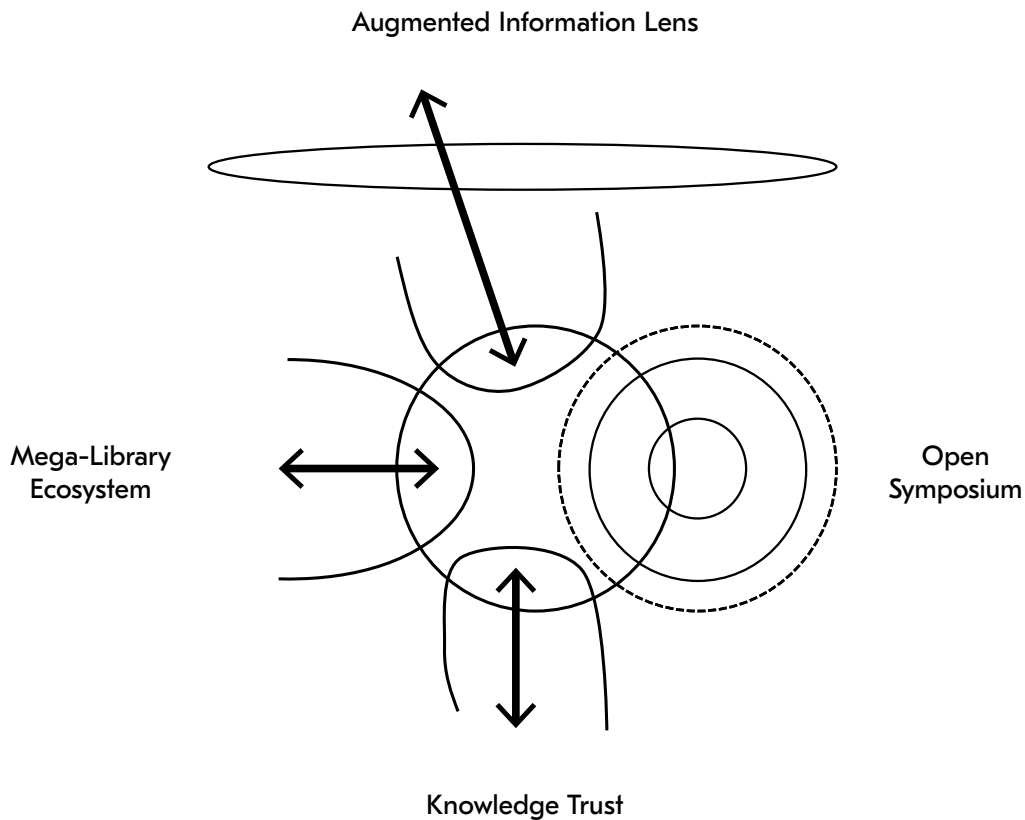
Figure 10 — Library Services as Four Layers of Interaction

sites—single universities—responding to the trend of exponentially increasing connectedness, then the research library of the future can take on new roles and partners, becoming an Augmented Information Lens, an Open Symposium, a Mega-Library Ecosystem, and a Knowledge Trust (described in Section 3).

This multifaceted, expansive, and collaboratively-produced articulation of the future of research libraries, and the vision and the world building that emerged from it through the iterative design process (for further detail see Appendix A), allowed for the final stage of the Strategic Thinking and Design process, the System of Action, to take shape. The System of Action initiatives proposed for ARL are elaborated in the next section.

9
A System of Action

A key component of ARL's Framework involves catalyzing action within the broader context—or ecosystem—of higher education. In her forthcoming book, *Design Unbound: Designing for Emergence in a White Water World*, Pendleton-Jullian and her co-author, John Seely Brown, describe a System of Action as "made up of interrelated components that affect the way people do things. These components are also interdependent. A change to one component affects the response of all the other components. And they are interactional, meaning that single actions or events can reverberate throughout the entire system." It may be easier to conceive of ARL's investments in the future as individual initiatives within discrete systems. However, each initiative affects different parts of the research library ecosystem in ways that are ultimately interrelated. Strategies to address the System of Action have a critical characteristic—they scale.

Issues of scale are threaded throughout the initiatives proposed for initial attention and investment of ARL. Some initiatives, such as SHARE, are already in play or in exploratory phases within other organizations. The domains for each initiative within the System of Action reflect areas for collective action as well as areas for individual institutional attention. ARL both catalyzes the collective response and enables the individual institutional response.

Several initiatives are proposed as a focus for the near future (Figure 11), recognizing that, over time, these initiatives will transform, expand, and give birth to new initiatives as

ARL Roles	Contexts for Research Libraries	**Essential Capacities**
	——————→	······················
Inspire, introduce, catalyze	Augmented information lens for individuals	**Advocacy and Policy**
Broker, connect, mediate	Open symposium within academic community	**Assessment** **Communications and Marketing**
Facilitate, scaffold, structure, support	Meta-library ecosystem for powerful capacities	**Issue Incubator** **Membership**
Shape, design, influence, build		**Partnerships**
Manage, run, and/or spin-off	Knowledge trust for society	

Extending beyond the Library Context

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Collective Collections
Deep and wide platforms for ensuring knowledge resources are available

Scholarly Dissemination Engine
Promoting wide reaching and sustainable publication of research and scholarship

Libraries That Learn
Integrated analytical environments to mine data for transformation

Within Our Community

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ARL Academy
Fostering and nurturing creative, effective, and diverse research library leaders and leadership

Innovation Lab
An incubator for new ideas and seeds of change

Figure 11 — Framework

the System of Action evolves. They are initiatives in the literal sense of initiating—of setting the Association in motion.

Collective Collections

ARL will motivate the creation of deep and wide platforms for ensuring that knowledge resources are accessible and sustained through federated networks of print, digital, data, and artifactual repositories, created and managed by collectives of institutions (e.g., HathiTrust) in North America and beyond. The SHARE initiative is a key part of this strategy, operating at the network level and unifying distributed resources. In all cases, the work of supporting the most effective access, retention, and preservation will take place through a collective investment that respects and supports local interests while leveraging collective collections. ARL's work will not only seek to guide the creation of governance, shared protocols, best practices, trusted relationships, and financial models, but will in some cases extend to convening parties to pursue the creation of new entities that conduct work in this space.

Scholarly Dissemination Engine

In order to promote wide-reaching and sustainable publication of research and scholarship, ARL and its member libraries will mobilize efforts to achieve collaborative infrastructure and financial models for publishing. These efforts will ensure that the publications produced retain and enhance rigor and quality, embed a culture of rights sympathetic to the scholarly enterprise, and use financial models that are sustainable. These publishing efforts will focus on the widespread and critical dissemination of scholarship as a permanent record of research institutions.

Libraries That Learn

ARL-organized enterprises will incubate the design, funding, and building of coalitions of libraries that make decisions through evidence-based investments enabling the creation of new concepts, theories, and operational designs in support of research and learning environments.

These projects will seek to employ integrated analytical strategies that will mine data for guidance in transforming those environments.

ARL Academy

ARL will foster the development of an agile, diverse workforce and the inspiring leadership necessary to meet present and future challenges. Requisite expertise and skills will come from new as well as traditional domains, stimulating opportunity and challenging existing research library culture. Coordinated action within ARL will continue to focus on critically important diversity initiatives and leadership programs. To ensure the development of the talent and expertise necessary for future success, ARL will seek partners in establishing a formal, potentially credentialed curriculum for library professionals and for those new to libraries. ARL could further explore partnerships to develop agile research nodes or centers of excellence that would engage leading academic librarians and faculty to take on research and develop projects.

Innovation Lab

ARL will develop an Innovation Lab, an incubator for new ideas and the seeds of change. A fluid, multi-institutional enterprise, the Innovation Lab will take the form of coordinated, collective activity that supports principled opportunism regarding new developments. ARL, through its coordinating role, may secure new capital and use investment to spur innovation. The partnering institutions will seek ways to organize their collective capital, funding projects that, when collected and curated, are greater than the sum of their parts. Strategies for the Innovation Lab may include: events addressing cutting-edge questions and technology; documenting best practices; advising institutions with regard to projects; supporting impromptu innovation labs and experiments; gathering, holding, and disbursing funding for new ventures in publishing and archiving; and scouting to keep abreast of new innovation or best practices. This effort will create a culture of

innovation, learning from partial successes and failures as necessary in establishing a new era of creative R&D in research libraries.

Open Symposia[1]

ARL will orchestrate and then scaffold the prototyping of a suite of a half-dozen or so libraries as Open Symposia that provide new opportunities for: mega-collaborations that work on projects related to big questions, especially those that are directly aided by specific local resources/expertise and relevant to challenges that cross the suite of libraries; and conversations both within home universities and across the suite of libraries that lead to new insights, build new knowledge, and potentially new fields.

This suite of Open Symposia will: help disciplines update themselves; help individuals, teams, and disciplines to forge new intra- and inter-institutional partnerships; and scaffold the building of agile and robust mega-institutional networks. To do this, the Open Symposia will focus on developing a new type of physical and virtual space with embedded technologies that can embody knowledge (visualization labs, video and audio capture, modeling things and systems) and facilitate conversations, providing sensemaking and thing-making tools for everyone, and orchestrating partnerships, conversations, projects, and innovative teaching.

Prototyping will start with identifying a constellation of libraries that have a reason to work together, each designing and implementing an Open Symposium locally in their own way.

Advancing the System of Action

The System of Action initiatives will be developed through an iterative process that engages members and other experts. Each initiative working group will engage in the

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1   Since the writing of this report, the Association decided not to pursue the Open Symposia initiative as part of the System of Action. As of going to press in June 2016, the System of Action includes five initiatives: Collective Collections, Scholarly Dissemination Engine, Libraries That Learn, ARL Academy, and Innovation Lab.

following steps to create an implementation plan:

- **Identify a design team** that includes those invested in working to conceptualize a prototype, key experts in critical areas, and creative/imaginative individuals who will combine vision and pragmatism.
- **Create a provisional "brief,"** a document containing the guidelines, conditions, and constraints that contextualize the design process.
- **Identify precedents** of similar and analogous entities, including analysis of similarities/differences, successes/problems, and innovations.
- **Revise the brief.**
- **Design workshops and critiques.** Design processes must incorporate considerations of who will lead a prototyping, as well as institutional support, funding costs and avenues, and implementation and operations plans.
- **Secure funding and designate staffing.**
- **Outline a review and accountability process.**

20th Century   **2005**   **2015**

| Structures and Functions | → | Strategic Themes and Directions | → | Collaboration and Collective Action |
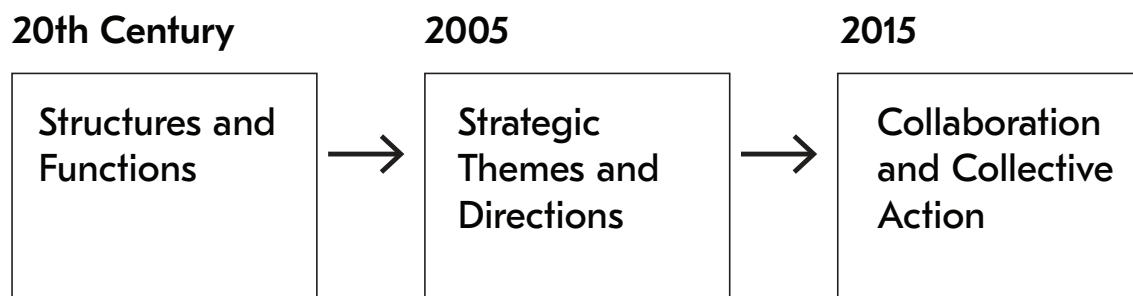
Figure 12 — Evolution of ARL/Libraries

Implementing and Resourcing the Framework

While the Framework takes ARL in new directions, there are existing resources and capacities that can be transitioned to the new focus (Figure 12). A combination of the organization's existing operating budgets and Agility Fund, reimagining of staff roles, and judicious use of reserve funds, along with possible grant-funded activities, can support and enable these transitions. The System of Action initiatives will require the development of financial and sustainability plans as part of the process.

A Board-appointed Transition Team has provided assessment of the existing committee structure and recommendations on new structures to engage the membership and move the Framework forward, including the creation of a Coordinating Committee. The recommendations of this Transition Team were made available for the Association's Fall 2015 Meeting and are now online at http://www.arl.org/storage/documents/STaDTT_Final_Report.2015.07.17.pdf. Concurrently, ARL leadership and staff developed a strategy to continue the essential capacities while reconceiving and adding capacity to advance new directions.

In the spirit of the Strategic Thinking and Design process, ARL should be agile, flexible, and opportunistic—i.e., what is written here is only a framework, not a blueprint, subject to thoughtful revision while proceeding with fiscal prudence and working to ensure the enthusiastic adoption by the membership.

10

In Transit: The Strategic Thinking and Design Transition Team and Its Work

How do you go from the promise of the Strategic Thinking and Design process to the reality of moving the organization to put its strength behind the implementation of its new strategy? The answer for ARL was the development of a small Transition Team made up of highly respected leaders, led by Brian E. C. Schottlaender of UC San Diego, a former president of the Association; Anne Kenney of Cornell University, a former ARL Board member; and Martha Whitehead of Queen's University in Ontario. The Transition Team was staffed by ARL executive director Elliott Shore and deputy executive director Sue Baughman and was advised by the 2014–2015 president of the Association, Deborah Jakubs of Duke University. Ann Pendleton-Jullian served in an advisory role.

The Transition Team developed a set of principles to guide its work:

Principles and Assumptions That Guided the Transition Team

- With the Board's concurrence, the complete transition to the Strategic Framework should be in place before the end of 2015 and the Association should start to implement some parts of it as soon as possible.
- Members need to see themselves in the new structure and be able to identify the role/roles that they might play—receptor, facilitator, leader, etc.

