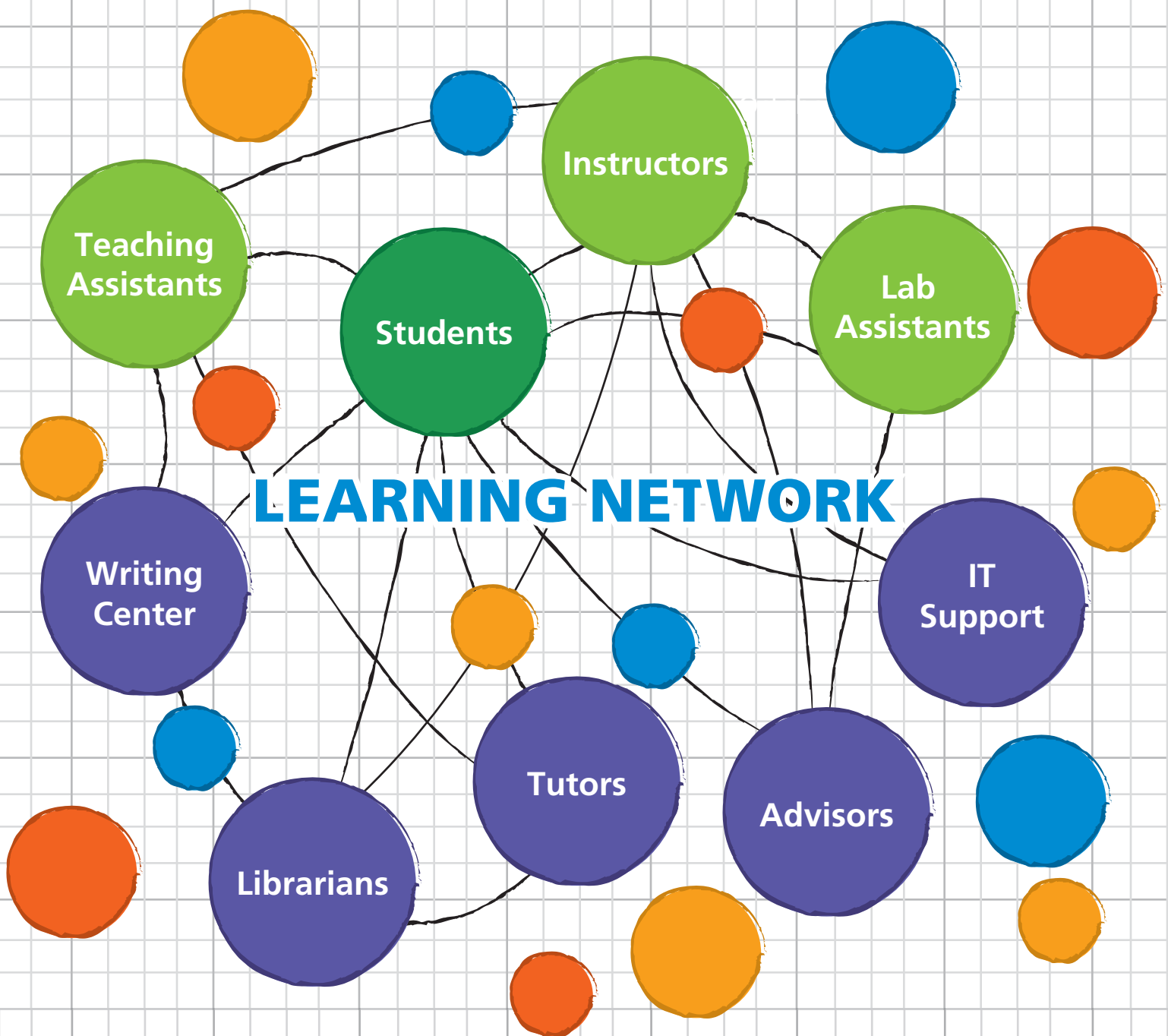


Too Much Assessment Not Enough Innovation

October 2012

R & D Models and Mindsets for Academic Libraries
Brian Mathews, Virginia Tech



PERCEPTION SHIFT

Too Much Assessment Not Enough Innovation

R&D models and mindsets for academic libraries

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Abstract

Academic libraries are facing a disruptive future. There are new technologies, new pedagogies, new publishing models, and new environments, all converging with teaching and research. This multiplicity of change is bubbling forth and setting up for new directions in the years ahead.

Library assessment programs would benefit from adopting Research and Development (R&D) practices in order to anticipate and accommodate new demands. This paper outlines a perspective shift for addressing needs in the emerging landscape of higher education. By embracing a discovery-oriented outlook, activating networked development initiatives, and nurturing a culture of creativity and experimentation, libraries can position themselves for growth opportunities.

Preface

In the early 1600's telescopes were some of the most powerful instruments in the world. It wasn't distant stars that people were searching for, but rather financial advantages.¹ Aspiring entrepreneurs stood on hillsides monitoring the shoreline for incoming

trade ships. This ability to see *the future* before others enabled them to capitalize on emerging opportunities.

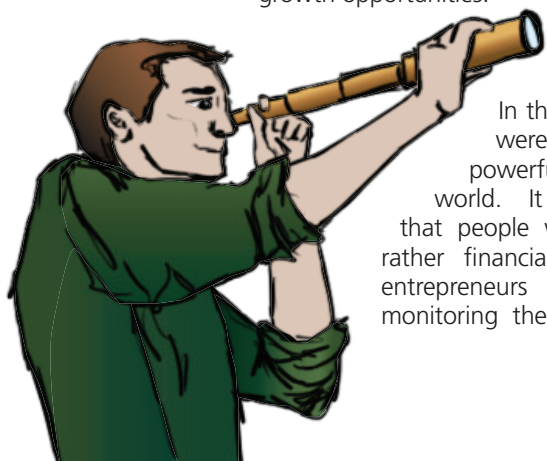
Famed venture capitalist Guy Kawasaki champions the telescope approach for forward-looking organizations.² He believes that people generally waiver between two dominant mindsets: microscopes and telescopes. Microscope-thinking focuses on understanding and improving existing processes, whereas telescope-thinking gazes outward at new possibilities.

