

## Risk Taking in Academic Libraries:

### The Implications of Prospect Theory

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#### Abstract

Risk is a fundamental characteristic of the landscape of academic libraries, and has often been understood in the context of planning and management. Scenario planning has been an effective tool for developing a nuanced approach to risk. However as the pace of technological change accelerates each year, and the financial and organizational pressures for demonstrating value increase rapidly, it is important to reexamine our understanding of risk. The future of our libraries is at play. Prospect Theory is an influential and groundbreaking model from the field of economics that helps us to better understand how people make decisions under risk. Applying the basic principles of Prospect Theory to academic libraries can help us reframe our approach to risk assessment and to understand our actions from a different perspective. This paper describes the dynamics of risk in academic libraries and contextualizes these issues in relation to Prospect Theory.

#### Introduction

In the world of librarianship, scenario planning is becoming more and more important. Thomas Chermack provides a comprehensive definition: "Scenario planning is a process of positing several informed, plausible, and imagined future alternative environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organizational learning and improving performance."<sup>1</sup> As such, scenarios can be an effective tool for managing uncertainty, scanning the environment imaginatively, and outlining the success indicators from an organizational perspective. Involving staff in this process is essential to success, to promote engagement and buy-in. Hannabuss asserts that "scenarios can represent very well what people think, or think they think, or what they have assumed."<sup>2</sup> Others such as Rea and Aldrich<sup>3</sup>, Walton<sup>4</sup>, and Staley and Malenfant<sup>5</sup>, have applied this strategy as a heuristic tool for assessing options and determining priorities in the face of many unknowns. It is a risk mitigation approach that can provide a focus on a very fluid future, allowing libraries to gain a better understanding of their organizations, priorities, and options in a world where the only certainty is very rapid change.

Libraries need to compellingly demonstrate value to their communities, or risk being diminished or even replaced. Our relevance to the larger institution is no longer a given, in an era where university mandates and teaching methods are facing significant reassessment and

repositioning, and competition from new channels of education, such as MOOCs. In a world exploding with new forms and sources of knowledge, as well as tools for data manipulation, user behaviors and expectations are changing rapidly – therefore it is not surprising if university administrators ask questions about library priorities and investments in relation to institutional goals for delivering education and fostering research. Collections, spaces, and services are key foundations of library activities which have framed our perception of what we can offer to our patrons and our stakeholder communities. As the economic model of information delivery and use has been transformed in the digital era, new behaviors around knowledge creation, access, and sharing have developed. The organizational expectations of an academic library to deliver value are more urgent and pointed than ever before. Thus there is a critical importance of understanding the dynamics of risk in library planning and management.

Much has been written about risk in relation to libraries. A search of the Library and Information Science Abstracts (LISA) database for the search string “risk\* and (management or assessment or planning or identification or mitigation or checklist or inventory)” and limiting the results to peer-reviewed material, yields 1,056 hits, as of this writing (January 9, 2014). Frequent topics include: security and systems; network issues; project management; knowledge management; human resources; supply chain issues ; organizational culture; disaster planning; and records management. The same search yielded 203 hits in the Library Literature and Information Science Full Text database, and 1,348 hits in the Library, Information Science and Technology Abstracts (LISTA) database, although these results were not as relevant as the above-cited result. It can be seen that there is a wide range of issues in the professional literature that address risk from multiple perspectives.

Prospect Theory comes from the field of Economics and articulates a new model of risk behavior, using experimental settings to document how people actually evaluate options in a scenario involving difficult choices, whether in gambling situations or vacation options. The purpose of this paper is to reflect upon the basic principles of Prospect Theory and apply them to library strategic planning – what can we learn about our assumptions, our assessment, and our management of risk? Our environment is becoming riskier as the scale of opportunities and dangers both mount commensurately. Technological, social, cultural, and political challenges bedevil us. We collectively aim to reinvent our libraries for a dynamic future while retaining what is valuable from our past and present experience.