- The transition process should be transparent and open, with explicit descriptions of—and defined charges for—the various bodies that might be formed, including: standing committees, initiative design teams, and oversight group for the transition
- Standing committees will no longer be large committees.
- Committees will be tuned towards enabling the System of Action—they will no longer work independently of the larger goals of the Association but rather see their work as furthering and supporting the System of Action process. ARL library directors will be appointed to committees based on their expertise, experience, and interests.
- The System of Action will be reviewed on an ongoing basis, with a complete review in 2017 (which coincides with the end of the five-year term of the current executive director).
- The transition plan will include a lightweight structure with enough coordination to provide support at the appropriate times and where needed.

As one sees in this articulation of principles and assumptions, the ethos of the Strategic Thinking and Design work has been fully assimilated by the Transition Team and the Board. The importance of this crucial step of purposeful implementation cannot be underestimated—the tendency to put all of one's efforts into the work of imagining the future and less into working to change the way an organization acts was successfully resisted by the Association through this transition process, which examined the August 2014 *Report of the Association of Research Libraries Strategic Thinking and Design Initiative* closely to develop a transition plan.

Goal of the Proposed Organizational Restructuring of ARL

As articulated in the August 2014 report, the vision of the research library in 2033 is one in which "the research library will have shifted from its role as a knowledge service provider within the university to become a collaborative partner within

a rich and diverse learning and research ecosystem."

The organizational restructuring proposed below is intended to position ARL to foster library innovation within this ecosystem, and to be more agile, flexible, and adaptable in a rapidly changing environment. The proposal below is for a looser, networked structure that facilitates the conception and sharing of new ideas and encourages collaborations across institutions and sectors, while at the same time providing some structured support that will help transform ideas into concrete projects and outcomes.

ARL's proposed organizational framework has been designed according to the following principles:

- **Agility:** there will be short-term design teams and project groups that will brainstorm and develop new ideas (instead of standing committees for determined strategic directions).
- **Coordination:** organizational layers and processes will be minimized, but there will be clear pathways for communication and decision making through a coordinating committee and/or the Board.
- **Engagement:** all ARL members will have opportunities to engage in the framework and action components, whether in the role of receptor, informer, participator, facilitator, or leader.
- **Excellence:** groups charged with particular portfolios of responsibilities will be populated by those most engaged in, knowledgeable about, and able to carry out those responsibilities.
- **Support:** there will be standing Board committees, working closely with staff, related to the "essential capacities" that enable both collective and individual action. The new structure will leverage ARL program staff and their strengths.

The Transition Team's work led directly to the Association's Fall 2015 Meeting, which was an almost complete departure from past meetings, although there were hints of this new direction in the Spring 2015 Meeting in Berkeley, where discussions among those interested in pursuing one or more of the rubrics of the System

of Action were held. The Fall Meeting was organized around the System of Action and the ways in which the enabling committees would be engaged in this work. The meeting featured lightning-round talks—a "hunchery"—that presented five ideas intended to spark innovation, an in-depth exploration of inherent bias, and meetings of the Coordinating Committee and the Financial Strategies Task Force, both focused on moving to action.

The meeting saw the Association's first use of "clickers" to gauge interest and movement on the part of the membership—the meeting itself was designed to escalate information about and interest in the work of the Transition Team and design teams, and ended on a note of high drama: when the second day began, 61% of ARL member representatives indicated via clickers that they were excited about the direction in which the Association was moving; at the end of the meeting, that same day, 79% of the membership answered the same question in the affirmative.

One could likely trace the rising enthusiasm on the part of the membership to the growing dynamism in the sessions that asked member representatives to think carefully about how they would interact in this new framework. A session on "Grand Challenges and Wicked Problems"—organized by the Libraries That Learn Design Team—was the crucial turning point in the meeting: it served up to the membership the System of Action as a vehicle for affecting the ecosystem in ways that considered the library in context and leveraged the library's resources. Working alone and in small groups, each participant had a chance to reflect on the largest issues confronting them.

At the Fall 2015 Meeting, it was apparent that the process set into motion a year and half earlier engaged the membership at multiple levels, developing a language that had become internalized and was used to move from process to action. In wrapping up the meeting and engaging the membership in a preliminary prioritization of next steps, Brian Schottlaender had a similar effect on the members as John Seely Brown had in October of 2012—the change that was called for was called into being.

11
Conclusion

The prologue to this process is completed—and given the nature of the process, the implementation started happening while the community was still engaged in world building. For example, SHARE—the ARL-AAU-APLU-COS effort to make research widely accessible, discoverable, and reusable—turned out to be an exemplar of the kinds of work involved in a System of Action initiative that exists in and beyond the library space. SHARE works toward the goal of establishing Collective Collections. The ARL Academy and the Innovation Lab have already made their power known in conversations with ARL Leadership Fellows and with funders. The need for new metrics surfaces often in conversations in the field and could be one aspect of Libraries That Learn. The work of the ARL-AAU Task Force on Scholarly Communication to move the academy towards innovative, sustainable, affordable forms of scholarship will be one component of a Scholarly Dissemination Engine. This is just the beginning of the first chapter—working towards a new set of roles for ARL should lead research libraries and higher education forward in unanticipated ways.
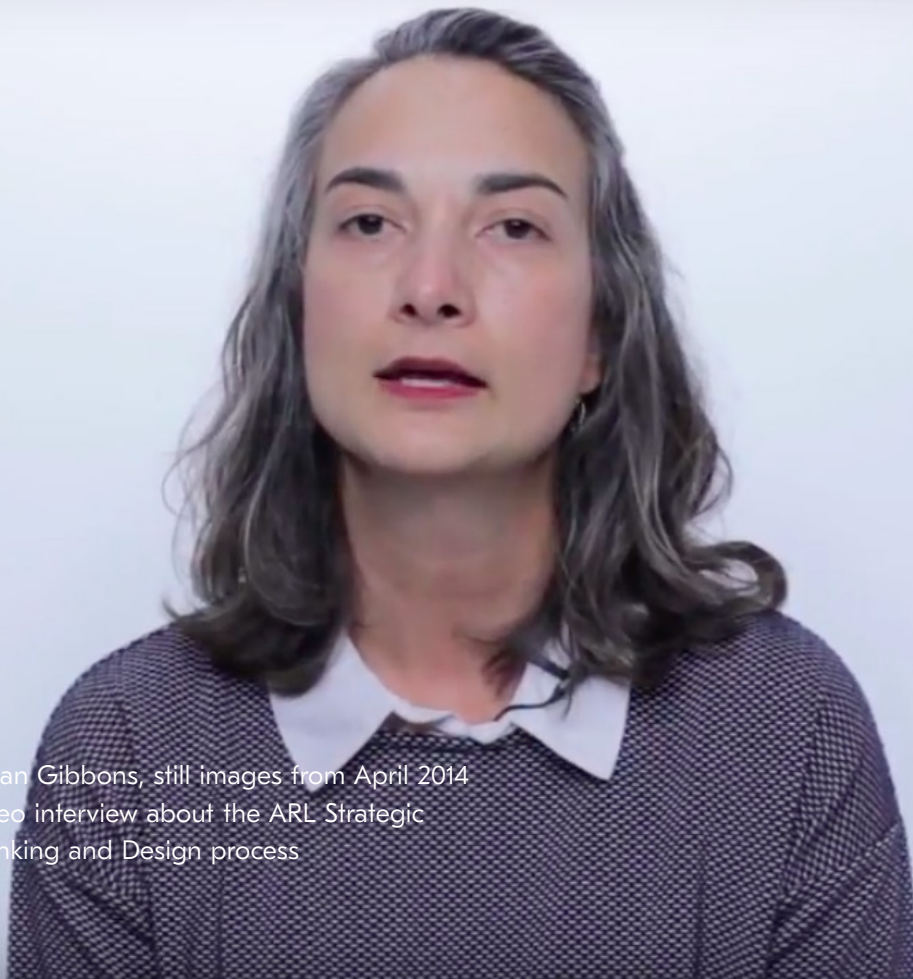
Susan Gibbons, still images from April 2014
video interview about the ARL Strategic
Thinking and Design process

Appendix A: Analysis of Themes Emerging from Design Meetings

The following three spreadsheets provide examples of the analysis performed by the Strategic Thinking and Design Work Group to surface themes and a draft Vision from the Design Studios and Regional Design Meetings.

Group 1	Given/Real	Values	Critical	Imagined
Content	Ownership analog/published/gatekeeper	trust selection Preservation Stewardship	We don't always know what's important. Ownership not necessary	Access Unvetted types/formats (e.g. YouTube)
Services	one on one, low touch, no follow thru, we don't do your work for you. "The Desk"		subject expertise scalable?	collaboration billable hours (less experts, more expensive) $
People	inward looking	lifelong learning engage relationships outreach	flexible, poignant management. Transition, Integrated, multifaceted	Capture worth. Agile
Space	Stacks Social	hub of Interaction Co-learning	creativity	
Facility				
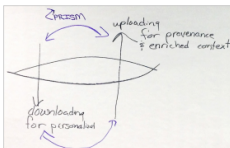
1. Design Studio #1, Washington, DC, October 29, 2013

View or download this file: http://www.arl.org/storage/documents/
design-studio-no1-matrices-29oct2013.pdf

2. Collation of Ideas from Regional Design Meetings as of November 29, 2013

View or download this file: http://www.arl.org/storage/documents/
collating-design-mtgs-29nov2013.pdf

3. Regional Design Meeting, Philadelphia, January 23, 2014

View or download this file: http://www.arl.org/storage/documents/design-mtg-no8-23dec2013.pdf

Appendix B: Text Mining of University, Library, and IT Strategic Plans

In the initial stages of the project the research team used text mining to better understand commonalities among the strategic plans and to help identify distinctive areas within the corpus of documents. The team used this information to help guide further areas of inquiry and discussion, such as a close reading of a sample of the strategic plan documents (Appendix E) and the interviews of leaders of collaborative projects (Appendix F). ARL staff gathered a total of 251 strategic plan documents from ARL member institutions including the university (n=92) and IT (n=64) plans, in addition to the library strategic plans (n=95). All documents were converted to text files and then analyzed using RapidMiner. Given the size of the corpus analysis including all terms in the documents proved unwieldy so the research team developed a list of key terms and phrases that could be extracted from the documents and analyzed as a dataset (Table 1 and Table 2). The list of terms was based on discussions observed during the design studios and the regional meetings, as well as discussions among the team members. A few selected summary tables and figures are included here. A more detailed view of the data as an interactive database is on the ARL website at http://www.arl.org/about/arl-strategic-thinking-and-design/interactive-strategic-plan-db.

Table 1. List of terms and phrases extracted from the strategic plan documents. "Document Occurrences" indicates the number of documents in which the term appears, while all other figures represent the number of times the term appears within the group indicated

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
academic freedom	33	23	25	3	5
administration	1734	169	895	148	691
agile	44	26	14	12	18
archive	219	78	21	143	55
archivist	13	10	2	11	0
art	890	105	795	22	73
assess	1591	186	794	386	411
backbone	37	16	5	0	32
backup	86	29	9	2	75
big data	21	11	8	0	13
bioinformatics	18	8	8	3	7
biology	197	53	125	42	30
biomed	95	36	71	17	7
bioscience	32	9	30	1	1
biotechnology	41	19	30	7	4
book	194	75	58	121	15
brand	41	15	14	9	18
budget	884	146	345	220	319
budgetary	64	35	39	13	12
capital	462	113	320	41	101
carbon footprint	15	10	12	1	2
catalyst	35	28	22	6	7
chargeback	17	7	1	0	16
China	25	18	19	5	1
civic responsibility	16	11	15	0	1
client	205	41	13	41	151
cloud	268	35	4	10	254
CMS	15	10	4	1	10
collaborate	2723	217	1153	682	888
collect	1642	148	201	1339	102
commercial	228	79	133	54	41
common	171	37	80	51	40
commonwealth	69	11	49	11	9
compliance	221	57	57	13	151
confidential	21	14	1	5	15
conservation	128	38	69	51	8
consume	106	40	18	54	34
consumption	59	27	25	8	26

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
content	760	139	102	307	351
cooperate	234	80	98	63	73
copyright	107	30	5	82	20
corporate	151	51	108	19	24
cost	1389	146	484	141	764
create	2254	207	1204	416	634
creation	463	151	199	110	154
creative	967	155	705	162	100
culture	1389	183	1028	240	121
curate	90	41	12	66	12
curricular	188	58	164	15	9
curriculum	374	96	295	56	23
cyberinfrastructure	76	18	1	7	68
data	2531	180	555	336	1640
data curation	19	14	1	15	3
data management	69	46	4	29	36
database	264	79	30	79	155
dataset	16	10	3	5	8
democracy	24	14	20	4	0
democrat	30	19	26	2	2
develop	47	22	12	1	34
digital	1339	149	112	851	376
digital preservation	22	18	0	18	4
discovery	568	150	258	221	89
disseminate	159	71	50	70	39
distance learning	68	36	16	8	44
diverse	921	134	751	110	60
ecology	68	19	44	16	8
economic	838	130	672	98	68
economy	244	83	183	17	44
ecosystem	78	18	41	32	5
education	4330	206	3291	368	671
EDUCAUSE	38	15	0	9	29
efficient	991	170	378	168	445
electronic	512	113	82	237	193
entrepreneurial	148	45	139	3	6
entrepreneurship	107	34	92	5	10
equity	119	32	111	2	6