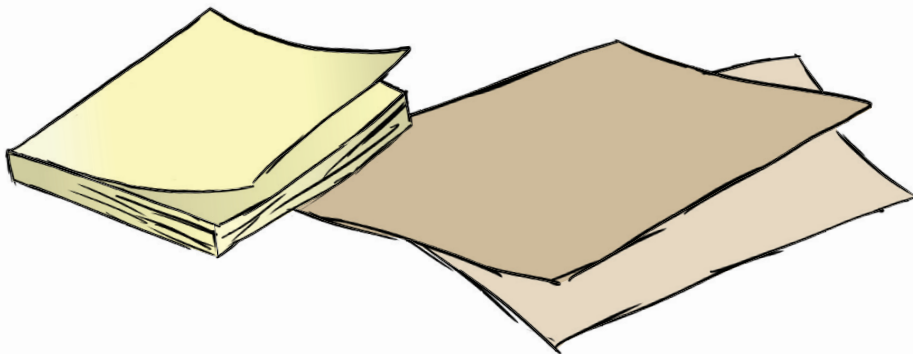
We're at a critical point in the history of libraries. Now is the time to raise our telescopes and scan the horizon. While we invest in numerous assessment measures, we tend to use microscopes in search of small improvements rather than bold new directions. I propose that by adopting Research and Development (R&D) models, metrics, and mindsets, academic libraries can position themselves to discover and implement changes, resulting in new and greater value.

Thinking like an R&D lab prepares and empowers us to face the uncertain challenges ahead. The concepts described in this paper serve as a launching pad for the future. The central theme: assessment initiatives need to be about more than *sustaining* our current practices—we need them to lead us to *growth*. By peering through the long lens of R&D, distant domains become possible destinations.

The goal of R&D

In 1902, a mining company formed and developed sandpaper into a lucrative product.³ Profits took a downward turn when customers started complaining about quality, which led to the establishment of a small lab to identify defects. The effort grew from a one-person shop into a team of engineers who worked on improving materials as well as manufacturing processes. The lab eventually added scientists and other experts focused on discovering, designing and implementing new ideas. The company is 3M, one





of the most robust R&D powerhouses in the world. They started with sandpaper and today they offer over 55,000 products.

Ideas are plentiful. You and your colleagues probably have a long wish list of projects you'd like to tackle, but for one reason or another it's hard to get off the ground. Moving from idea to implementation is challenging. Sometimes the obstacle is money. Other times it's skills, connections, bureaucracy, personalities, or time constraints. These issues may be connected to something larger: culture. Does your library accommodate the messiness and disruption of innovation?

Many library leaders want to move in new directions but lack the framework. Traditional models are not particularly effective for doing new things. This is where we can turn to the ideation and implementation practices of R&D.

So what exactly is R&D? Let's start with a definition:

"Systematic activity combining both basic and applied research... aimed at discovering solutions to problems or creating new goods and knowledge."⁴

The desire to solve problems, to develop new knowledge, and to create or improve services should be the driving force behind our assessment programs. The practice of R&D transcends chemists in a lab or engineers behind computers: it's a philosophy of innovation, an attitude that frames what we study and how we build solutions.

Many libraries operate like 3M did in its early years as a committee charged with assessment duties. They use tools to measure quality, effectiveness and user satisfaction. This approach is helpful for understanding how well current operations perform, but won't lead us to innovation.

To foster change-making innovation, we expand our toolkit as well as our construct for exploring problems. R&D encourages investment into larger and deeper questions that increase or blur established boundaries. Innovation requires us to travel down multiple

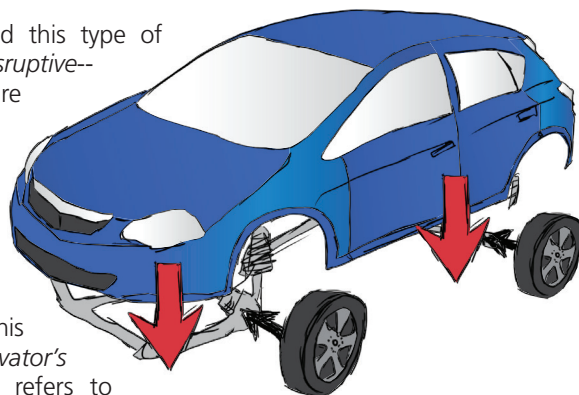
paths simultaneously with a variety of partners as companions. Just as 3M evolved from the kernel of quality management into a product development juggernaut, academic libraries are poised to deliver a similar impact on learning and research.

Disruptive Cycles

Imagine you operate a profitable horse and buggy shop in the early 1900's. The craftsmanship of your carriages is unrivaled. Your service is excellent and your customers are loyal. The data suggests that you're doing everything right.

Then everything changes. Motorized vehicles hit the mainstream market. In 1908, Ford develops the Model T and by 1927 the fifteen-millionth unit rolls off the production line.⁵ Libraries, and perhaps higher education, are on the verge of a similar experience.

In the technology world this type of change is referred to as *disruptive*-- it alters everything we're comfortable with, everything that we know. And while this immense change is difficult, it's a healthy part of innovation. Clayton Christensen outlines this theme in his seminal work, *The Innovator's Dilemma*, in which he refers to disruption as a process by which a new product or service uproots the established landscape.⁶



This cycle occurs over and over again as new ideas supplant old ones.⁷ Telegraphs were replaced by landline telephones, which are being replaced by mobile technology. Radio was challenged by television, which today is being challenged by the Web.

Shift to higher education and you can see disruption everywhere. There are new technologies, new pedagogies, new publishing models, new learning environments, new partnerships, new tuition

structures, new credentialing processes, new attitudes, preferences, and expectations all interconnected with teaching, learning, and research. This multiplicity of change is bubbling forth and setting up for unprecedented years ahead.

What's the future of libraries? Karen Williams, Associate University Librarian at the University of Minnesota, proposes that academic libraries are shifting from a collections-centered focus toward an engagement-centered model.⁸ This reframes the role of librarians from experts in scholarly *products* (publications) into experts of scholarly *processes*. Discovery and access to information will no longer be our defining identity. Librarians will become integrated and embedded partners emphasizing the craft and expression of knowledge. In this scenario, libraries shift from being suppliers of information into co-creators of scholarly experiences and outcomes.

**The old rules
(and metrics) don't
apply during a
disruptive cycle.**

This radical change requires new skills, abilities, and attitudes. To shape this future we need telescopes pointing out in different directions. We cannot simply import our legacy model into a digital domain; rather we need to design new models and new domains. Simply put: the old rules (and metrics) don't apply during a disruptive cycle. Processes articulated for telegraphs won't work in the era of wireless communications. Likewise, our work will be different in a robust digital environment.

I addressed this spirit of change in an earlier paper about startups.⁹ My intention wasn't to suggest that libraries *behave* like startups (although that is possible using the lean methodology) but that we *think* like them. A startup mindset enables us to navigate through the uncertainty of disruption. It frees us to think differently instead of towing tradition along begrudgingly. In this sense, we're not upgrading the library but rewriting the source code. A new identity is being constructed while things are in motion; we don't know where the outcome will lead and hence have to become nimble, iterative, future-focused organizations prepared for arriving challenges. By anticipating and engaging disruption head-on, we can position the library as a leader of change rather than a victim of it.