## Risk

We can begin by distinguishing the nature of risk from its disreputable brother, namely gambling. These are two sides of the same coin, but there are crucial differences between them. As March and Shapira express it,

“...managers distinguish risk taking from gambling primarily because the society that evaluates them does and because their experience teaches them that they can control fate. Society values risk taking but not gambling, and what is meant by gambling is risk taking that turns out

badly. From the point of view of managers and a society dedicated to good management, the problem is to develop and maintain managerial reputations for taking "good" (i.e., ultimately successful) risks and avoiding "bad" (i.e., ultimately unsuccessful) risks, in the face of (possibly inherent) uncertainties about which are which." <sup>6</sup>

The ability to exercise control over the outcomes of decisions and to effectively navigate uncertainties are hallmarks of successful risk-taking. Developing one's personal profile as a successful risk-taker carries organizational consequences for reputation and influence. To what degree can one exercise control? This is a key issue, but our world of digital technologies and information deluge is becoming so complex that control in the traditional sense is no longer viable or even desirable. To what degree can we achieve our well-honed strategic objectives? Academic librarians seek positive outcomes as managers do in other professions, but our environment is marked by organizational complexity, multiple and overlapping stakeholders, bureaucracy, financial constraint, and the weight of past practices from an analog era.

March and Shapira note that "risk is most commonly conceived as reflecting variation in the distribution of possible outcomes, their likelihoods, and their subjective values."<sup>7</sup> This variation in outcomes leads inevitably to gains and losses, and the positive or negative perceptions that are engendered within the library and the parent organization regarding the value proposition of the library. Risk in libraries is both simple and difficult to assess. According to MacCrimmon and Wehrung, "Risk can be defined in terms of three components, magnitude of loss, probability of loss, and exposure to loss."<sup>8</sup> In this sense, risk is understood in relation to potential loss, in terms of the scale, likelihood, and proximity of a loss. For example, if a potential loss is very small, the likelihood and exposure to it would be of much less concern than, say, a large magnitude coupled with a moderate probability and moderate exposure. It's also worth noting that risk is typically equated with loss; it normally isn't seen as an opportunity for gain. Libraries are conservative entities that are not generally comfortable with the dynamics of risk. However, risks can often be understood as opportunities. For example, the competitive environment between universities is the flipside of a collaborative mindset, and this basic paradox has been characteristic of academic libraries' activities for many years, as we embrace both realities. The risk of losing funding can be perceived as an opportunity for increased fundraising efforts with alumni and other community stakeholders. The Google mentality, i.e. that Google and the Internet in general is an ocean of universal and useful knowledge, is an opportunity to teach students the contrasting and unique advantages of using a library search box. The risk of becoming irrelevant to our parent organizations is perhaps the biggest risk of all, encompassing enormous magnitude and complete exposure. For many years we have heard the endless drumbeat of the crisis affecting libraries, and the tiger pit of dangers (political, organizational, logistical, and existential) that we are facing. However every profession and institution in society is facing an increasingly risk-filled environment and it is important to see this as an opportunity to leverage risk to our advantage.

In terms of physical safety and security, the library environment can be perceived as low risk, in comparison with many other occupations and professions. Nicholas Joint describes this as follows:

“...each self-contained task in the sequence of daily activity is not very risky: the financial well being or reputation of the host institution of the Library will not be threatened by any one mistake, nor will the life and limb of the librarian be endangered. Risk in library environments can thus be characterised in two ways: for most staff, the risk represented by each task is low, and the level of risk does not vary, it is predictable and similar in each particular instance. Libraries thus present a homogenous, low risk environment.”<sup>9</sup>

However, it is clear that individual risk and organizational risk are two different matters. While it is true that each staff person’s activities and potential mistakes do not carry life-and-death impacts (when compared to the impact of doctors, firefighters, or soldiers, for example), there are impacts on the goals of faculty, students, and the university administration. The dizzying pace of change in our networked culture is greater than what any previous generation has experienced, as Schmidt and Cohen have noted.<sup>10</sup> This means that libraries face external risks from any number of possible directions. Change can occur in political, technological, financial, and cultural dimensions, or a combination of these, with a lightning rapidity that would have seemed impossible a generation or two ago. The speediness and breadth of change in our working environment means that our minds have been rewired to absorb and react to organizational stimuli and information in ways that would not have been available to previous generations of librarians. We are faster on our feet because this has enabled us to survive and to thrive. There is no doubt that the digital information era has created a more visceral understanding of risk, in which the opportunities are much greater, the challenges much thornier, and the potential for loss of relevance to our community is very real. Casserly points to an ongoing reality for libraries, namely that “risk and technological changes are inexorably linked, risk and technological changes are inexorably linked, and librarians, as experts, must communicate these risks to lay persons and develop appropriate risk management strategies.”<sup>11</sup> Financial pressures and accountability demands are becoming more intense with each passing year.