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
ethic	243	62	217	14	12
ethnic	96	36	66	30	0
expertise	539	142	205	209	125
facile	253	71	121	25	107
faculty	6770	220	4411	863	1496
finance	261	69	159	9	93
financial	885	137	563	70	252
fundraise	149	48	118	28	3
genetic	88	20	28	58	2
geospatial	10	8	2	3	5
GIS	13	11	1	7	5
global	1397	158	1066	197	134
Google	44	27	2	18	24
govern	1031	130	411	93	527
government	32	19	27	4	1
governor	86	21	62	3	21
grant writing	12	11	8	2	2
green	102	43	69	9	24
Hathi Trust	16	9	0	16	0
health	1824	129	1130	589	105
healthcare	106	24	86	4	16
healthy	96	43	74	17	5
high performance computing	96	24	17	0	79
human	310	79	224	28	58
identity	162	68	83	8	71
identity management	75	30	3	3	69
image	59	20	19	3	37
information literacy	103	32	8	94	1
infrastructure	1726	182	559	169	998
innovate	1955	197	1169	297	489
instructor	142	51	62	13	67
intellectual freedom	13	11	3	10	0
intellectual property	107	57	40	23	44
interdisciplinary	754	109	642	66	46
interdisciplinarity	54	13	42	12	0
Internet	247	54	50	32	165
Internet2	24	13	0	0	24

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
knowledge	1454	181	875	336	243
Kuali	19	9	4	3	12
Latino	19	8	13	6	0
learn	3877	224	1939	840	1098
learner	149	61	83	34	32
lecture	33	12	18	0	15
legal	127	49	70	23	34
legislature	33	18	26	6	1
librarian	326	80	22	281	23
librarianship	18	8	0	18	0
library	3421	173	233	2988	200
license	265	77	60	53	152
lifelong learning	89	49	49	30	10
local	949	171	407	175	367
mentor	333	81	295	23	15
mentorship	41	24	33	4	4
metric	287	84	190	35	62
mobile	451	89	45	66	340
MOOC	11	9	7	0	4
multidisciplinary	98	44	76	11	11
multimedia	87	40	6	31	50
music	124	42	86	17	21
nation	2061	176	1459	365	237
nationwide	15	12	12	1	2
nonprofit	90	44	82	5	3
norm	48	21	42	2	4
online education	22	14	15	4	3
open access	123	53	17	85	21
output	77	38	35	36	6
ownership	71	30	9	13	49
partnership	917	165	569	243	105
patent	47	21	46	0	1
patron	52	32	2	48	2
pedagogy	79	44	41	12	26
PhD	50	19	48	1	1
philanthropy	47	17	45	2	0
pioneer	57	36	45	3	9
platform	252	80	60	36	156

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
policy	698	113	419	82	197
policymaker	18	9	17	1	0
postdoctoral	77	24	76	1	0
preservation	261	86	30	196	35
privacy	119	40	8	12	99
product	1082	165	363	426	293
professor	740	66	551	12	177
professorship	49	21	44	4	1
profit	33	13	7	23	3
project management	128	39	10	8	110
public	2048	190	1337	484	227
public good	30	15	28	2	0
public policy	104	37	91	7	6
publish	365	99	63	221	81
quality	56	28	38	9	9
quantity	57	32	42	5	10
rank	402	86	323	45	34
region	746	120	549	106	91
reimagine	10	10	5	4	1
reinvent	19	16	9	6	4
repository	182	73	16	108	58
reputation	318	73	271	18	29
research	11328	238	7091	2115	2122
restructure	27	21	16	4	7
rethink	32	22	16	7	9
revenue	364	73	311	20	33
revisit	24	16	14	2	8
rigor	109	48	95	3	11
risk	566	87	111	56	399
rural	56	27	34	18	4
satellite	34	18	10	4	20
scalable	56	31	9	12	35
scholarly communication	141	54	5	132	4
scholarship	1076	152	772	216	88
science	1751	149	1250	207	294
scientific	207	52	108	62	37
scientist	95	38	67	21	7
security	1278	138	226	81	971

Word or Phrase	Total Occurrences	Document Occurrences	University Plans	Library Plans	IT Plans
senate	212	50	169	19	24
skill	734	151	359	210	165
skillset	33	18	8	10	15
social media	39	25	11	12	16
social network	64	35	12	13	39
social science	196	56	155	18	23
society	483	95	430	28	25
software	653	87	46	58	549
special collection	110	44	12	97	1
specialist	86	44	23	30	33
stakeholder	367	99	154	70	143
standard	658	125	207	84	367
state	2476	164	1913	240	323
statement	225	84	120	60	45
statewide	105	39	75	18	12
steward	88	51	36	28	24
stewardship	161	65	92	48	21
storage	460	92	41	83	336
streamline	122	66	44	16	62
student	10995	226	7664	1006	2325
sustain	1161	165	765	212	184
tailor	48	38	18	19	11
teach	2476	208	1302	423	751
teacher	240	73	180	35	25
technology	4557	201	800	370	3387
transform	56	29	37	9	10
underserved	64	19	36	26	2
urban	144	41	118	9	17
user	1420	154	51	826	543
vendor	171	50	7	22	142
video	240	69	31	33	176
virtual	498	129	82	176	240
web	1037	125	155	169	713
website	223	81	64	78	81
world	1574	159	1287	136	151
worldwide	98	53	54	24	20
youth	35	14	27	8	0
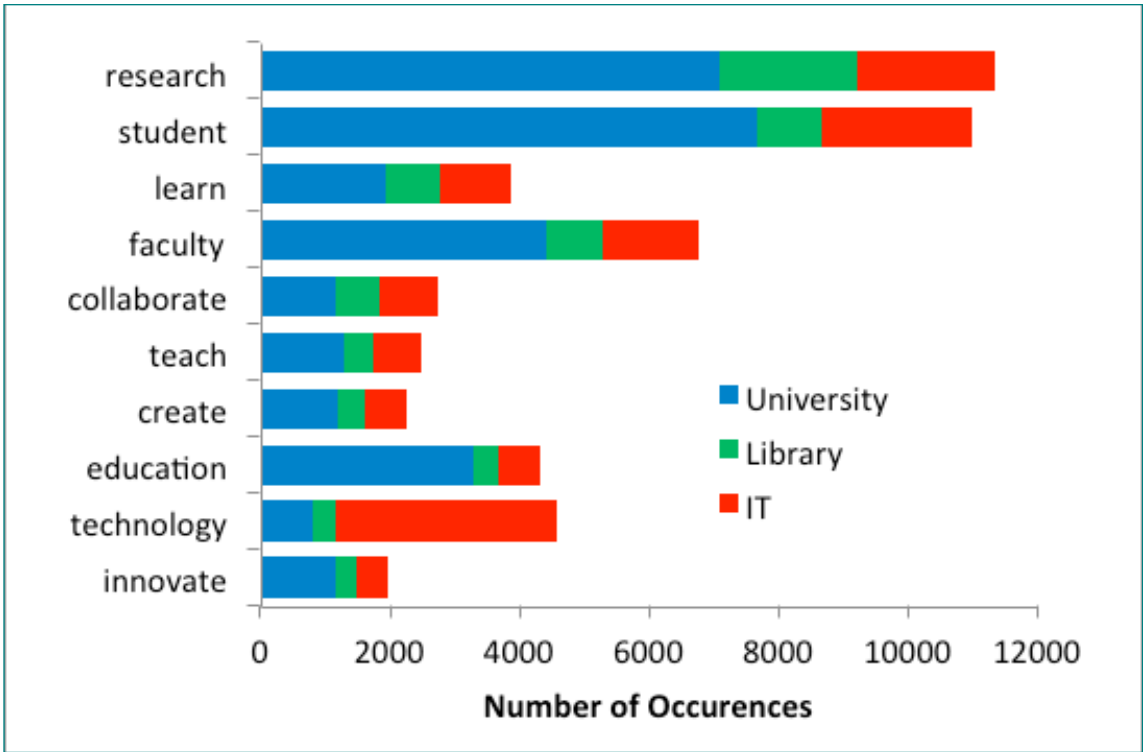
Figure 1. Terms occurring in at least 75% of the strategic plans (n=251). Terms are ordered by the number of plans in which they occur (from greatest to least) and the number of term occurrences within each group is also indicated.
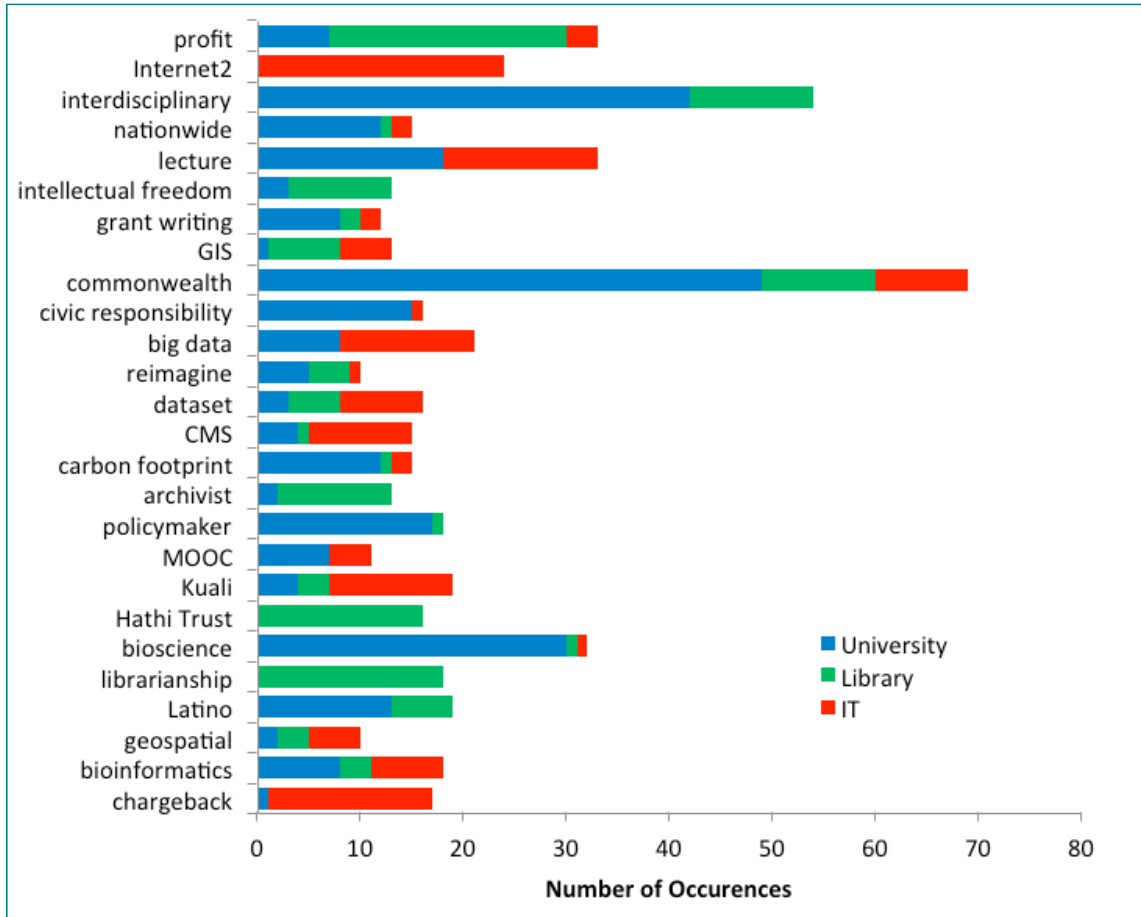
Figure 2. Terms occurring in fewer than 5% of the strategic plans (n=251). Terms are ordered by the number of plans in which they occur (from greatest to least) and the number of term occurrences within each group is also indicated.

Table 2. Mean frequencies for all extracted terms and phrases by group. Frequencies are based on the term occurrences per document and means are calculated within each group.

Word or Phrase	University Plans	Library Plans	IT Plans
academic freedom	0.001830984	0.000611598	0.00039198
administration	0.062891551	0.023933211	0.10315554
agile	0.001750562	0.002282992	0.00258808
archive	0.001014908	0.025613804	0.00479184
archivist	0.000120361	0.001817721	0
art	0.047076309	0.006240423	0.00910739
assess	0.044717261	0.063254561	0.06996358
backbone	0.000275763	0	0.00254145
backup	0.000315224	7.79144E-05	0.01285615
big data	0.000509175	0	0.00265259
bioinformatics	0.000487452	6.45473E-05	0.00035445
biology	0.006554545	0.001437634	0.00284868
biomed	0.004198045	0.000746966	0.00053786
bioscience	0.001314379	0.000191736	2.1194E-05
biotechnology	0.001277795	0.000320831	0.00011126
book	0.002586912	0.027290922	0.00127242
brand	0.000898101	0.001330058	0.00047346
budget	0.028586747	0.024417178	0.04908829
budgetary	0.001759629	0.00169076	0.00077726
capital	0.019951004	0.006749368	0.02273604
carbon footprint	0.000671183	7.55921E-05	0.00045272
catalyst	0.001558037	0.001264429	0.00069412
chargeback	2.31303E-05	0	0.00216886
China	0.001516251	0.00049796	7.7496E-05
civic responsibility	0.000888146	0	0.00031281
client	0.000979993	0.00937352	0.01663644
cloud	0.000283273	0.001174864	0.03094395
CMS	0.000118073	6.72159E-05	0.00331827
collaborate	0.077038356	0.110552548	0.12409169
collect	0.010144386	0.243289465	0.00885114
commercial	0.006437587	0.006014926	0.00416681
common	0.002250015	0.006706462	0.00214749
commonwealth	0.004291939	0.001471569	0.00048162
compliance	0.002816025	0.001425277	0.0210201
confidential	7.30802E-05	0.000189518	0.00145543
conservation	0.003366512	0.003305832	0.00070374