We're not upgrading the library, we're rewriting the source code.

Discontinuous Thinking

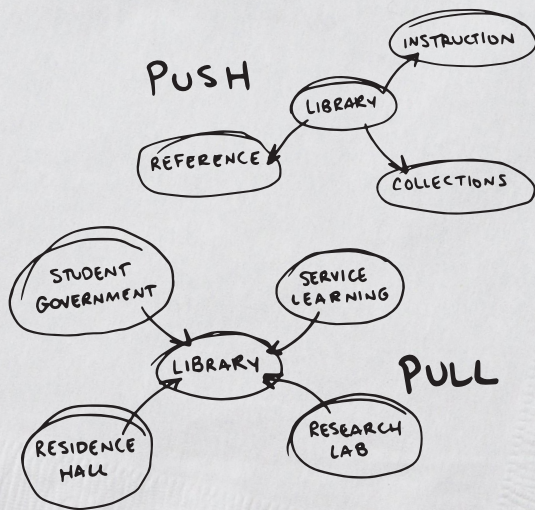
Xerox knew that it had to evolve.¹⁰ While its photocopy business was extremely profitable, it anticipated that competitors would rise and that disruptions would emerge. Xerox responded in two ways. In Rochester, located near corporate headquarters, Xerox built an R&D facility focused on making better copier machines. On the West Coast, three thousand miles away from administrative oversight, Xerox established the Palo Alto Research Center (PARC).

PARC operated differently than the New York office. They brought together engineers, scientists, and philosophers and let them dream up new possibilities. Their objective was to generate new knowledge leading to breakthroughs that could open up entirely new industries for Xerox. The results were profound. PARC gave us laser printing, Ethernet cables, graphical user interfaces, modern personal computers, object-oriented programming, and WYSIWYG editors among other inventions.

You'll find the business literature is packed with stories, theories, and models for generating innovation, but Xerox provides this potent prototype: play both sides. The Rochester facility focused on developing the core business, while Palo Alto teams separately aimed at creating entirely new industries. This dichotomy highlights a critical concept, the difference between continuous and discontinuous innovations.¹¹

Continuous innovation is incremental and takes place within existing infrastructures. It builds on existing knowledge and existing services without challenging underlying strategies or assumptions.

Discontinuous innovation brings forth new knowledge and new conditions that result in the development of new products, services, or operating models.



involved with (rather than just pushing out to) research labs, student government, or new pedagogies, librarians can position themselves for an engagement-centered universe.

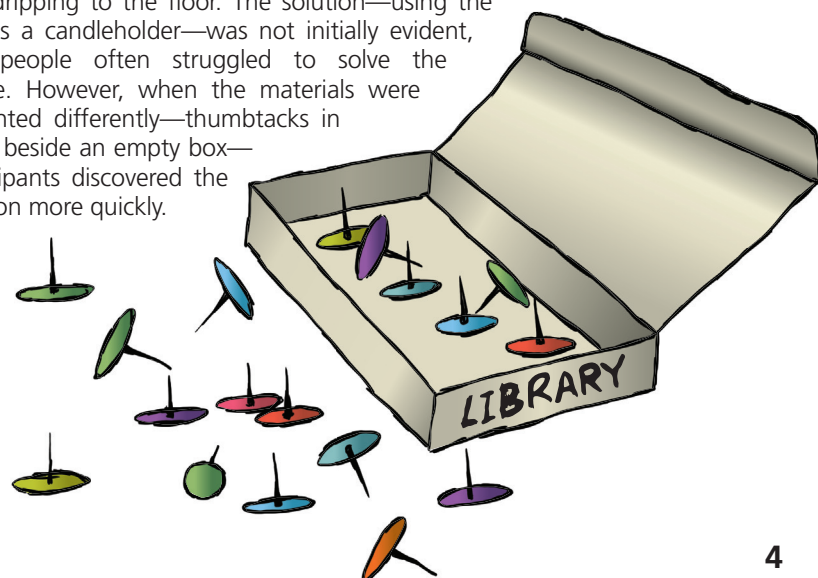
A Cosmic Perspective

In a famous experiment, volunteers were asked to watch a video and count the number of times a ball is passed between individuals.¹² The study suggests that most people are so focused on counting the transactions that they fail to see a woman wearing a gorilla suit walking in the background.

Cognitive scientists refer to this phenomenon as “perception blindness” or “inattention blindness.”¹³ We’re often consumed with the details of immediate matters that we remain unaware of the larger situation, even when it is in plain sight. If your job involves repeatedly performing the same task, then changes that make it easier might not be obvious to you. When considering reference work, the desk model is so ingrained in our professional culture that it blinds us to other interaction opportunities.

Breaking free from the gravity of tradition requires a conscious effort. Awareness of our selective blindness enables us to zoom out and refocus our vision. I refer to this as gaining a “cosmic perspective.” It is only by viewing situations through the wide lens of a satellite that we can truly appreciate the full scope of possibilities.

Another cognitive concept that limits our vision is “functional fixedness.”¹⁴ This insight was derived from an experiment known as *The Candle Problem*. Participants were given a figurative candle, matchbook, and a box of thumbtacks and asked to attach a lit candle to a wall without the wax dripping to the floor. The solution—using the box as a candleholder—was not initially evident, and people often struggled to solve the puzzle. However, when the materials were presented differently—thumbtacks in a pile beside an empty box—participants discovered the solution more quickly.



Library assessment tends to emphasize the continuous side of the spectrum. *How satisfied are patrons with our current offerings? How can we push services out further? Do students comprehend what we’re teaching them? How can we streamline workflows?*

While these questions are necessary, the challenges of a disruptive environment require discontinuous thinking, too. If we are shifting away from a collection-centered mission, then we need to ask new questions.

Let’s look at an example. Consider the variety of academic support that college students need. Librarians typically focus on teaching information literacy delivered through reference and instructional services. Using the continuous approach, the goal is to expand these efforts in new ways, such as texting or course-based tutorials. We push out core services through different channels or new locations. This extension approach is continuous because it builds upon our existing platform.

A discontinuous approach asks a broader question: *what elements are critical for student success?* This inquiry opens new paths. Instead of seeking new ways of adapting old services, the intent is to reimagine the role of the library. By examining the larger learning landscape we can discover unmet or underserved needs with the prospect of offering new services, technologies, spaces, expertise, or applications.