Library attitudes to risk are influenced by one’s role and where one works. Whether you are the director of a library, a unit head, or a front-line librarian will have a bearing. The size and type of institution will also have an impact, e.g. working in a small teaching-focussed university vs. a large research-intensive one; or working in a library that is a member of numerous consortia versus a library that is a member of very few. The scope of one’s responsibility, particularly management responsibility, has a bearing on risk tolerance or risk aversion, and organizational expectations of performance will vary accordingly. We shouldn’t overlook the fact that the decisions of public service librarians to adopt specific new tools, activities, or new ways of connecting with patrons, inherently reflects an attitude to risk, i.e. openness, reticence, or ambivalence. The same can be said about technical services operations in how they adopt new workflows and roles with respect to information technologies, metadata, and network opportunities in the digital world. These realities play an important role in the lifeblood of academic libraries (and others) at many levels of the organization.

## Dimensions of Risk

When thinking at a strategic level, it can be useful to categorize risks into thematic clusters. For example, there are technological risks, financial risks, political risks, and socio-cultural risks. Each of these will have its own dynamic and drivers. Technological risks would include rapid obsolescence; dysfunctional tools; lack of interoperability with other systems; foreshortened life cycles for development; and the quality of maintenance and support. Financial risks could include the parent institution's degree of support; the foreign exchange rate; the country's economic performance; investments made by the institution; and the global economy. Political risks would relate to institutional strategic agendas shifting in direction; changes in senior administration and therefore shifting loyalties and power balances; unpredictable directions for post-secondary education; and of course new governments with new agendas, or the same government moving into new political and legislative directions to please a segment of the electorate. Socio-cultural risks are more intangible, and can include patron attitudes and preferences in their use of information devices; evolving social norms in behavior regarding information use and communication styles; shifting demographics that lead to a new mix of ethnic and linguistic groups in the student population; new learning styles based on use of social media, multi-media tools and technologies; and different purposes for using library spaces and collections, such as collaborative team work. This also speaks to the multi-stakeholder landscape in which we work: faculty, students (current and prospective), support staff, administration, and government authorities all have a stake in the decision-making in the university, and hence the library.

These challenges weave a complex kaleidoscope of risks. Weighing probabilities within each cluster, relative to each other, and mapping these to possible courses of action is an important but extremely difficult goal. How does this impact our thinking and decision-making? The question of weighting is an important one, and it will be addressed further on. Rendering this task all the more difficult is the impact of the time horizon upon risk assessment. An analysis projecting the risk environment in one year's time could be quite different from a two year, three year, five year, or ten year window. As the pace of change in our world is accelerating exponentially, it becomes increasingly difficult to be confident in the mental models involved in our planning exercises, whatever these models may be. Nimble reaction, certainly at a tactical level and sometimes a strategic level, will define a successful library that can absorb significant change in any of the cluster dimensions listed above. Nimbleness of reaction to change is becoming one of the key attributes of successful libraries today. We are an evidence-based profession, and we pride ourselves on making decisions based on evidentiary knowledge, but in terms of risk assessment this knowledge is often incomplete, contradictory, difficult to analyze, or unavailable.

## Decision-making

The problems for risk assessment and decision-making become more acute every year. Patricia Pitcher expresses this quite cogently:

“The planning mode is based on the assumption that the future will mimic the past. This is so because analysis always comes late to the party; it is based on collecting historical "facts", what used to be, and extrapolating (projecting trend-lines) those facts into the future. One problem with this approach is that the facts need interpretation and only the Technocrat thinks that the "facts speak for themselves." A second problem is that change is unfathomable, and trend-line extrapolations are seldom accurate.”<sup>12</sup>

Planning is messy, and our systematic approaches to environmental scanning and assessment need a healthy dose of contingency thinking, to deal with both the ‘unknown unknowns’ as opposed to the ‘known unknowns’ such as the impact of mobile devices on learning; new releases of product software or new library systems; new types of performance accountability measures; or new government directions in education. All of these will have tangible consequences for the role and activities of libraries, though we can’t know the extent or the timing until they actually occur.

Here we see two interrelated dilemmas – the need to interpret facts, especially current facts, in light of our present landscape, and the unpredictability of change. Can any of us look back ten years and reasonably claim to have accurately foreseen the tsunami scale of change that has affected the academic library, and have planned for risk accordingly? This doesn’t mean that we should throw our hands up in the air and give up on risk assessment, but that we recognize these societal realities and prepare for flexibility in strategy. Leadership is required to craft and mold an organizational vision that is well-defined, effectively communicated, and that is resilient enough to adapt to rapid change. Kees van der Heijden points to the importance of process: "The less things are predictable the more attention you have to pay to the strategy process. Uncertainty has the effect of moving the key to success from "the optimal strategy" to the "most skilful strategy process."<sup>13</sup> With so many stakeholders, the process of consultation, communication, and idea formulation is essential to the success of the outcome of planning. This links back to the fundamental uncertainty and unpredictability in which librarians’ work. The planning process that incorporates this reality of risk, as an organizational and management process, is more likely to lead to positive results.