Word or Phrase	University Plans	Library Plans	IT Plans
consume	0.001228489	0.002399076	0.00510283
consumption	0.001077745	0.000172126	0.00276337
content	0.005276609	0.053252242	0.04033335
cooperate	0.006486946	0.006436081	0.00726598
copyright	0.001649419	0.011172613	0.00106559
corporate	0.007528591	0.00122782	0.00187075
cost	0.026288742	0.019407902	0.10153965
create	0.083552144	0.072062125	0.09092952
creation	0.016477234	0.020554536	0.0175279
creative	0.050882382	0.03516514	0.01268139
culture	0.080230051	0.048723883	0.01680088
curate	0.00069431	0.013445313	0.00143008
curricular	0.010154532	0.004284979	0.00119667
curriculum	0.019752629	0.008821078	0.00259692
cyberinfrastructure	0.000127367	0.000599493	0.00792716
data	0.027324362	0.052599069	0.21923785
data curation	0.001377238	0.009133317	0.01833888
data management	2.34807E-05	0.002726863	0.00018924
database	9.23822E-05	0.005480133	0.0065287
dataset	9.69961E-05	0.000470235	0.00088406
democracy	0.000776251	0.000608366	0
democrat	0.001225604	0.000189029	0.00035634
develop	0.000965093	6.72159E-05	0.00318246
digital	0.006558882	0.145166378	0.03782147
digital preservation	0	0.005215511	0.00025836
discovery	0.025155311	0.060807012	0.01267558
disseminate	0.004634068	0.010958578	0.00374358
distance learning	0.001136599	0.000642249	0.00620226
diverse	0.057688101	0.016207606	0.00963183
ecology	0.001358291	0.000421966	0.0003602
economic	0.04931684	0.010224446	0.00903667
economy	0.010969944	0.002205071	0.00524993
ecosystem	0.001705739	0.001376211	0.0006955
education	0.218243036	0.053111399	0.08937603
EDUCAUSE	0	0.00070646	0.00499812
efficient	0.026452327	0.028238506	0.06974858
electronic	0.003641678	0.033351707	0.02170677
entrepreneurial	0.010819273	0.000317218	0.00032966
entrepreneurship	0.006655387	0.000680937	0.00217389

Word or Phrase	University Plans	Library Plans	IT Plans
equity	0.008168043	0.000246767	0.00078465
ethic	0.011419145	0.003357427	0.00242068
ethnic	0.004419344	0.001056136	0
expertise	0.013733741	0.042474238	0.012384
facile	0.00791963	0.002955454	0.00978939
faculty	0.273186893	0.155292163	0.17662317
finance	0.014988367	0.002001939	0.01135126
financial	0.034999306	0.012473991	0.03599756
fundraise	0.009136629	0.003215403	0.00041057
genetic	0.001794988	0.001522064	0.00011898
geospatial	2.47103E-05	0.000240623	0.00038962
GIS	9.37973E-05	0.000584609	0.00043902
global	0.087020954	0.035203122	0.02260917
Google	0.000234226	0.002734489	0.00489605
govern	0.029490964	0.009927788	0.07179117
government	0.002074308	0.000120594	0.00029774
governor	0.003268132	0.000407402	0.00137835
grant writing	0.000563402	5.00083E-05	0.00019882
green	0.004676403	0.001317263	0.00310848
Hathi Trust	0	0.003024938	0
health	0.069305307	0.022622561	0.00841096
healthcare	0.00519338	9.4486E-05	0.0033
healthy	0.003847145	0.002045234	0.00063997
high performance computing	0.000255626	0	0.00747697
human	0.0128711	0.004805945	0.00287026
identity	0.006757946	0.000621738	0.01315744
identity management	0.00016398	0.000672332	0.01173426
image	0.00054307	0.000614754	0.00336412
information literacy	0.00042981	0.019238759	0.00023254
infrastructure	0.042094286	0.033405316	0.14083174
innovate	0.079705469	0.066904675	0.07088892
instructor	0.002701327	0.002754469	0.00707362
intellectual freedom	0.000510355	0.002254965	0
intellectual property	0.003685176	0.004839507	0.00304629
interdisciplinary	0.001276302	0.001654968	0
interdisciplinarity	0.035985815	0.01005895	0.00475468
Internet	0.001452356	0.00347491	0.02323567
Internet2	0	0	0.00410694

Word or Phrase	University Plans	Library Plans	IT Plans
knowledge	0.056693437	0.061357873	0.030049
Kuali	0.000119027	0.000441603	0.00457499
Latino	0.000633787	0.001208925	0
learn	0.139942368	0.18049501	0.13569214
learner	0.005105875	0.008072538	0.00223185
lecture	0.000769694	0	0.00076789
legal	0.003988728	0.002695665	0.00429506
legislature	0.001528499	0.000829655	6.3224E-05
librarian	0.01866006	0.44103706	0.0202103
librarianship	0.000774843	0.043138303	0.00129314
library	0	0.001770304	0
license	0.003027989	0.00811336	0.01712588
lifelong learning	0.004651786	0.004922146	0.00152569
local	0.029040215	0.026021863	0.03918539
mentor	0.018667487	0.002252967	0.00259755
mentorship	0.002027691	0.001083387	0.00114666
metric	0.010691779	0.00569188	0.01660916
mobile	0.003203727	0.011524391	0.05650049
MOOC	0.000701043	0	0.00080305
multidisciplinary	0.005774048	0.001566445	0.00084877
multimedia	0.000419967	0.004122231	0.00469077
music	0.004766681	0.002531842	0.00200926
nation	0.107970718	0.038993689	0.03050688
nationwide	0.001646309	2.39295E-05	0.00013982
nonprofit	0.005907242	0.000483059	0.00014815
norm	0.001686905	0.00032062	0.00021485
online education	0.001292815	0.000998015	0.00015673
open access	0.001402003	0.018853632	0.00366546
output	0.001941152	0.006790935	0.00074914
ownership	0.000332127	0.002551755	0.00539556
partnership	0.044138753	0.037232341	0.01465216
patent	0.002631673	0	4.9707E-05
patron	7.93224E-05	0.011364417	0.00010198
pedagogy	0.004869219	0.003331832	0.00323631
PhD	0.002821054	2.39295E-05	1.9164E-05
philanthropy	0.002225484	0.000220075	0
pioneer	0.003875747	0.000341279	0.00047204
platform	0.004083299	0.005418862	0.02063978
policy	0.019885113	0.007634453	0.02048198

Word or Phrase	University Plans	Library Plans	IT Plans
policymaker	0.000674379	2.15158E-05	0
postdoctoral	0.004462766	2.39295E-05	0
preservation	0.002480778	0.03344074	0.00294163
privacy	0.00021999	0.001900468	0.01285633
product	0.025012842	0.033119559	0.0379148
professor	0.029548575	0.002093016	0.01091236
professorship	0.002039648	0.00070243	0.00017368
profit	0.003175768	0.001840602	0.00057681
project management	0.00025059	0.001326211	0.03030614
public	0.102715589	0.062565243	0.02698926
public good	0.002307864	4.7551E-05	0
public policy	0.003773135	0.00104051	0.0004094
publish	0.003245524	0.033629024	0.01088803
quality	0.001409342	0.001236621	0.00219782
quantity	0.002019821	0.000945339	0.00240701
rank	0.019555893	0.006608919	0.00203968
region	0.036591804	0.012815786	0.01471797
reimagine	0.000393129	0.000857925	9.7784E-05
reinvent	0.000618923	0.000937765	0.00114837
repository	0.000747758	0.014108169	0.00655343
reputation	0.015436011	0.002845728	0.00258286
research	0.385424399	0.315086455	0.26668406
restructure	0.001141129	0.000820892	0.00053966
rethink	0.000697832	0.001924178	0.00279099
revenue	0.019052197	0.002438723	0.00712206
revisit	0.000586342	0.000281704	0.00145493
rigor	0.007381016	6.66531E-05	0.00045944
risk	0.009373185	0.004951768	0.04061402
rural	0.002105859	0.000625134	0.00046468
satellite	0.000473157	0.00040516	0.0020744
scalable	0.000578627	0.002109452	0.00470528
scholarly communication	0.001293928	0.02665977	0.00028307
scholarship	0.053102666	0.044743523	0.01163183
science	0.072647051	0.02584161	0.02907215
scientific	0.006988137	0.002612197	0.00464387
scientist	0.004646041	0.000623721	0.00049339
security	0.012784427	0.013977869	0.16091746
senate	0.011153248	0.001891195	0.00307282
skill	0.022730277	0.03452505	0.02184735

Word or Phrase	University Plans	Library Plans	IT Plans
skillset	0.000251398	0.001442841	0.00254637
social media	0.001067728	0.001905884	0.00348419
social network	0.000802058	0.001851928	0.00454459
social science	0.006773666	0.001912062	0.00142181
society	0.025680604	0.003069305	0.00226266
software	0.001837105	0.006316703	0.07383896
special collection	0.000527679	0.018623421	0.00012964
specialist	0.001707155	0.004565437	0.00260655
stakeholder	0.00911206	0.008282264	0.03599356
standard	0.01493206	0.011875231	0.0399456
state	0.132153606	0.032596289	0.0433359
statement	0.008005527	0.009021339	0.01375285
statewide	0.004551093	0.002328834	0.00199302
steward	0.003053943	0.00677992	0.00329003
stewardship	0.00707241	0.009072344	0.00437295
storage	0.001947199	0.012909728	0.04880195
streamline	0.00429928	0.00189876	0.01188779
student	0.492340222	0.154680925	0.27263368
sustain	0.052288705	0.031718801	0.0263051
tailor	0.000881308	0.005920333	0.0015811
teach	0.086894462	0.089723855	0.07428513
teacher	0.009878205	0.004318025	0.00135771
technology	0.051687119	0.052980352	0.39818279
transform	0.002632111	0.003062282	0.001606
underserved	0.003149023	0.001078295	0.00028605
urban	0.013832925	0.00126135	0.00183177
user	0.009411637	0.163645331	0.07235683
vendor	0.000189773	0.002961552	0.01695039
video	0.001463211	0.006175948	0.0226798
virtual	0.006158893	0.038280654	0.02945282
web	0.006453779	0.020657447	0.07418176
website	0.004467493	0.01020021	0.01454849
world	0.099803389	0.022498608	0.0229455
worldwide	0.003632433	0.003158123	0.00237248
youth	0.001470154	0.000821721	0

Figure 3. Mean frequencies of all terms by group of strategic plans: (a.) University strategic plans, (b.) Library strategic plans, (c.) IT strategic plans.

(a.) University Strategic Plans

(b.) Library Strategic Plans

(c.) IT Strategic Plans

Appendix C: Taxonomy of Regional Design Meeting Story Content

Overall Taxonomy

Cool stories

Stories about productive steps taken

Stories that surface a problem
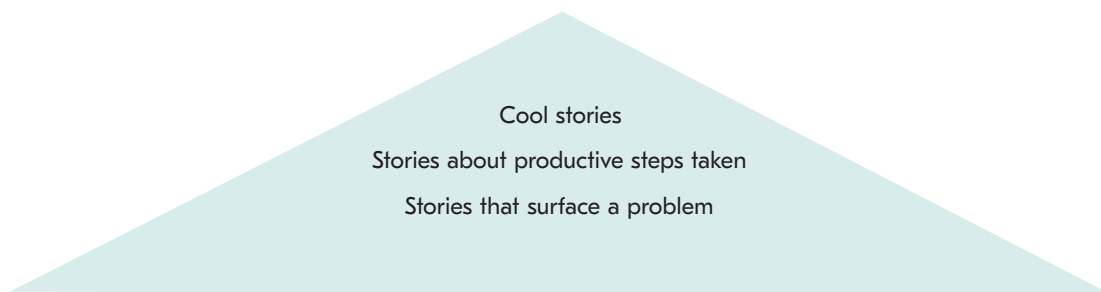
Taxonomy of stories by major themes, with examples of cool stories highlighted

Library-faculty or library-student engagement

Cool stories about library-faculty or library-student engagement

- LA regional meeting: story about a "flipped library" model: on discovering that the faculty and students "couldn't see" the library's value and staff, launched budget-neutral, but still effective, effort to re-brand the library and change perceptions, placing library staff on committees throughout campus and aggressively marketing services, demonstrating what the library offers and how it is the one thing that ties all of the colleges

together. {This story also resonates with idea of librarian cohort discussed in Minneapolis story, noted below under staffing}

- Chicago regional meeting: story about grant-funded initiative in which undergraduate students were hired to work together with librarians and programmers to develop mobile apps; apps ended up showing what the core library services are for students, how they want them to be easier and more convenient, and surfaced the need for creativity, aggressiveness in the library.

Stories about productive conversations with faculty and students
Stories about being ignored or misunderstood by faculty or students

Library space

Cool stories about innovative ways to work within
(or outside of) the library's physical space

- Houston regional meeting: story about library renovation and dream of using ambient technology to tie the intangible, virtual things we track in libraries to tangible objects that we use as signage—to help people, to gather data, and for research.

Stories about productive use of space
Stories about space constraints

Technology or data

Cool stories about solving technology or data problems

- DC New ARL Library Directors meeting: story about a pilot project involving building collaborative units, going down the organization to find the right people, then assembling a "tiger team" and having them demo a project in order to show that the team is ready to help faculty with their research and data. Goes towards answering

the question, "How can we make this an ecosystem?"

Stories about attempts to address tech or data problems
Stories about tech or data problems

Staffing

Cool stories about creative ways to engage
library staff in the future of libraries

- Minneapolis design meeting: story about recruitment and hiring of a cohort of six new public services librarians as means of getting critical mass to change organizational culture. {This idea also come up in Claremont story noted above under library-faculty engagement}
- Chicago regional meeting: story about how medical library did not even appear on organizational chart for future university re-organization; librarians at the institution are research faculty, but seemingly forgotten at the highest level; speaker suggests need to change attitude: "I'm hearing a lot of the verb 'serve' but I'm not hearing 'partner,' and that worries me."