Discontinuous thinking encourages us to pull information in from other domains and then evaluate our potential involvement. We need to spend time understanding a community before assuming its needs. For instance, instead of setting up a mobile reference desk in the dorms, librarians might volunteer with the campus live-learn community to uncover ways of supporting residence hall staff hoping to grow their academic initiatives. By getting

The results suggest that perceptions are clouded by viewing the box as a *container* for thumbtacks rather than as a *platform* for the candle. The role of the box is so ingrained in our minds that it is challenging to perceive it beyond its primary purpose. In this regard, functional fixedness stems from the persistent biases that we relate to various objects, places, concepts, or people. Often when something is labeled one way, it's hard to break that initial stereotype. Libraries fall into this mode as well: are they *containers* of information or *platforms* for learning?

The perils of perception blindness and functional fixedness are that they encourage tunnel vision. And the real danger is that we might be unaware that we're even in a tunnel. This narrow view perpetuates a drive for excellence (tradition) over the desire for innovation (evolution). It is grounded in the sameness of continuity at the expense of discontinuity.

During tough times you'll often hear leaders talk about "mission critical" endeavors, when in reality, during a disruptive cycle, what truly might be necessary is a new mission. A cosmic perspective challenges our preconceptions and entrenched thinking. PARC, instead of just making photocopiers better, revolutionized how people communicated. Likewise, we need to take orbit beyond our day-to-day operations and legacy viewpoints by adopting a different outlook that enables us to anticipate and design for the future.

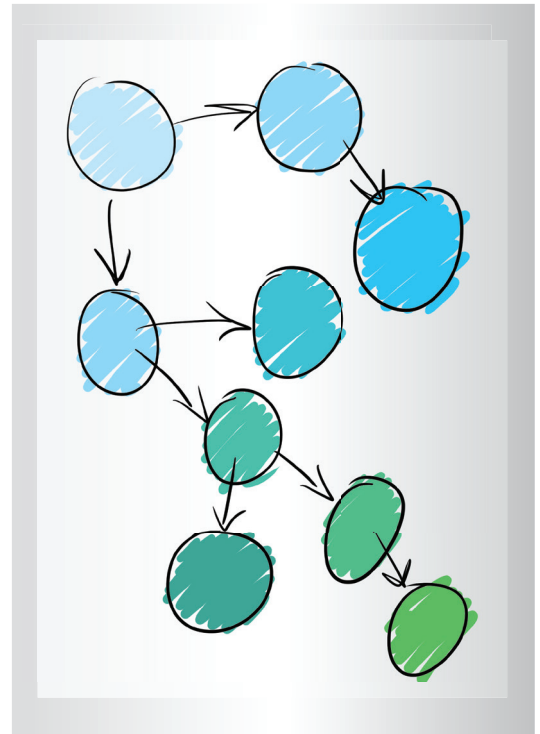
A Discovery-Oriented Outlook

Anthropologist Thomas Galdwin provides us with two contrasting mindsets regarding new ventures.¹⁵ His research found that European navigators typically began their expeditions with a set plan, charting voyages based on universally accepted principles and best practices. As the journey commenced, progress was measured in accordance with a preset course.

Trukese islanders of the Western Pacific took a different approach. They began with an objective rather than a plan. They set off with a goal in mind and then responded to conditions that arose. This included the utilization of wind, waves, tide, currents, and clouds in order to steer accordingly. The effort was guided by doing whatever was necessary to reach the destination--the specific course taken wasn't important.

If you're developing an idea that is continuous or otherwise follows a predictable path, then a concrete plan based on established protocol or experience is suitable. However, if the idea is filled with uncertainty or if the destination isn't clearly defined, then different tactics are required.

A discovery-driven outlook acknowledges the difference between planning for a new venture and planning for a more conventional need.¹⁶ New ventures demand that we envision the unknown. Our assumptions are then tested and assessed in real-time. Much like the Trukese adapting to whatever nature presented them, our project requires us to convert guesswork systematically into the working process. Therefore, the real potential of the venture is only discovered as it unfolds.



Think of it like this: Let's say you start out with Idea A. It doesn't quite work, so you build it in a different direction called Idea B. Along the way Idea C is sparked and ultimately becomes a new program that your library adopts. Had you followed a conventional path, it's unlikely that Idea C would ever have been discovered.

The key component of this outlook is how success is measured. In a conventional approach, this is typically determined by “staying on course,” following the plan, hitting good numbers, or achieving specific targets.¹⁷ The Balanced Scorecard is a perfect example of this schema: performance as a measurable goal.

With a discovery-oriented outlook, learning is the objective. We want to uncover as much useful information as possible in order to address needs and grow the new venture. A prime example is evident in collection building strategy as libraries shift from a predominately selector-driven model towards a demand-driven model. Instead of assuming we know what scholars want, we provide them with what they need when they need it.

This outlook challenges the foundation of our assessment programs. It requires us to move beyond inputs and measures of satisfaction, and instead test assumptions about what is necessary. We want to make libraries more efficient, but what if the thing we’re making more efficient isn’t a thing that people need anymore? What if libraries need to become something else?

Navigating a disruptive and uncertain future requires not a map, but a compass.¹⁸ Training ourselves to hunt for the unknown is a critical attribute for future-oriented librarians. But in order to think cosmically, we need new mindsets.

Leaping Sideways: *mindsets*

AT&T’s Bell Labs was one of the most productive R&D operations in history.¹⁹ A predecessor to PARC, it gave us transistors, lasers, information theory, UNIX, C and C++ programming languages and many other inventions. While Bell Labs focused on improving and expanding communication platforms, researchers were given tremendous creative freedom. The benefits of organizational flexibility were perhaps most evident in their work in outer space.

In 1962 Bell Labs, in collaboration with NASA and other agencies, launched Telstar.²⁰ This satellite, which still orbits the earth today, was the first to relay telephone conversations, fax images, and

broadcast video around the globe. Successful implementation required not only unprecedented technical breakthroughs and new expertise, but also the imagination to believe it was possible.

It took Bell Labs over twenty-five years to develop the skills and components necessary to make satellite communications possible. The project was expensive and highly speculative: it was discontinuous and an extremely disruptive idea. At the time, AT&T was heavily invested in an infrastructure of wires, cables, and switches, as well as phone hardware and technicians. The move into wireless was a giant “sideways leap.”²¹

Game changing, groundbreaking ideas don’t simply appear on your desk; you have to go out and find them. Here are three mindsets to help you along the discovery process:

Seize the White Space.²²

As organizations mature, their functions become well defined. Funding, performance measures, and capabilities are concentrated on this *core operating space*. The objective is to secure the necessary resources in order to improve and sustain existing services.