On a general level it is useful to ask, Does strategic planning work? There is no easy answer to this question. It would be very instructive (and quite sobering) to look back upon previous cycles of strategic planning and ask ourselves some key questions, i.e. did we accomplish our goals? What factors affected our success or lack of success? What can we learn from new circumstances that intervened and either wrecked our plans or gave them an unexpected boost? What does this teach us about the nature of risk, and the unknowns that influence our effectiveness as a library? While it would be rash to throw out strategic planning altogether, to continue on this well-worn road without critical reflection does not do us any good. If we decide that strategic planning is ineffective and outdated, what replaces it from a leadership perspective? What is a better mental model to apply in a rapidly changing world? Scenario planning is one methodology for managing change and risk, but not the only one. Library management requires this type of candid, organizational gazing in the mirror, in order to better understand our collective sense of self.

It is worth reflecting upon the nature of our mental paradigms and how they affect risk assessment and decision-making in libraries. The historian of science Thomas Kuhn asserted that a paradigm is "the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community."<sup>14</sup> In a library context, this constellation is typically conservative, reactive, and risk-averse. This is starting to change, as more libraries adopt an open, pro-active, even risk-seeking style, but it is still the dominant mode of library thinking. These paradigms are the social and personal patterns of thought based on experience, knowledge and background. In the complex university context of risk, this can be understood as the under-the-fingernails knowledge of how things really work, i.e. how to influence senior administrative decision-makers; the scope allowed for leadership in the library; a nuanced understanding of stakeholders on campus; pre-existing perceptions or expectations in the university administration that may help or hinder the library's advocacy role; and the staff's level of tolerance to risk. Any understanding of risk and decision-making in a library needs to be fully attuned to these drivers and possibilities. It will help delineate good risk from bad risk.

### Prospect Theory

Prospect theory originated in the field of economics. In 1979, two Israeli psychologists, Daniel Kahneman and Amos Tversky, published a ground-breaking paper in the journal *Econometrica* entitled: "Prospect Theory: An Analysis of Decision under Risk." This paper has been cited tens of thousands of times and led to Kahnemann receiving the Nobel Prize for Economics in 2002 (Tversky had died in 1996). Their paper was instrumental in providing a reassessment of how people make decisions under risk, and more importantly, how "people systematically violate the predictions of expected utility theory."<sup>15</sup> The latter theory was well-established in the disciplinary discourse. The key premise was that the utility of any outcome was based upon the "weighted average of all possible levels of utility [to] best represent the utility at any given point in time."<sup>16</sup> In other words, given a set of scenarios for a specific issue, the weighting of the possible options and the averaging of these weights would determine the optimal utility at any particular time. It is a highly rationalist approach to the expected outcomes of human thought and behavior, and assumes that our decision-making process can be understood principally in these terms. Prospect Theory, by contrast, asserts that this process is much more complex and messy, and that there are issues regarding probability assessment that affect decision-making in significant ways, and violate expected utility theory. These in turn impact the consequences in a social or organizational context.

There are four basic principles behind Prospect Theory: 1) reference dependence; 2) loss aversion; 3) diminishing sensitivity; and 4) probability weighting. "In Prospect Theory, people derive utility from gains and losses, measured relative to some reference point, rather than from absolute levels of wealth...Second, the principle of loss aversion implies that people are much more sensitive to losses—even small losses—than to gains of the same magnitude."<sup>17</sup> Third, "there is an observed loss of sensitivity to gains or losses, as the scale of such events increases. And fourth but not least, is the role of probability weighting in decision-making, namely that "the weighting function overweights low probabilities and underweights high probabilities."<sup>18</sup> This leads individuals "to overweight unlikely extreme

outcomes.”<sup>19</sup> These are decision weights, rather than erroneous beliefs: “In Prospect Theory, people do not weight outcomes by their objective probabilities but rather by transformed probabilities or decision weights.”<sup>20</sup>

A related principle of Prospect Theory is that loss aversion is affected by whether an individual stands to gain or lose: “people tend to be risk averse over moderate probability gains: they typically prefer a certain gain of \$500 to a 50 percent chance of winning \$1,000. This is known as the certainty effect. However, people also tend to be risk *seeking* over losses: they prefer a 50 percent chance of losing \$1,000 to losing \$500 for sure.”<sup>21</sup> This points to a tendency, perhaps innate in human nature, to focus on certainties where an increase in one’s fortunes is at play, but to be more risk-prone when they are in a losing situation, perhaps to minimize losses even against the odds.