Stories about how to deal with entrenched library culture or staff attitudes
Stories about library culture or staff as a hindrance to moving forward

Administration

Cool stories demonstrating a creative way to engage
with university administration about the library

- DC New ARL Library Directors meeting: story about how turnover in university administration can be an opportunity for the library to "re-train" university leaders; university librarian invited to join dean's table, University Research Council, shares what library can offer, how she deals with staffing, etc.,

with the result that she is now a core member of university's administrative team and a go-to resource for newly hired administrators; she is "Switzerland," a neutral third party.

Stories involving productive conversation with administration
Stories complaining about administration

Appendix D: "Tagonomy" of the "Shark in the Water"/"Cool Cat" Stories

Methodology

A research team member viewed the videos of five of the regional and design meetings convened between September 2013 and January 2014 as part of ARL's Strategic Planning and Design process. Specifically, the research team member listened to the portion of the meeting in which the participants shared their group's "Shark in the Water" and/or "Cool Cat" stories. While listening to these stories, the researcher "tagged" each story as a means of capturing its major theme(s). She applied as many tags as relevant from a list of 21 frequently occurring themes, which were generated during the process (see list of tags below).

A total of 125 stories were analyzed. A few stories received only one tag, others as many as seven; on average, a story received three or four tags. As noted above, each tag applied to a story represents a broad theme or issue addressed in the story. The tags do not reflect whether the theme or issue was presented as positive, negative, or both; rather, they are intended to capture the general nature of the topics that surfaced in the telling of the stories.

After viewing each video and tagging each story, the researcher then tallied the total number of times a tag (theme) arose during a particular meeting. The total numbers for each meeting appear below. In addition, a word cloud ("Wordle") was generated from these totals as another way of visualizing the data.

Tags

The 21 most frequently occurring tags applied to the stories and totaled for each meeting are: access, administration, collaboration, collections, data, DH (digital humanities), faculty, postdocs, fundraising, future of libraries, library culture, library space, marketing, pedagogy, perception of library, staffing, STEM (science, technology, engineering, mathematics), students (general), undergraduates, graduate students, research

Notes regarding the tags:

- "Administration" refers to university (or museum) administration.
- "Pedagogy" also refers to teaching and instruction generally.
- "Staffing" refers to issues concerning library staff, including leadership.
- Additional note: the staff categories most often mentioned are subject specialist/liaison librarians and public service librarians; next most frequent are IT/technologist staff.
- "Fundraising" includes donor relations.
- "Students" is frequently used as a general term; it seems most often to refer to undergraduates.
- "Perception of the library" refers to the outside/external perception of the research library.
- "Library culture" refers to the internal perception and habits of the research library and its denizens.

Totals
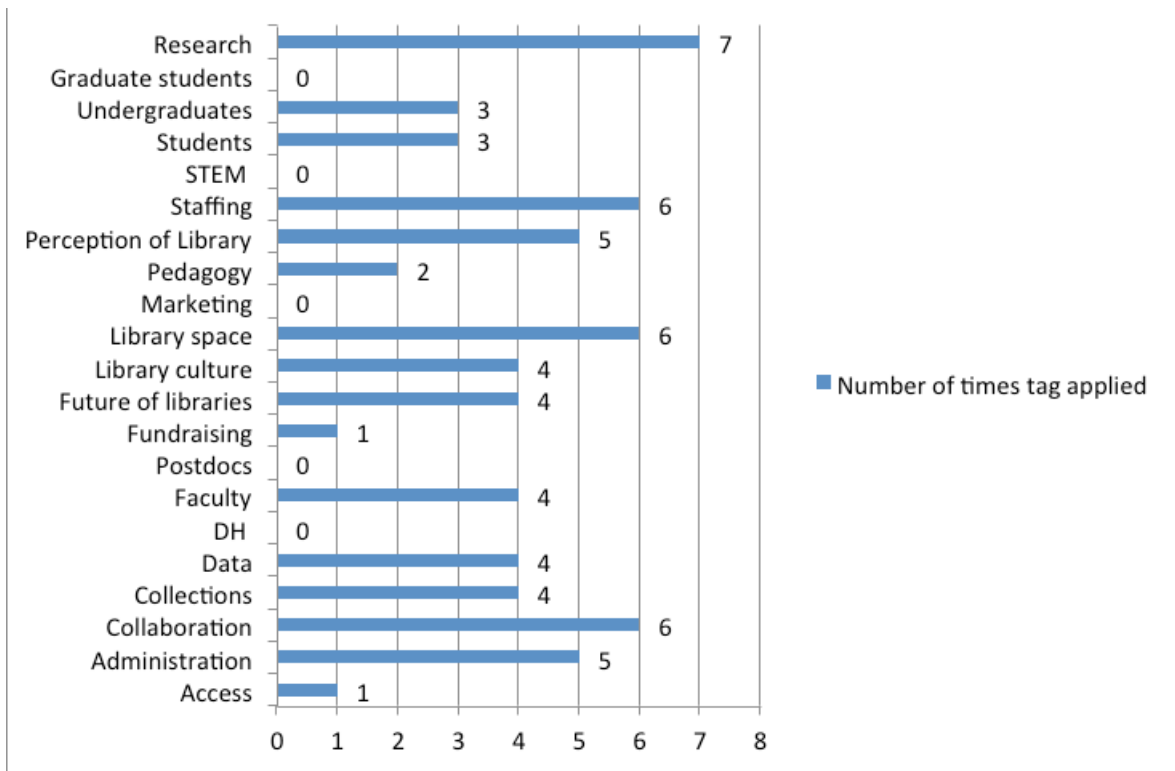
New Directors meeting, Washington, DC, September 12, 2013
(Total number of stories: 23)

Research 4
Graduate students 0
Undergraduates 2
Students 3
STEM 2
Staffing 6
Perception of Library 6
Pedagogy 4
Marketing 0
Library space 4
Library culture 4
Future of libraries 1
Fundraising 3
Postdocs 0
Faculty 7
DH 2
Data 3
Collections 9
Collaboration 8
Administration 6
Access 2

■ Number of times tag applied
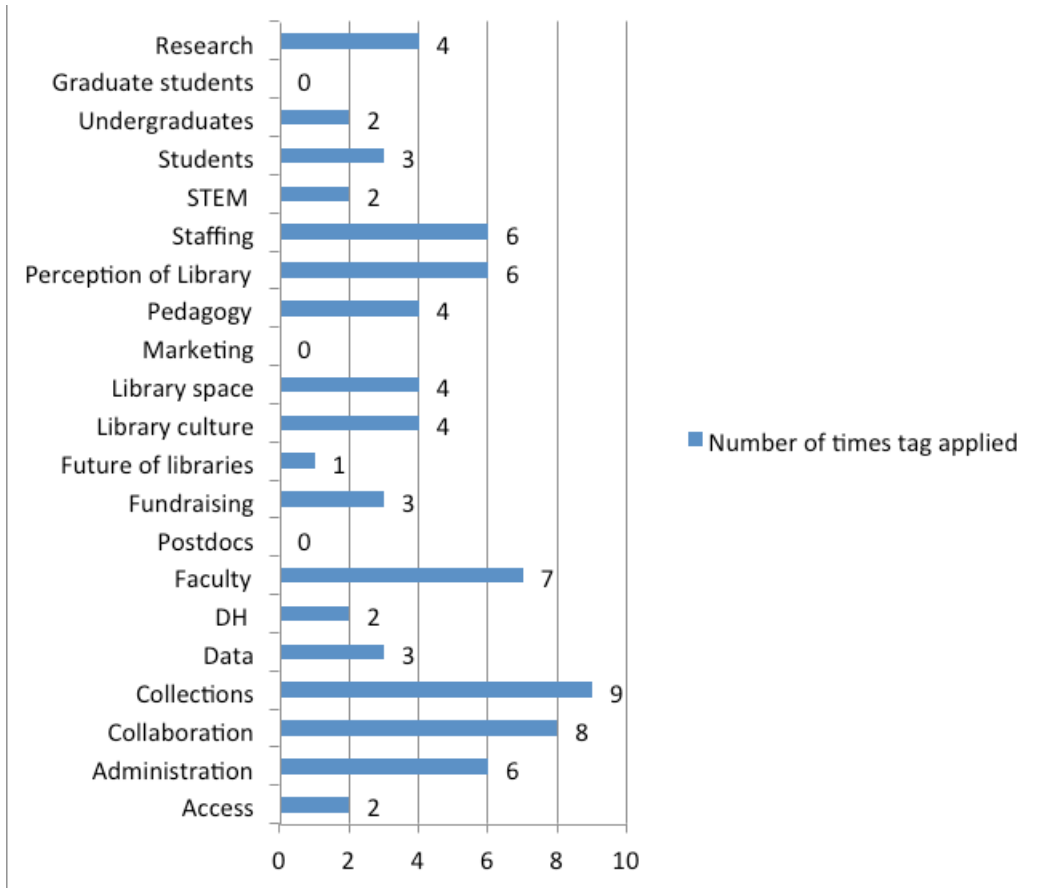
Design meeting, Minneapolis, MN, October 1, 2013
(Total number of stories: 25)
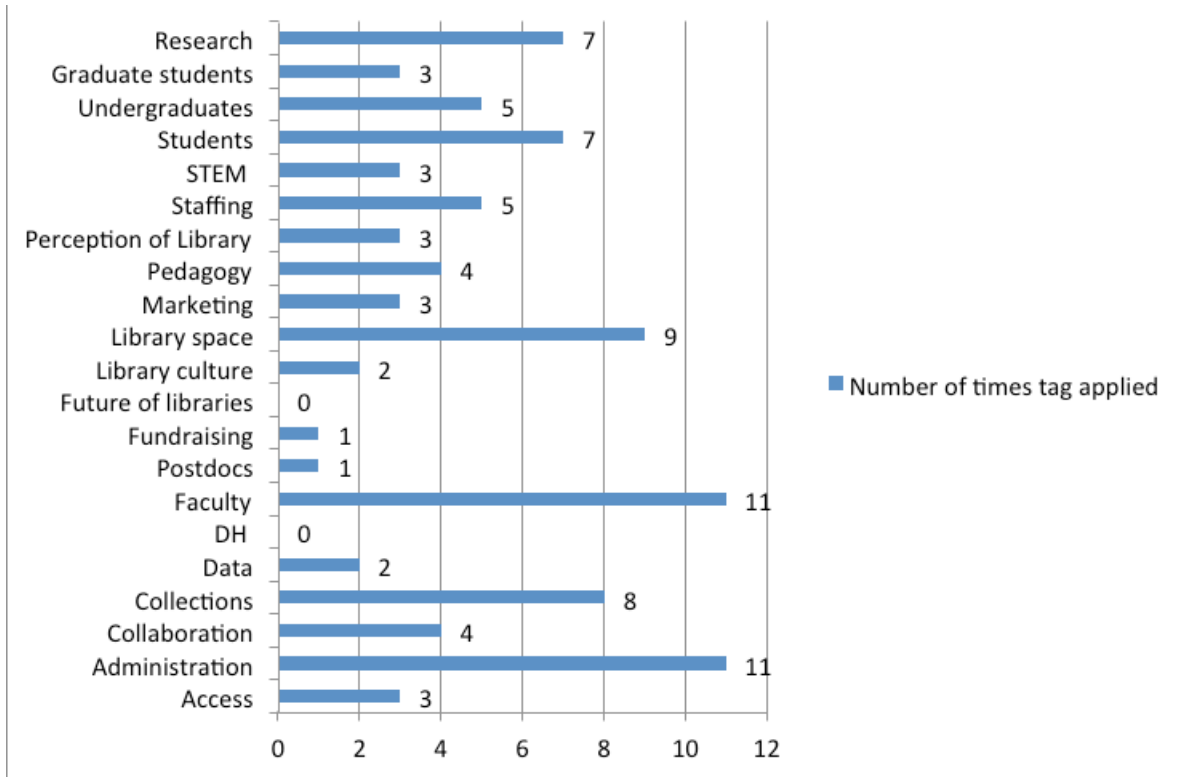
Regional meeting, Los Angeles, CA, October 17, 2013
(Total number of stories: 26)

Research 5
Graduate students 3
Undergraduates 4
Students 3
STEM 4
Staffing 10
Perception of Library 10
Pedagogy 3
Marketing 3
Library space 5
Library culture 4
Future of libraries 2
Fundraising 2
Postdocs 0
Faculty 12
DH 1
Data 2
Collections 7
Collaboration 11
Administration 7
Access 0