But what happens when opportunities arise outside of the core space? Maybe you will encounter a new technology or a new user segment. Channels open, creating entirely new roles that transform what we do. At these moments, organizations move into *white space*, or uncharted territory existing outside of their core. Libraries moving from storage to publishing functions are a good example of this concept.

Seize the White Space provides a framework for exploring adjacencies and the outer edges of the core. Awareness of emerging trends and distinct domains is an important piece, but having a systematic approach for evaluating and building new ideas is most critical. Training ourselves to recognize and pursue new environments is essential for addressing strategic progress.

Swim in Blue Oceans.²³

Cirque du Soleil reinvented the circus. They did this not by competing directly with Ringling Brothers or Barnum & Bailey, but by blurring the lines between

theater, ballet, and spectacle. Another way that we can move forward is by entering into uncontested domains. This is called Blue Ocean strategy. Here's how it works:

Red oceans represent all services or products in existence today—the known marketplace or everything currently available. Boundaries are well defined in this crowded environment and the space is driven by competition.

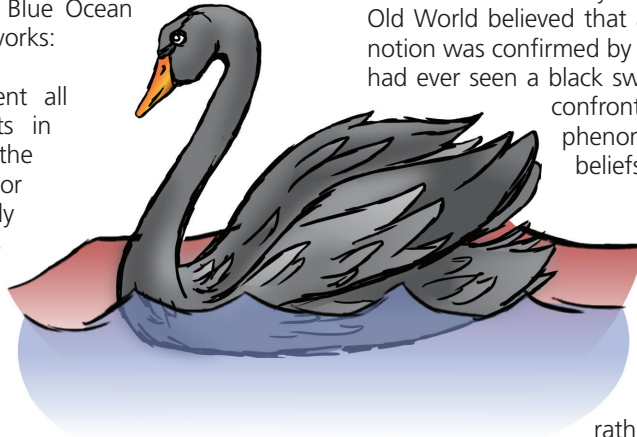
Blue oceans, by contrast, denote all services or products that are not yet in existence. This unknown space is untainted by competition; demand is created, not fought over.

While white space encourages us to move beyond our core operations, blue oceans encourage us to move into areas that are outside of everyone's space and into completely new domains. Sometimes new industries emerge, such as eBay developing the concept of online auctioning. But often, blue oceans are created by altering the boundaries of existing industries; this is what Cirque du Soleil did.

A library example: suppose that you're considering adding a multimedia lab. You could build one based on benchmarking with other peer libraries in conjunction with surveying your users. Before proceeding, you review the landscape and realize that your campus already hosts numerous computer labs with design software. You could duplicate this, hence entering a red ocean. Or you could rethink the approach and find a blue ocean. Maybe your lab features one-on-one consulting or maybe it offers a plotter printer, 3D prototyping, or other value-added services. Or maybe instead of focusing on undergrads, you develop a multimedia sandbox for faculty and graduate students that addresses their design needs? The key is to differentiate what you do from what is also currently available.

Search for Black Swans.²⁴

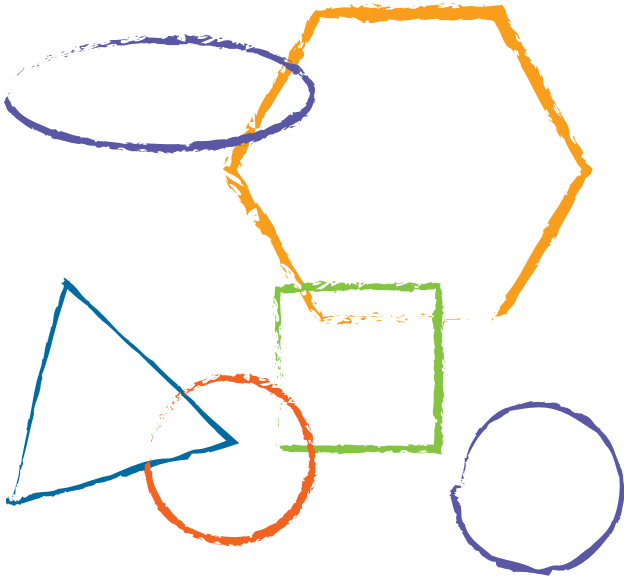
Prior to the discovery of Australia, people in the Old World believed that all swans were white. This notion was confirmed by empirical evidence: no one had ever seen a black swan before. And hence the confrontation with an unexpected phenomenon challenged the beliefs of what's possible.



Black swans encourages us to consider possibilities outside the realm of regular expectations. This is part of adopting a discovery-driven outlook rather than a reliance on data-driven decision making. Just like the

emergence of automobiles, iPhones, eBook Readers, and MOOCs, unexpected breakthroughs lead to climatic changes. Disruption can't be *measured* while it's happening. All the old data, metrics, and processes become irrelevant. The key is being aware of impending obsolescence early enough to evolve.

These three mindsets establish a process of recognizing emerging opportunities and consequences. Adapting involves discontinuous thinking and stochastic tinkering. Experimentation and discovery-oriented fact collecting are preferred over a top-down directed approach focused on improving existing services. The driving question for the R&D-minded librarian is: *what else should we be doing?*



Ideation & Implementation: approaches

Every idea requires a different approach; each has to be nurtured and grown individually. What works well for one concept isn't necessarily the best option for another. A small team working on a large project requires a different process than a large team working on several small projects.

When it comes to innovation there isn't a one size fits all model. Part of the challenge is finding the processes that give your ideas the best chance for success.

Project management keeps groups on task, but product development unlocks the potential. New ideas can't simply live as action items for a committee to debate, but should be treated as small entrepreneurial ventures moving through your organization's pipeline.

Product development philosophy provides models and metrics for implementation. Granted, these approaches are designed for commercial endeavors, but the methods and spirit of them enable us to systematically grow and develop new spaces, services, tools, resources, instructional activities, outreach efforts, and other possibilities. What it boils down to is ideation: the formation, incubation, and advancement of ideas into tangible outcomes. Here are a few approaches:

Customer Development.²⁵

Serial entrepreneur Steven Blank provides a model focused on customer development rather than product development. He argues we should start with users rather than services or technologies. His method devises ways to *prove* value via feedback, assessment, and usage, before scaling too quickly. Blank feels that many concepts fail because they are untested and don't reflect real needs. This program includes: Customer Development, Customer Validation, Customer Creation, and Company Building.

Lean Startup.²⁶

Eric Ries advocates for the lean methodology: build, measure, learn. His expertise is with startups, but the approach has been adopted by other organizations including the federal government.²⁷ Ries expands the customer development model by launching prototypes (building) as soon as possible. After observing how potential customers interact with the service (measuring), the initial concept is improved upon (learning) and the cycle repeats itself. Assessment is integrated into an iterative process refining how the concept grows.