■ Number of times tag applied
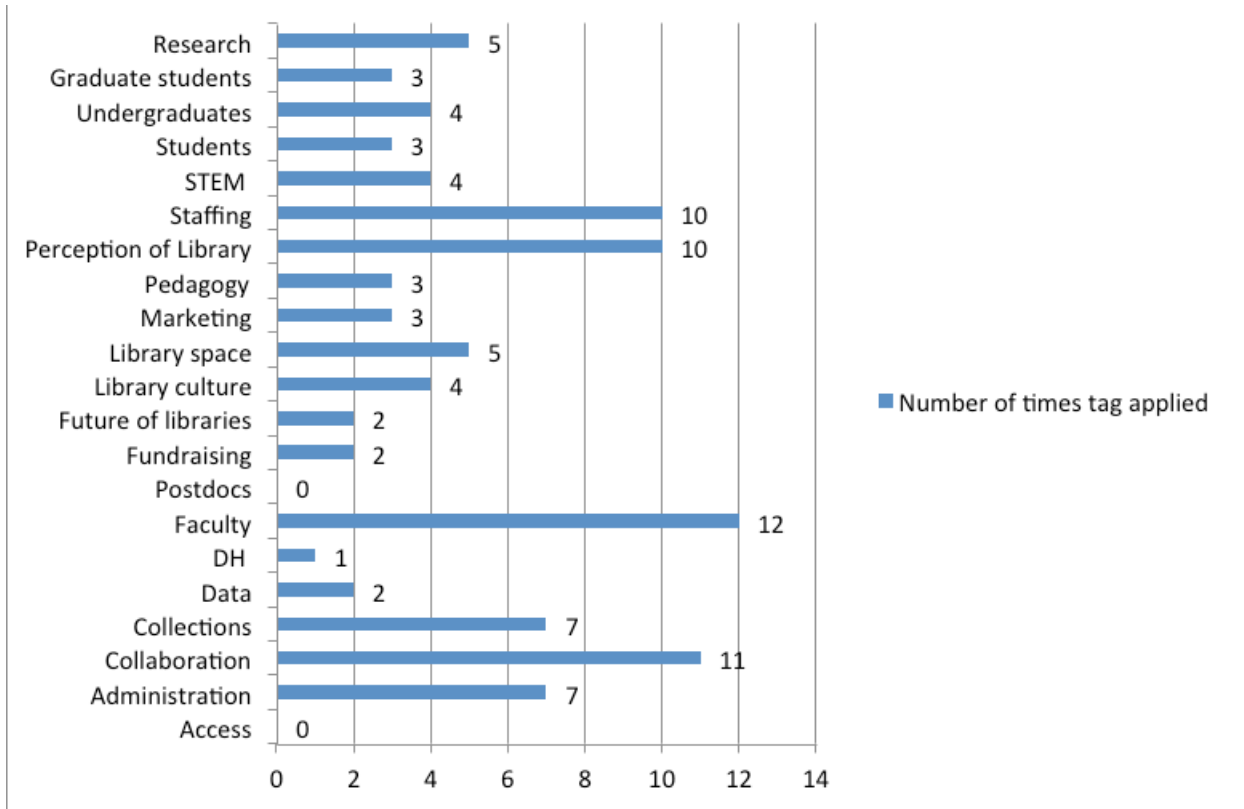
Regional meeting, Chicago, IL, October 22, 2013
(Total number of stories: 29)

Research — 7
Graduate students — 5
Undergraduates — 3
Students — 7
STEM — 4
Staffing — 7
Perception of Library — 2
Pedagogy — 5
Marketing — 2
Library space — 7
Library culture — 1
Future of libraries — 0
Fundraising — 1
Postdocs — 0
Faculty — 11
DH — 2
Data — 5
Collections — 8
Collaboration — 7
Administration — 3
Access — 5

■ Number of times tag applied
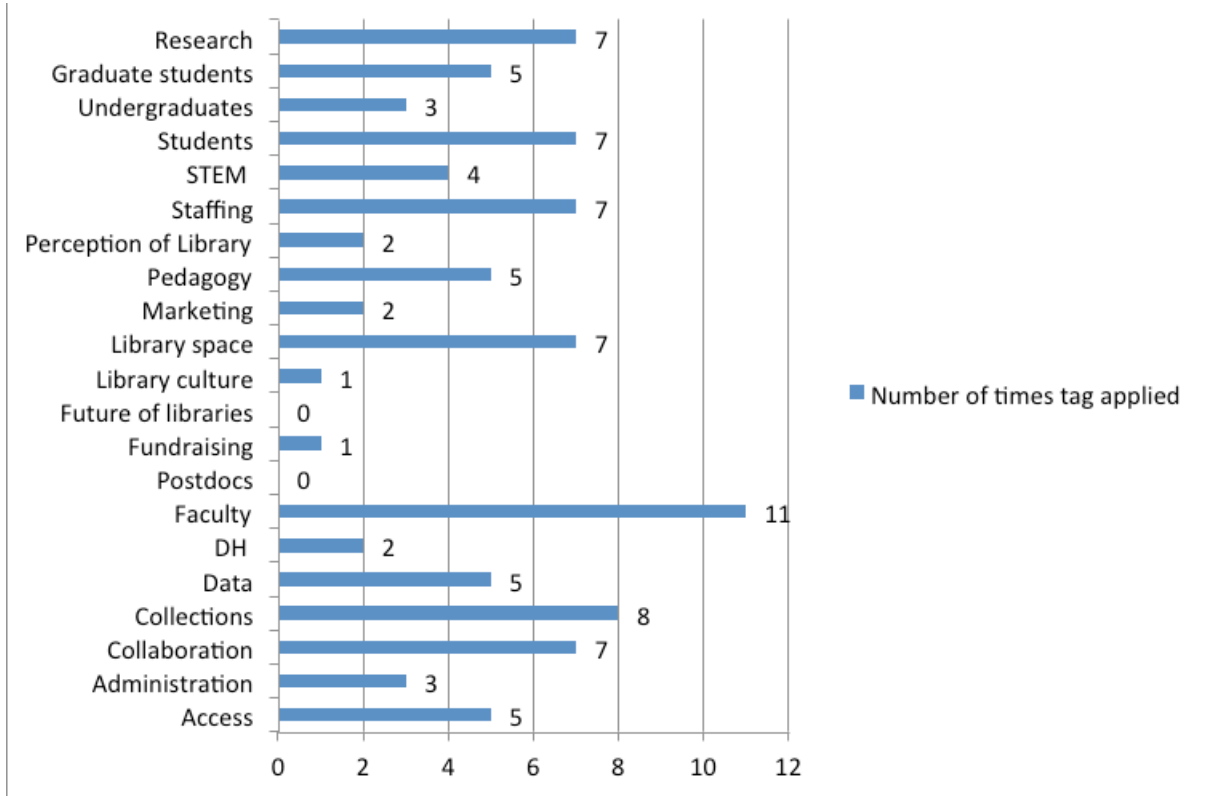
Regional meeting, Houston, TX, January 14, 2014
(Total number of stories: 22)

A Few Observations

A breakdown of the number of times each theme occurred in the stories told at a given meeting is presented above. Taking the data as a whole, the top seven (top one-third) tags are: faculty (45), collaboration (36), collections (36), staffing (34), administration (32), library space (31), and research (30). If all student-related tags are combined, however, students come in as the top tag with 51 incidences. A world cloud visualizing the "grand total" of tags applied in this analysis appears immediately below.

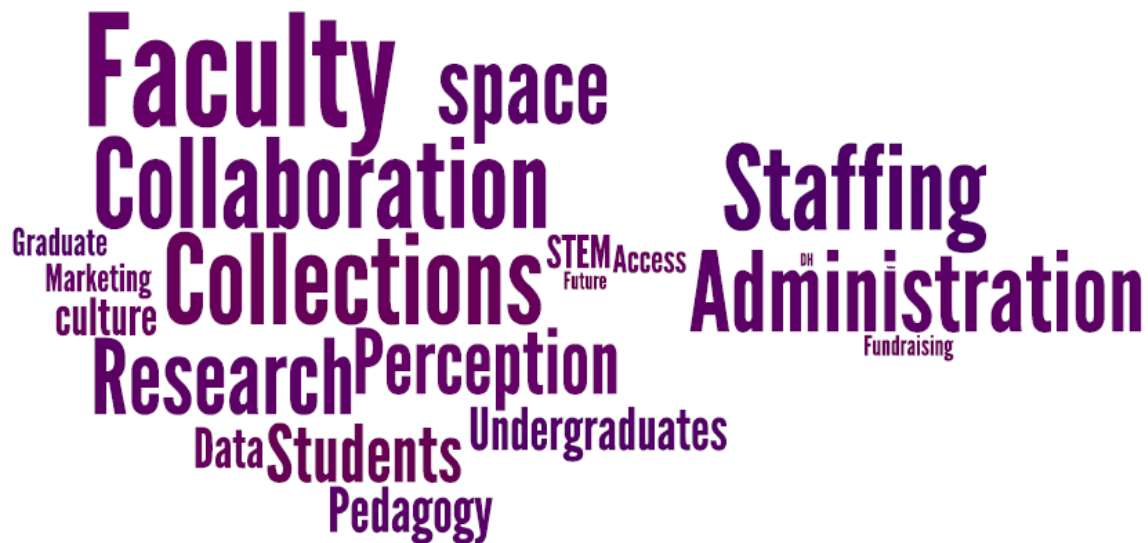Several observations on the stories and the tags applied to them may be noted here. One is the fact that "students" are often mentioned as a general category of users (and occasionally as staff), and this term primarily seems to refer to undergraduates. In fact, undergraduates are frequently mentioned as such, even more so than graduate students. Postdoctoral researchers were mentioned only once in the five videos surveyed. It would thus seem fair to conclude that undergraduates and their research needs are in fact a key focus of ARL libraries, and that undergraduate students are, and will continue to be, major stakeholders in the future of the research library.

Also notable for their relative infrequency are the tags "data" (16) and "pedagogy" (18) (also note that "research" [applied to 30 stories] comes in seventh of the seven most frequently occurring tags). As with the low incidence of explicit reference to graduate students, the relatively infrequent mention of "data" and "pedagogy" may in fact be because they are so ubiquitous, so central to the mission of research libraries, that they do not require explicit mention. "Faculty," however, is the most frequent single tag applied to the stories. One may therefore wish to reflect further on the relationship between the oft-mentioned factors of faculty (45) and university administration (32), and the lesser-mentioned, but still fundamental, elements of data, pedagogy, and of course, research, to see where the aims and goals of the external factors intersect with or are at odds with the internal aims and goals of the research library.

"Digital humanities (DH)" was tagged only five times in the 125 stories analyzed. By contrast, STEM was tagged 13 times. Perhaps this observation says something about the impact, or lack thereof, of the new—if still ill-defined— field of digital humanities on the research library.

Finally, it is crucial to note that the repeated mention of collaboration during the storytelling exercise, as well as the common goals observed in the research team's survey of library strategic plans, led the Research Team to augment their study by conducting interviews with key figures engaged in large, collaborative projects. These interviews allowed the team to identify numerous keys to success, lessons learned, and additional pieces of advice on starting, organizing, and sustaining multi-institutional collaborative initiatives. These are now available as a bullet-point list (see Appendix F: Words of Wisdom on Collaborative Projects).

Appendix E: Environmental Scan: ARL Library Strategic Plans

Introduction

As part of its charge to conduct an environmental scan of ARL libraries, along with the universities or other institutions of which they are a part and the IT divisions of these institutions, the Strategic Thinking and Design Research Team reviewed the strategic plans of these three categories of entities. An initial overview of all of the documents prompted three conclusions: (1) they vary in terms of format, specificity, and granularity; (2) they were not written in a way that would facilitate formalized coding for themes; and (3) the strategic plans reveal a large degree of commonality in strategic focus. A closer reading of a sample of ARL libraries strategic plan priorities showed an emphasis on priorities including developing a wide range of digital initiatives, improving staff development and institutional culture, collaborating with individuals and units within their institutions and with communities outside of their institutions, supporting scholarship, improving both their physical and technological infrastructures, improving instruction and other services, and developing collections.

Overview of the Problem

The strategic plans of ARL libraries, host institutions, and associated IT units, vary in format, length, and specificity. The documents on the whole often appear written for an audience of administrative officials

for reasons including accreditation. They vary in terms of the amount of effort expended to produce them. Many of them are intended to lead and guide library leaders and staff in their work going forward, while in other cases they may represent part of a wider effort in the institution to conduct a planning exercise. The plans vary in currency: some were written recently, while others are significantly older.

The research team's original plan was to conduct formal qualitative data analysis coding the documents for themes using NVivo software. However, upon closer reading of the documents—each of the documents was read through at least once by at least one of the team members—it became clear that it would be difficult to code themes in a formalized manner because of the variability in the way the documents were written, even if the content did not vary considerably. While many of the documents are in long format with fully articulated areas of concentration, others consist mainly of grouped lists of bullet points of lesser or greater number and specificity. The diversity of form represented by the documents, mainly in terms of length and specificity, would make it difficult to glean meaningful information from them as a result of this theme-coding exercise: while some institutions may go into a great deal of specificity regarding their plans, others were more general. This made it challenging to identify patterns by type of library or other meaningful criteria. If one institution wrote a 2-page plan and another a 20-page plan, comparing them will tell much about the differences in the form of the plans themselves but not necessarily allow for a comparison of the two libraries' visions.

In order to move forward with an analysis of the documents, the research team decided instead to use a different strategy representing a combination of quantitative and qualitative approaches. The team used text mining to identify terms that were used in the documents, allowing for a comparison of the frequency of particular terms in the three categories of documents (library, institution, and IT) (Appendix B).

For the qualitative analysis, the team resorted to a less formalized version of the theme coding, by reading a random sample of the strategic plans to identify the strategic priorities expressed in them. The point of this reading activity was to

identify the direction ARL libraries, as a group, see themselves heading and to identify common strategic planning priorities. The findings from the less formalized coding process, as pertains to the library strategic plans, are represented here. Also included is an overview of the institutional and IT strategic plans.

Methodology

A research team member read a random sample consisting of 22 of the library strategic plans to identify goals that received emphasis in the document and thus emerged as priorities. For those documents that were very long, this was a fairly subjective process of determining which goals seemed to emerge repeatedly or received emphasis in some other way. For the shorter documents, each bullet point may have been noted. Each of these priorities was then placed into one or more of 20 categories. The categories were based on the content in the library strategic plans.

Priorities were placed into more than one category when it would allow a more fine-grained analysis. For example, the category of "digital initiatives," too general to be used on its own, was used in conjunction with "collections" to identify those priorities that pertained to electronic resources separately from those that mentioned collections in general. To take another example of dual categorization, if "improving facilities" was categorized together with "students," this indicated an emphasis on better physical space for students. If it was categorized with "collections," this indicated more space for collections was a priority. To take one more example, "diversity" was a priority in different contexts including library staffing and services to students.

Since ARL membership encompasses a range of research library types, and the libraries may use some terminology describing library services and infrastructure differently from one another, it was challenging to come up with categories to perfectly describe each library priority. For example, if a library refers to its "unique holdings," it may or may not be describing what another library may call "special collections" and/or the contents of its "institutional repository." If a

library uses the term "information literacy" they may or may not be referring to what another library refers to as "instruction." It should be noted that in an attempt to create categories general enough to absorb these nuances, names were created for categories that do not reflect the diversity of how terminology was used in each of the documents.