Agile Teams.²⁸

Agile refers to a software development process that can be applied to other projects. The framework is ideal for collaboration on large undertakings in which the objectives are uncertain or frequently changing. Agile promotes iterative and incremental work that can be broken down into a series of smaller parts and coordinated in a decentralized manner. Teams respond quickly to evolving needs, insights, and emerging possibilities.

Positive Deviance Approach.²⁹

The Positive Deviance methodology consists of five steps: define, determine, discover, design, and monitor. It is based on the philosophy that within every community or organization there are positive outliers who are exceptionally more successful than others, despite having the same resources. These groups or individuals use uncommon approaches that generate more effective outcomes. By learning from these exemplars, organizations can incorporate and promote these methods more broadly.

Design Thinking.³⁰

IDEO presents a field-tested methodology of innovation: observe, visualize, evaluate and refine, and implement. The design thinking process revolves around empathically exploring the problems that users experience and then designing solutions around apparent needs. This practice expands beyond usability or user-friendliness, taking instead a systematic look at the tasks involved with accomplishing objectives. Steven Bell provides a helpful article about applying design thinking to a library context.³¹

Challenge Driven Innovation.³²

Ambitious and auspicious challenges can be an effective motivational tactic. CDI divides large problems into smaller subsets and tasks groups with solving separate portions. When fused together, these distinct components can help organizations move forward with difficult goals or challenging objectives. This strategy consists of seven stages: idea gathering, filtering, dissection, channel distribution, evaluation & confirmation, assembly and integration, and launch.

**Networked
assessment
allows us
to address
issues we
never knew
existed.**

Percent Time.³³

Google popularized 20% time, but the concept has been around for decades. Hewlett-Packard and 3M both encouraged “free time” which fostered many breakthroughs.³⁴ Percent time essentially gives employees a small portion of work time free from their daily-to-daily core duties to explore or tinker with new ideas. Staff can pool time together to work collaboratively on large projects or individuals may focus on a small side project of tangential interest. Percent time nurtures an entrepreneurial culture by empowering employees to identify and tackle problems, seize white space, and to turn discovery-oriented observations into unplanned impacts.

Hack-a-thons.³⁵

Facebook hack-a-thons are infamous late night ruckuses that result in highly creative outputs. After-hours in a heavily caffeinated environment, employees brainstorm and work on new ideas for the website. Much of the social network’s ideation happens in this manner, including the development of new tools and features, code improvements, and bug fixes. After an evening of intense coding, teams present their work and the best concepts are pushed forward into production.

Networked-ness: cross-pollination

In 1856 William Henry Perkin, an English chemistry student, changed the world.³⁶ Using exotic materials from Far East colonies, he created a compound that gave textiles of cotton, wool, silk a rich shade of purple. This pop of color revolutionized fashion by launching the organic dye industry.

This advancement set off a frenzy in Europe and the Americas. Not only were lush new hues available for fabrics, but chemists started searching for new materials that they could bring to market. This milestone is referred to as the birth of modern R&D.³⁷ Chemical, mechanical, and pharmaceutical labs, such as BASF and Bayer, quickly developed and industrial research emerged.

Often, R&D is portrayed serendipitously. A scientist stumbles upon a medical breakthrough by mistakenly mixing chemicals. Or an engineer tinkers in frustration until that ah-ha moment strikes. While lone inventors do make important discoveries, R&D is typically a social activity.

Most of the groundbreaking efforts constructed at NASA, IBM,

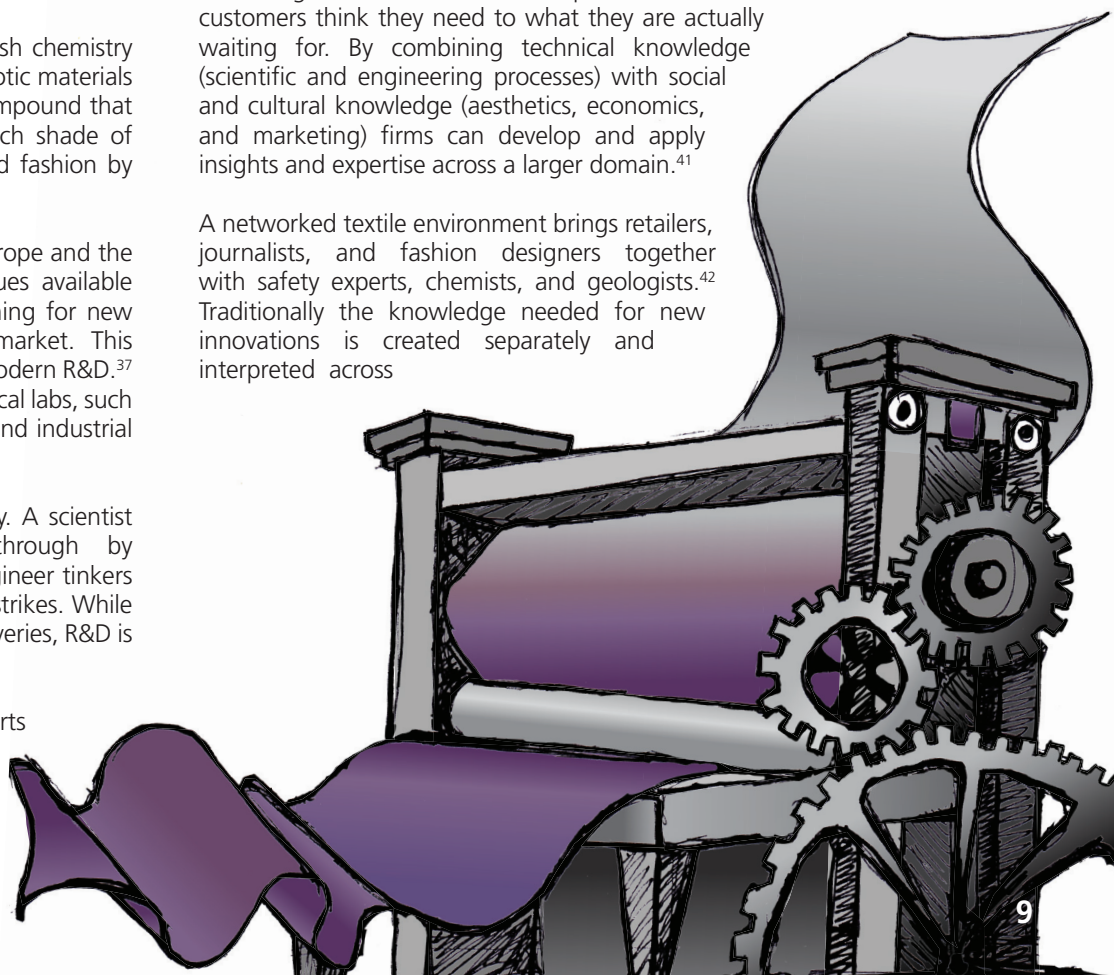
PARC, and Google were team efforts. In fact, when Bell Labs conducted a productivity audit they found that it wasn’t environmental or procedural factors that propelled success, but a person.³⁸ Researchers who commonly shared breakfast or lunch with Harry Nyquist, an electrical engineer, tended to secure more patents. Why? It wasn’t that Nyquist gave them specific directions, but he had a way of asking good questions that got people thinking differently.