Findings

As noted above, the heterogeneity of language used by libraries to describe their activities posed a challenge in some ways to the process of categorizing priorities. On the other hand, the research team simultaneously found a great degree of homogeneity reflected in the content of the strategic plans. The plans seemed not to identify unique characteristics, nor to emphasize a vision distinctly different from the others. Indeed, there was a great degree of overlap among the libraries' goals as reflected in their strategic plans, which speaks to a kind of field-wide agreement on the key issues and a convergence of ideals regarding the functions and role of research libraries.

For each of the categories listed below, the number of times it was identified in the entire corpus of 22 documents is indicated. Note that these results do not indicate the number of libraries in the sample that identified particular priorities. Rather, the findings indicate how many times in the entire sample corpus each priority was identified. For those libraries that wrote extensive plans, a given priority may have been expressed in multiple ways and each of these is noted. Therefore, what follows provides summary data of ARL libraries' strategic priorities rather than a quantification or comparative analysis. Given the similarities in content of the plans, and the fact that they varied in terms of length and specificity, this was considered the most useful approach to take.

A word cloud generated from the notes taken during the reading of the library strategic plan sample follows the discussion of the priorities.

Digital Initiatives (67 occurrences)

Since this category is very general, it does not stand alone and it will be discussed only as a secondary category in order to reflect the emphasis placed on digital technologies, infrastructures, tools, and services among many of the priorities in the corpus. The use of Digital Initiatives as a secondary category also serves to distinguish those goals in some categories that referred to digital technologies from those that did not. In the descriptions of the categories below, distinctions between priorities related to digital initiatives and those that were not are noted.

Staff Development/Organizational Culture (31 occurrences)

Of the priorities related to staff development and organizational culture, seven of these specifically mentioned staff diversity in terms of recruitment or faculty/staff training. Faculty/staff recruitment was also sometimes mentioned on its own. Preparing faculty/staff for "emerging" or "21st-century" challenges was indicated often in terms of developing skills. (Note: these statements may have been related to digital technology skills, but they were not also categorized under digital initiatives since they could be referring to other social and economic challenges.) Skill development was mentioned in general or as related to supervisory or leadership skills. General professional growth or support for the scholarly/creative activities of library faculty also were placed in this category. Other expressions of this priority were related generally to improving organizational culture, transparency, employee recognition, workplace safety, and employee accountability.

Outreach/Engagement (30 occurrences)

This is a broad category that includes outreach and engagement with other individuals and units within the larger institution, such as a university campus, as well as the community outside the campus.

(Priorities involving collaborations with other libraries or cultural institutions were placed in the Collaboration with Other Libraries category.) Outreach/Engagement includes initiatives involving changing the role of liaison librarians, contact with faculty, the integration of services into teaching and research, general initiatives involving campus outreach, positioning the library as a provider of expertise or as the center of campus initiatives, and gaining recognition for the library's work on campus. Also included are priorities expressed as general statements involving collaborations with other institutional units. General priorities regarding improved communication with stakeholders were listed a small number of times and are included in this category. Specific mentions of engagement with communities outside the institutional/campus environment were also placed in this category. Digital initiatives were identified a small number of times among the outreach/engagement goals.

Supporting Scholarship/Open Access/Publishing (22 occurrences)

Almost every priority expressed in this wide-ranging category related to digital initiatives, such as those cases when support for institutional repositories, scholarly e-publishing, or data curation were specified. More general expressions, which were also categorized under digital initiatives, included playing an active role in changing scholarly communication environment or open access publishing. There were a small number of mentions of partnerships with university presses. The preservation of digital scholarship was mentioned once in the sample.

Technological Infrastructure (20 occurrences)

These priorities include support for instructional technology, improving virtual/mobile services, using technology for collaboration outside the library, exploring outsourcing, increasing efficiency of operations using technology, improving the technological infrastructure to support the stewardship of collections, integrating print and digital resources, and general statements about using

technology to improve operations. (Each of the priorities in this category was dual-categorized as reflecting a digital initiative.)

Physical Space or Facilities (20 occurrences)

This category includes physical space as a priority in any context. Physical space as related to students was indicated five times and space for collections was indicated three times. The goal of improving space for special collections was identified as a priority three times. Mentions of cooperative storage and physical space to support technology or services fell into this category, which also includes general statements about improvement of physical space.

Assessment/Decision Making (19 occurrences)

This category refers to statements reflecting how management decisions would be made and the degree to which a process of assessment would be undertaken to determine the success or failure of programs or other initiatives. Some statements specifically tied assessment to decision making, and a small number indicated decisions would be "data driven." Many in this category expressed a general sense that assessment would be undertaken.

Instruction (19 occurrences)

Many priorities categorized under instruction were general statements, with a number of them also specifying course integration or indicating support for classroom technology (and these were also categorized as Technological Infrastructure and Digital Initiatives). Special Collections was indicated once in this category.

Collections/Collection Development (19 occurrences)

Of the eight priorities in this category also placed under Digital Initiatives (since they indicated digital formats specifically), the

majority referred to the development of digital collections such as e-books, e-journals, streaming media, and data. The other priorities in this category may have included digital collections, although the formats were not specifically indicated: development of special collections (government documents, gray literature, cultural heritage, or local history) and general collection building. Also included in this category were statements addressing the role of physical collections and two cases in which building diverse collections was mentioned.

Special Collections (14 occurrences)

As indicated above, this category includes the building of collections defined as special or as government documents, gray literature, cultural heritage, or local history collections; and improved space for special collections. Six priorities in this category related to the digitization of unique holdings, which were also categorized as Digital Initiatives.

Students (12 occurrences)

As indicated above, improving physical space for students was indicated five times. Preparing students for citizenship or leadership was mentioned three times. First-year students were mentioned twice, as was diversity. (Note: general information literacy or library instruction was not categorized under students unless students were mentioned specifically.)

Services (10 occurrences)

Although many of the priorities identified here involve improving services in various contexts, some of these involved assessment of services in a general sense. Others in this category mentioned improving services to diverse student body (as noted under "Students" above), and other specific services to specific users. Other mentions were general statements referring to tailoring services to user needs.

Diversity (10 occurrences)

As indicated in several of the categories above, most mentions of diversity were in reference to library faculty/staff, while a smaller number referred to either students or to collections.

Collaboration with Other Libraries (9 occurrences)

This category includes a wide range of priorities, including cooperative storage, collection development, mass digitization, preservation including disaster planning, and social media engagement with other cultural heritage organizations.

Preservation (9 occurrences)

Most of the priorities involving preservation were general statements, five mentioned digital preservation specifically (most often along with analog), and two involved inter-institutional collaboration on preservation of print or disaster planning (see Collaboration with Other Libraries, above). There was one mention of preservation of digital scholarship.

Sustainability/Funding (8 occurrences)

Priorities placed in this category generally referred to seeking or developing new sources of funding.

Emerging Challenges/21st Century (8 occurrences)

Priorities that referred to preparing for the future or emerging challenges were placed in this category. As indicated above, the majority of these referred to staff development or training. A smaller number referred to future challenges in general terms.

Access/Discovery (7 occurrences)

Each of the priorities in this category was dual-categorized with Digital Initiatives, and these included improving access in online discovery systems (in addition to in-person), promoting the use or accessibility of electronic resources, and easing discovery of electronic resources.

Global/International Reach or Focus (6 occurrences)

Priorities placed in this category include those that mentioned developing global information resources, having scholarly collections of worldwide significance, serving an international community of scholars, or generally addressing global challenges.

Interdisciplinarity (5 occurrences)

The majority of the priorities relating to interdisciplinarity or multidisciplinarity were general statements of support for this principle or specifically in terms of support for scholarship. One involved staff training.

Word Cloud

World cloud derived from researcher's notes from reading a sample of ARL libraries' strategic plans to identify priorities.

IT and Institutional Plans

In order to place the library strategic plans in their institutional contexts, members of the Research Team also read a random sample of strategic plans of the parent institutions of ARL libraries and the IT divisions of these institutions. The random samples of 22 institutional strategic plans and 22 IT strategic plans were drawn with purposeful overlap with the institutions sampled for the library strategic plans. Half (11) of the institutional strategic plans

were from schools selected for the library strategic plan analysis, the other half were drawn at random. A similar sampling process was used for the IT strategic plans with half of the sample being from institutions used in the library strategic plan sample.

The team found that, similar to the library strategic plans, the institutional and IT plans varied in terms of their formats, length, and specificity but did not vary a great deal in terms of content. The IT strategic plans were similar to each other in their emphasis on efficiencies and cost-effectiveness, supporting collaboration, and enhancing service quality (reliability, etc.). However, the IT plans differed from each other in their orientation to user experience and stakeholder involvement, as well as their perspective on technology as a means to support the research enterprise versus a driving force of activity on campus. Priorities that cut across both library and IT strategic plans include support for new technologies including mobile applications and virtual collaboration, and research data management.

The institutional strategic plans showed a greater consistency in length and format. Much like the library and IT strategic plans, there is a remarkable consistency in terms of institutional priorities. The dominant priorities included a focus on the global economy; community engagement; diversity; and improving scholarship, teaching, faculty and students, and financial standing. Variations from one institution to the next tended to cluster around differences between institution types. For example, land grant institutions tended to have a specific priority to improve the state.

Conclusion

As suggested from ARL library strategic plans, member libraries share many priorities in terms of their strategic goals looking forward. An emphasis on digital initiatives was identified throughout the sample of member libraries plans, and this infused many of the other priorities including goals involving scholarly communication. Engagement and collaboration with other entities, both within the larger institutions of which libraries are a part and wider communities, was a widely

expressed goal. Improving the organizational culture of the libraries, particularly with respect to improving training opportunities for library staff, also emerged as a priority among this sample of ARL libraries.

Appendix F: Words of Wisdom on Collaborative Projects

Interviews were conducted with leaders of selected library collaborations, including HathiTrust, Europeana, DPLA, and DuraSpace. The key points from the interviews ar e organized below into four areas: getting started, keys to success, potential challenges, and lessons learned.

Getting Started

- Collaborative projects develop when **something needs to be done that cannot be achieved by just one institution.**
- Look for things that are **more effective at scale** or big wins.
- Need a **common and shared vision.**
- **Vision statement** very important; think about a big vision and articulate it.
- Need a **strong central thrust**.
- Need a **passion** about the project.
- Have **key players in the room** from the beginning.

Keys to Success

- **A partnership of equals:** Institutions need to be in a similar circumstance, at the same time and projected time frame, have similar means, and most importantly, have similar goals.

- **A culture of collaboration:** agreement to not compete with partners in the space related to the collaboration.
- **Leverage existing collaborative infrastructures:** There is a need to have "centers of gravity" that facilitate the nurturing of new collaborative projects.
- The best projects have a **co-investment in infrastructure.**
- **Strong leadership from the beginning.** A few committed leaders.
- **Strong institutional commitment,** in addition to the dedication of individuals. If an individual leaves, momentum is often lost.
- Write out **blueprint of the organization** in the early stages. **Clarity about roles** is very important.
- Try to cajole institutions into **a collective standard.**
- **A board/executive structure to guide/oversee project:** Only institutions who contribute resources get to have a say. "Bring the gold, make the rules."
- **A good project manager** hired by the board: project management/a strong project manager are critical. Projects need a lot of follow-through.
- **Work should be broken into a functional group and a technical group:** The functional group articulates what the product should do and be. The technical group executes the building of the product to meet those specs.
- **Product must solve an existing higher education problem:** The participating schools should build and use the product on their home campuses to prove it is solving a problem.
- **Think entrepreneurially:** "Run it like a start-up." "Think like a start-up." "Be bold." "Be revolutionary." "Break out of the box".
- **Collaborate but think bigger than the sum of the parts.**
- **Form collaboration from the top-down:** If it were up to developers, some collaboration would not have happened. There must be leaders with entrepreneurial outlooks. Go to the top-levels of libraries or other institutions to build lasting, significant partnerships.
- **Attract talented, committed people:** This is done by cultivating a network and building loyalty with relationships. Must convey

something exciting, relevant, and new is happening. Convey risk factors—get people willing to take risks.

- **Keep local staff satisfied** if you want to maintain buy-in.
- **Communicate** decisions/consensus to the broader community (who is making decisions and why), especially if project is director-driven.
- **Talented evangelists and marketing strategy**: Have a **community outreach strategy;** build **brand identity** around mission.
- A strong **sales strategy: Market the project,** just as you would a commercial project.
- Use **central funds** to make purchases without needing approval of the individual partners.

Potential Challenges

- **It takes time** to build trust among the collaborating partners.
- Sometimes **"There's no project to sign up for, it's an *idea."***
- **Patterns of funding are a problem;** funding agencies have to rethink and relearn how to support large, collaborative projects.
- Things almost always **turn out to be harder** to do than expected.

Lessons Learned

- Think about the strengths and weaknesses of all potential partners. **Some partners are better than others.**
- A **history of successful collaboration breeds more collaboration.**
- Use **personal connections** to organize original collaborators.
- There should be a **unified voice** right from the start.
- Always try to **assemble an advisory group** for each project.
- The **building of trust** is a very social and cultural issue; it has nothing to do with technology.
- **Our greatest impediment is *us;*** large, collaborative projects are a new frame of reference, a new cultural environment.