Kevin Dunbar, a psychologist studying how people think, also affirms the value of social cross-pollination.³⁹ When interviewed, scientists typically described breakthroughs happening while alone in labs or working late at night. Dunbar’s research, though, uncovered that the seeds of creative ideas were planted during weekly lab meetings or in hallway conversations. It was the interaction and exposure to different methods or concepts that resulted in new ways of tackling experiments.

This progression is impacting the very nature of how research is conducted. While academic and corporate research labs dominated R&D over the last century, more complex and collaborative efforts are now emerging. In fact, we are entering into the sixth generation of R&D practices, evolving from lab-based environments toward design-driven networks.⁴⁰

Textile manufacturers are once again leading the way. An emergent framework shifts emphasis from what customers think they need to what they are actually waiting for. By combining technical knowledge (scientific and engineering processes) with social and cultural knowledge (aesthetics, economics, and marketing) firms can develop and apply insights and expertise across a larger domain.⁴¹

A networked textile environment brings retailers, journalists, and fashion designers together with safety experts, chemists, and geologists.⁴² Traditionally the knowledge needed for new innovations is created separately and interpreted across



various research centers, design studios, and marketing agencies. This new interdisciplinary direction instead, recognizes the benefits of collective ideation and shared development through the integration of expertise.⁴³ By combining the diverse spheres of technique and social-cultural information, organizations are able to form a holistic and contextualized understanding of the operating landscape. This opens the door to discontinuous innovation.

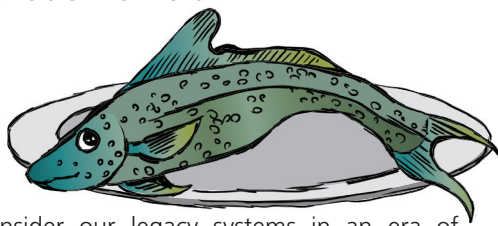
Applying this networked approach to library assessment would encourage us not only to partner with others on campus, but also to rethink the intention and output of our efforts. Consider the objective to support learning for undergraduates. Many others share this mission. And while the library obviously promotes an information-driven agenda, the boundaries blur into IT, tutoring, and other support services. As budgets tighten and disruptive possibilities emerge, where does that leave us? Instead of focusing on the discrete fixed role that libraries currently fulfill, assessment can guide us in new directions.

Building together with others sharing our path can result in the arrival at unexpected destinations. By combining the experiential sphere of current and former students along with instructors, together with the support sphere of tutors, advisors, teaching assistants, writing and communication professionals, and librarians we can expand the discovery-oriented outlook and influence the larger learning environment. Networked assessment and development allows us to address issues that we never knew existed.

Culture: *aptitude for creativity*

When the Vikings migrated across Europe they also established colonies in Iceland and Greenland. These lands presented numerous challenges. In Greenland the settlers survived for hundreds of years, while in Iceland their descendants still flourish. What happened?

Popular science writer Jared Diamond weaves together an interesting investigation comparing the two civilizations.⁴⁴ While there are many variables, archaeologists pinpoint one glaring difference: fish. The Icelanders adapted to the environment by changing their lifestyle and domestic conditions. This included adopting a hearty diet of fish. The Greenlanders replicated the familiar farmlands and societal structures of their homeland, which didn't include eating fish. The Greenland colonists could not persevere because their *culture* was built around their old environment.



Consider our legacy systems in an era of disruptive change. *The way we help patrons. The way we describe information. The way we provide information.* Migrating from a print to digital environment is very much like establishing a new colony: it requires a new culture. And a critical component of this new culture is the aptitude for creativity.

The profiles of R&D powerhouses highlight the need for many qualities: experimentation, curiosity,

ambition, and determination are a few. But a culture of creativity is a unifying and essential trait. Despite working for different industries and on different types of products, the desire and freedom to build ideas is indispensable for success. Organizations can have great talent, inspiring vision, money and resources, but without giving employees the opportunity to discover and develop new concepts, innovation will suffer.

A study interviewing industrial scientists about workplace conditions found that the most important attribute for creativity was intrinsic motivation.⁴⁵ Projects that people felt passionate about and that didn't involve too much external pressure were the ones in which creativity thrived. Here is a representative quote:

*"What's important to me is feeling that I've done something that's making a difference, seeing that something I've worked on has turned into a product. It's not about getting pats on the back from my own management, but having the self-satisfaction of seeing my work come to something, feeling that I have made a contribution."*⁴⁶

When asked about barriers or obstacles to creativity a consistent experience expressed in the study involved supervisors who believed that the creative process could and should be managed. Too much process kills the innovative impulse. Directors operated with the illusion that they were *helping* the effort, when in reality they were *hampering* it. The study suggests that leaders should instead focus on managing work environments and organizational climates that

support the freedom to create in accordance with broad objectives.

Let's consider three examples of highly creative R&D operations:

Bell Labs embraced a "problem-rich environment" in which employees were pushed to look beyond the day-to-day concerns and consider new areas for advancement.⁴⁷ The goal was to develop new knowledge that could be converted into new products or services. Innovation was considered a total process of interrelated parts-- not just about building a new widget, but about how that widget fit into the larger scheme.

PARC nurtured the "pioneering spirit." Its charge was to lead the company into uncharted territory. This lofty and aspiring mission motivated employees. They felt they were a part of something significant. Retrospectively, *PARC* leadership felt the key to their success was in leaving researchers unburdened by directives, instructions, or deadlines.⁴⁸ This open environment not only fueled creativity, but also resulted to unexpected breakthroughs that could not have been managed from the top down.

IDEO encourages "observation-fueled insight" in which more time is spent understanding problems than trying to solve them. The product design firm contends that methodology alone is not enough and that their secret formula is actually a blend of methodologies, work practices, culture, and infrastructure.⁴⁹ *IDEO* urges empathy-driven development centered on understanding what people are trying to do, rather than what they are currently doing. This is where data-driven decision-making fails to accommodate for human need.