- **Learn to let go of some control and learn to trust**—both institutions and individual people associated with them.
- **Take advantage of the financial benefits of doing things at scale.** Libraries may not be associated with individual institutions in the future. There is not just economic or user-based benefit to unbundling the library from the institution—also changing the way institutions work together as scholarship is more collaborative inter-institutionally. It makes sense for libraries that support them to be at scale and serving more than one institution.
- **It's important to have existing structures in place that you can leverage.**
- **Leverage existing resources**. Don't re-invent the wheel.
- **Leverage internal resources where appropriate, outsource work where appropriate.**
- **Leverage shared resources for innovative uses.** Go beyond the original purposes or benefits of the resource; mature beyond the original purpose of the collaboration.
- **Observe the three pillars of sharing:** shared infrastructure; shared services; and shared risk investment.
- **Carefully weigh risks and benefits**: Sometimes collaboration itself can introduce risks when functions such as digital preservation are concerned. Need to balance structures, consistency, standards with the participation of multiple institutions.
- It is critically important to **get any project out there and used as early as possible.**
- **Deal with the free-rider problem to address sustainability.** Want to be shared broadly, but have to find a way to manage that.
- **Do not rush to governance structure too quickly.** Don't set up structures before the entity is fully formed. Infancy needs to be treated differently than adolescence or early adulthood. More formalized structures need to be put in place to guide something once it gets past infancy. Take an evolutionary path toward sustainability.

- Define project, set goals and priorities, based on **grassroots consultation** and **broad member participation.**
- **Expand the partnerships to continue success.**
- **Think critically about forming corporate and project partnerships:** Think with a business head rather than an academic researcher's head—avoid the tendency to want to join together. Continually ask whether a potential partnership would forward the mission. Evaluate whether there are shared goals. Engage in a process similar to portfolio analysis.
- **Foster direct relationships** of individual schools with project partners, especially commercial partners.
- **Be bold, take risks, but be aware of risks and create contingency plans.** Must maintain financial stability. "Finding out what the sweet spot is—you have to be in it."
- **Demonstrate success.**
- **Streamline** the on-boarding process and other processes.
- **Do not give** individual partners **too much latitude** to do things the way and when they want.
- Can't operate under the premise that everybody needs to be in agreement. Need to be able to **twist arms, make decisions, move quickly.**
- Try to **avoid spending too much time following one person's idea** without seeing if it is doable or of broader interest; need better **strategies in managing grassroots ideas.**
- Consortia should focus on **shared technology** so partners can be freed up to do **more innovative work.**

Appendix G: Initial Draft System of Action, May 2014 (later modified)

Below is the version of the System of Action surfaced in this process in the spring of 2014 and presented for review at the May 2014 Membership Meeting. Based on feedback from the membership, the Strategic Thinking and Design Work Group modified the System of Action during the summer of 2014. That later version appears in the main body of this report.

Initiatives

The System of Action plan that emerged through the Strategic Thinking and Design process was presented by Susan Gibbons, John Wilkin, and James Hilton at ARL's May 2014 Membership meeting. It consisted of six initiatives that, when put into place, would allow for change at scale through innovative responses; these six initiatives are briefly elaborated here. They are:

- Coordinated management of collective collections
- Scholarly publishing at scale
- ARL Academy
- Building a boundless symposium
- A first suite of smart libraries
- Innovation lab and (venture) capital fund

Initiative 1

Coordinated management of collective collections, is fairly self-explanatory. It is envisioned as a federated network of print, digital and data repositories that may, in turn, expand into new types of repositories as technology continues to advance in the 21st century. This federated network is intended to allow for collective investment that respects the local, a governance structure that allows members to coalesce around what they need to share, and an economic model at a collective rather than individual scale. Broadly speaking, this initiative of the System of Action is about many of the core services and concerns of research libraries, including access, retention, and preservation; trusted relationships on an international scale; the exchange of expertise among practitioners; and collective management, acquisition, description and interoperability strategies. Key facets of this coordinated management of collections include governance, shared protocols, best practices, a decision tree, descriptive and trusted models, transparency, systems of access, and an ARL exchange—a system of exchanges akin to the contemporary scheme of "carbon credits."

Initiative 2

Scholarly publishing at scale, may also be conceived of as a super-academic communication system. In observing that the current economics, flow, and use of academic publishing are unsustainable and at odds with the needs of the research enterprise, and in recognizing that the data behind the metrics of publishing are not currently in the hands of the academy, this initiative seeks to "bring it back home" through the creation of a shared-infrastructure, at-scale, fully operational "press" driven by scholarly metrics that allows scholars to remain in control of their intellectual assets. This new press would also play a key role in institutional decision making. Key facets of this initiative include the ability for quick turnaround and durable access; irrevocable licenses to universities

and a culture of institutionally approved rights to unfettered and unbundled intellectual output; and a shared learning ecosystem. A pilot program to build a coalition of the willing is proposed.

Initiative 3

The ARL Academy, is described as a special academy for forming leaders and leadership teams, one that reshapes the profession for the 21st century and is geared towards populating the ARL of two generations hence. This academy would cultivate a diverse field of practitioners with 21st-century skills, creating catalytic agents for the research library of the future by scaffolding those agents with a strong network of alumni and mentors. Fundamentally, the ARL Academy would be about creating a new cadre of creative workers with skills in new technologies, strategic thinking and design, 21st-century economics, and specialized collections. The ARL Academy would further form a pool of talent from which research libraries could draw. Through proactive recruitment, a decentralized teaching model, a coalition of partners, including successful programs in adjacent fields, and a well-connected alumni and mentorship program, the ARL Academy will cultivate and develop expertise and leadership, allowing ARL to function in part as a consulting bureau and/or concierge service for the 21st-century research library.

Initiative 4

Building a boundless symposium, refers to the designing, funding, and construction of a prototype that provides new opportunities for meta-collaborations on projects and conversations that lead to new insights. This System of Action initiative envisions an ongoing role for ARL as a convener, orchestrator, and facilitator of intra- and inter-institutional partnerships that are robust, agile, and help to both update and propel individuals, fields, and institutions as they converse and collaborate. Key facets of this initiative are physical and virtual spaces with technology for embodying knowledge (e.g.,

visualization labs); tools for everyone to share; a symposium leader and team who orchestrate, stimulate, and support participants; campus partnerships; and projects and events that define a practice in action, including pop-up and flexible teaching environments. This System of Action initiative proposes the brokering of a five-institution experiment or prototype, a constellation of five who have a reason to work together—particularly in disciplines that are working on complex problems—and the establishing of tools and protocols through a first series of events and projects.

Initiative 5

A first suite of "smart" libraries, dovetails with Initiative 4 in envisioning the designing, funding, and building of a coalition of libraries that create personalized content delivery and collate data to support decision making in all manner of university and research activities. The ultimate goal of this initiative is the development of a "smart" library that shares data across all systems (course management, research trends, student life, etc.) and contextualizes and connects that data, with the result that the status of the research library is changed. This initiative relies on numerous platforms, including an integrated learning management system and data analytics platform, a research-agenda surfacer platform, and a student life management system, together with the technology, tools, and protocols to surface, integrate, and connect all of the initiatives and systems. Here, a consortium model, a design and operations team, and the presence of student success centers are considered necessary. As with Initiative 4, a boundless symposium, it is envisioned that ARL would broker a first prototype of a suite of smart libraries from a coalition of the willing, and that this first iteration would develop a design "brief," an inventory of existing platforms, tools, and protocols; identify the most valuable data first; and address the privacy issues inherent in this proposed initiative.

Lastly, Initiative 6

Innovation lab and (venture) capital fund, envisions a "think tank" or incubator role for ARL. Such an innovation lab would hold the big-picture view of the research library environment and thus be well placed to expand and direct discussions, assess individual institutions around innovation, projects and investment, and create a culture of innovation as an ecosystem that tolerates partial successes and "non-successes." The ARL innovation lab would be one means of organizing capital, providing funding assistance for projects that are greater than the sum of their parts, as well as a mechanism for locating additional capital, using investment to spur innovation. Through a practice of pop-up labs and experiments, the ARL innovation lab would include a scouting team to keep abreast of new innovation or best practices, events that hold conversations around cutting-edge questions and technologies, and the communication and dissemination of this work, including a mix of lenses and consultancy around differing budget models.

Appendix H: Bibliographic Review

Association of Research Libraries (ARL) and Stratus, Inc. *The ARL 2030 Scenarios: A User's Guide for Research Libraries.* (Washington, DC: ARL, 2010). http://www.arl.org/focus-areas/ planning-visioning/scenario-planning

Many of the themes that emerge in the systems of action echo those that emerged in ARL's scenario planning process, which was undertaken in 2010 by representatives from ARL institutions who looked out over a 20-year horizon to describe possible futures that research libraries may face. The resulting document, ARL 2030 Scenarios, was designed to provide resources to help ARL members strengthen their strategic planning initiatives, concentrating on those library functions that advance the research process. While each of the four scenarios envisions a different future, the Scenarios document identifies a number of themes that emerged in at least one, and in some cases several, of the scenarios:

- Developing diverse and novel sources of revenue and/or funding
- Balancing mission and values with sustaining the enterprise
- Engaging fully in research activities as service provider and steward of content
- Developing focused, specialized capabilities and scope
- Creating research library cooperative capacities

In many ways, the Systems of Action that resulted from the Strategic Thinking and Design process are consistent with these strategies that emerged in the scenario planning process. Similarities can be found in the way each exercise anticipates changes in funding models, envisions more collaboration among research libraries, suggests a greater role for libraries in terms of a provider of research tools and as stewards of research data, and considers how librarianship will need to change to meet emerging challenges.

Bok, Derek. *Higher Education in America*. (Princeton, NJ: Princeton University Press, 2013).

Bok notes the changing nature of academic research toward interdisciplinarity, collaboration, and the sharing of big data across institutions:

The research of academic scientists has also become more collaborative and interdisciplinary by comparison with earlier periods. Investigators addressing important human problems or attracted by exciting opportunities in fields such as stem cell research, nanotechnology, or environmental studies are likely to find that progress requires the help of colleagues in several disciplines. Scientists seeking to capitalize on the huge databases now available need the help of computer specialists. Biologists doing research on malaria want to collaborate with epidemiologists or biostatisticians. The Internet facilitates such cooperation by enabling investigators to join forces with colleagues in other parts of the country or even distant areas of the globe. (p. 357)

While Bok does not address the potential role of research libraries in adapting to these trends, his vision suggests the need for libraries to build cross-institutional and global partnerships to meet the changing needs of academic researchers. Among these changing needs is the management of large data sets.

Bok observes trends in government research funding which may lead toward more interdisciplinary research, often with

cross-continental collaboration. While this is happening, the need to work with big data is intensifying. "Meanwhile, investigators are now able to call upon powerful computers to assemble and analyze databases of a hitherto unimaginable size and to use advances in communication to collaborate with colleagues from different nations and even different continents." (p. 425)

Derek Bok calls on colleges and universities to assess progress in student learning at their institutions and apply the results to improvements in teaching. Unfortunately, he writes, those studies that result from accreditation measures, as well as those taken by institutions of their own accord, have often languished and have not been applied to improving student outcomes. "As of now, therefore, assessment data have piled up in administrative offices, but few campuses can report much progress in actually using the information to improve the quality of education." (p. 227) While Bok does not speculate as to whether universities may be overwhelmed by their own assessment data, lacking the expertise to manage that data over time, it is possible that academic libraries could play an important role in helping institutions to do this.

Bolt, Nancy. *Libraries from Now On: Imagining the Future of Libraries: ALA Summit on the Future of Libraries—Report to ALA Membership.* ([Washington, DC: American Library Association (ALA), 2014]).

One of the key issues discussed at the American Library Association (ALA) Summit on the Future of Libraries was the need to re-envision library service, which will involve librarians being encouraged to take risks and experiment without fear of failure as they discover new ways to serve changing constituencies. Another key issue was the role of libraries as community hubs, intricately involved in the communities that serve and striving to determine its needs. An emphasis was placed of the importance of networking and collaboration with relevant constituent groups. (p. 2)

In her presentation Education in the Future—Anywhere, Anytime

at ALA's Summit on the Future of Libraries, Renu Khator discussed the dramatic changes in store for the educational environment of the future. The summit report notes that "Khator said that universities and libraries must figure out the future together: libraries must look outward; libraries are about experience, not books; libraries are about place; libraries are about communities of learning; libraries are about focus. Above all, universities and libraries must be open, flexible, and innovative." (p. 7)

In his presentation "From an Internet of Things to a Library of Things," at ALA's Summit on the Future of Libraries earlier this year, author Thomas Frey noted a trend in libraries that reflects a change from being a place of consumption to one of production. "People are no longer satisfied with just receiving information; they want to help create it." Examples cited were publishing, maker-spaces, support for entrepreneurship, and 3D-printing of items such as pottery, bicycles, cars, houses, and clothing. (p. 8)

In recapping the ideas presented at ALA's Summit on the Future of Libraries, Joan Frye Williams remarked that the role of libraries will be "active, collaborative, and developmental." She said libraries will be "challenged to accommodate a shift away from an environment of unpredictable relationships and stable processes, and towards an environment of stable relationships and unpredictable processes. Creativity and comfort don't always go together." (p. 12)

International Federation of Library Associations and Institutions (IFLA). *Riding the Waves or Caught in the Tide? Navigating the Evolving Information Environment: Insights from the IFLA Trend Report.* (The Hague, Netherlands: IFLA, [2013]).

The IFLA report predicts that the accumulation of data by various new technologies will transform policymaking:

The number of networked sensors embedded in devices, appliances and infrastructure nears 50 billion by the year 2020. This "Internet of Things" leads to a further explosion in recorded data with

major implications for future public series and data-driven policy-making, as well as new challenges for individual privacy." (p. 14)

Given the implications for privacy, there may be no better institution that the academic library for managing the sharing of data across all systems.

Mobile communication devices and other technologies are set to transform the information landscape in the coming decades. As IFLA notes in its trend report:

Proliferation of hyper-connected mobile devices, networked sensors in appliances and infrastructure, 3D-printing and language-translation technologies will transform the global information economy. Existing business models across many industries will experience creative disruption spurred by innovative devices that help people remain economically active later in life from any location. (p. 4)

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