Culture is very subjective. What works well at one library wouldn't necessarily work in another. It can't be programmed and it's difficult to change. Yet this is another situation in which assessment is vital. By demonstrating new needs, assessment establishes the paths and sets the tone for growth. In short: assessment serves as the "change-making" enterprise in our libraries.

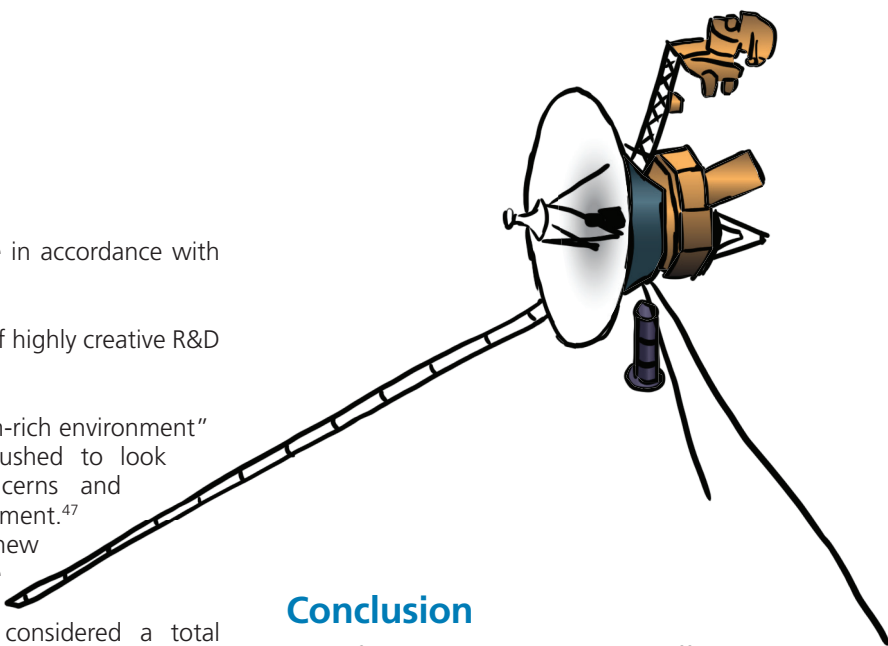
Conclusion

Thirty-five years ago *Voyager 1* set off to investigate the universe.⁵⁰ Its primary mission was to collect data and images of Jupiter and Saturn. After achieving that objective, it was thrust into the outermost edges of our solar system. The satellite is now on the verge of crossing that threshold and entering into the vast unknown of interstellar space: a domain beyond the reach of our Sun.

A similar expedition is necessary for academic libraries. Our mission needs to stretch beyond the legacy role of an established orbit, and venture into the open white space that awaits. It is with this cosmic perspective that librarians can expand beyond their core domain and address the emerging needs of a disrupted future.

We are at an inflection point in the history of libraries. The decisions we make over the next several years will set us down a new path and result in the establishment of a new identity. R&D practices are critical to this future because we need processes and philosophies geared toward converting new knowledge into new roles, new services, and new applications.

Assessment is our growth strategy. We need it to be more than a reflection on how well libraries are currently operating. It is a discovery tool that can push change and invention. Rather than just looking for continuous improvements with a narrow focus or building "effective, sustainable and practical" measures, we need our assessment programs to unlock the potential of discontinuous innovation. These endeavors should be discovery-oriented satellites exploring new domains and beaming back insights and opportunities we never imagined possible.



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Epilogue: Think Like Facebook

Take a walk through Facebook headquarters and you'll see posters plastered on the halls:

DONE IS BETTER THAN PERFECT

FAIL HARDER

WHAT WOULD YOU DO IF YOU WEREN'T AFRAID?

CODE WINS ARGUMENTS

THE RISKIEST THING IS TO TAKE NO RISKS

PROCEED AND BE BOLD

My favorite is

MOVE FAST AND BREAK THINGS.

These messages serve as reminders that Facebook resides in an environment of constant change. Employees iterate daily and CEO Mark Zuckerberg challenges them to push the boundaries of what is possible.

Obviously, a social web enterprise moves at a different pace than an academic library. What's common though is that we both operate under disruptive conditions. Much of what is familiar today will be very different tomorrow. The question is: how do we face this residual chaos? *Avoid it? Hide from it? Ignore it? Complain about it? Fight it? Embrace it? Build upon it? Direct it?*

Change is happening in our profession. We can't circumvent it. But we can choose the way that we decide to feel about it: the way that we deal with it. The changes happening in our libraries are not temporary; in fact, adapting to change should be added to all library job descriptions. Change requires constant practice -- like an instrument or a sport. It requires participation from all levels of the organization. Change is what libraries do.

For libraries, Facebook is aspirational in this regard because while our business models vary, our missions are somewhat similar: both enable people to create, curate, share, and access information freely. Moving fast and breaking things isn't about doing sloppy work or committing acts of vandalism-- it's about exploring a wide range of new ideas and testing them to see what works. Facebook refers to this philosophy as "the hacker way," placing great value on the currency of ideation. The people at Facebook

practice this by constantly implementing small tweaks and new features to see how users react. They also push forward with bold new directions (Wall, News Feeds, Timeline) seeking to transform the ways people interact.

Facebook's development strategy is outcome-driven. Everything is validated by usage. Ideas that work gain more attention. Ideas that don't work are removed. There isn't a lot of room for clinging to tradition when the goal is provide a better experience for people every time they visit the site.

I tried to express this ingenuity vibe in *Think Like A Startup* and carry it over into this piece as well. My objective for both papers is to shift perceptions by introducing concepts from domains outside of the library landscape. I want to increase our vocabulary and magnify new perspectives.

Specific methodologies are not as important as the philosophies that one follows. I tried to make a case that libraries can't settle for feeling like *victims*; instead we must demonstrate that we're *entrepreneurs* making positive changes happen. This is a challenging direction for our profession, which has long been rooted in conservative values. But I propose that we need to establish the expectation and tradition of becoming organizations known for innovation.

Meeting the needs of our users isn't enough. In fact, exceeding their expectations isn't enough either. Our aspirations must be bolder. Facebook is more than a message board, email service, and photo archive—it is a comprehensive social utility used by over one billion people. We must aim to change the way that people think of libraries by offering them opportunities they never anticipated. Future-looking librarians cannot be satisfied with meeting or exceeding users' needs; instead they must constantly seek new ways to transform users' lives.

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