Here is an example from the research of Kahneman and Tversky. In an experimental setting, subjects were asked to choose between the following two options:

- A) a 5% chance to win a three-week trip to England, France and Italy; or
- B) a 10% chance to win a one week trip to England.

67% of participants chose Option A, and 33% chose B, even though the odds are in favour of B.

In a second test, subjects were asked to choose between the following two options:

- A) a 20% chance to win a gamble for \$4,000; or
- B) a 25% chance to win a gamble for \$3,000<sup>22</sup>

65% of participants chose Option A, and only 35% chose B, even though the odds are in favour of B. Both of these examples demonstrate how our choices violate utility theory, since we are acting on impulses or motives that run counter to our best interest or prospect.

Viewing risk assessment and mitigation in libraries through the lens of Prospect Theory can offer us a new window onto an old question, namely how we make decisions involving risk. First, it is clear that purely rational thinking (understood here in terms of utility theory) is impossible to apply to library management. We can gather data by measuring the use of our services, and we can assess the qualitative satisfaction of our patrons, with various instruments and surveys. However, we cannot weigh evidence and measure data as in a chemical or medical experiment, since there are many variables – political, social, cultural, and economic – that act as intervening forces that need to be understood, sifted, and weighed. It is much more an art than a science, and there are real consequences to decision-making, whether for staff, services, or the brand of the library. We can’t know the probabilities of different scenarios of the



future, but we do attempt to weigh them carefully in order to understand their implications for our services and activities.

The ARL 2030 Scenarios is an excellent example of a sustained reflection upon the landscape in which we may find ourselves in another generation- the risks and opportunities for libraries in each scenario are pressingly clear. It is up to each library to assess the probability of any scenario occurring, and to weigh the challenges in planning approaches and strategies for such a major scale of change. This echoes the importance of decision weights in the assumptions underlying Prospect Theory. The guide for the scenarios notes the importance of challenging ingrained assumptions that have a pervasive impact on organizational decision-making: “Scenario planning is a strategy-related methodology that is designed to challenge deeply held assumptions and beliefs and thereby liberate thinking from current constructs and structures...The result is an organization that is more anticipatory and proactive in its operational arena.”<sup>23</sup> This method of conceptualizing the future can have a rejuvenating effect on our thinking, thus allowing us to imagine many possibilities with new eyes. It follows that a new understanding of risk is sketched out in relation to each scenario. This stepping out from our habitual frames of organizational reference, to a more objective portrait of possible future states, can inform a new model for risk assessment in libraries. Uncertainty is an environmental reality that we don’t often recognize for what it is: “Organizations act on what they know or what they believe they know to be certain. Many of those certainties are in actuality uncertainties. Those false certainties become the basis for an organization’s strategic decision-making. The more mature the business, the more embedded those false certainties become and the more significant the perceived risk associated with change or acting against those certainties.”<sup>24</sup> We may have lots of data and business intelligence to work with, but prioritizing the value of this information, and being aware of what is missing or unavailable, is a perennial challenge. Unless we have a clear-eyed, sober understanding of the uncertainties in our environment, we can’t assess risk in a meaningful and effective manner. Prospect Theory leads to a more nuanced understanding of how we grapple with uncertainty to make decisions in the face of risk. What are the implications for how we process information and make decisions?

## Implications

In Prospect Theory, reference dependence is understood as the point of departure from which decisions are made. Therefore it is a matter of the scale of gain or loss relative to the status quo, and how the value (positive or negative) is understood, rather than absolute gains or losses. In the library context, what would reference dependence imply? Each library has its own constellation of strengths, deficiencies, goals, and challenges. As well, each library has its numerical footprint, e.g. size of budget, extent of space, size of staff complement, equipment infrastructure, etc. This collectively represents its current reality. What a library gains (or loses) in an institutional strategic planning exercise is in relation to this corporate self. The value is understood as relative to this initial reference point, i.e. the extent of a gain or loss, rather than any objective assessment of its overall assets or footprint following a strategic allocation of new investments or a loss of an existing resource (e.g. financial, human, or material). Translated into library terms, reference dependence would imply that the magnitude of change

as an indication of how we have 'won' or 'lost' on the resource allocation front is what we value. We can also view the point of reference as the sum of our assumptions, beliefs, values, and knowledge that informs the management of our libraries. This too is our current reality.

Prospect Theory argues that we are much more sensitive to losses than to gains of the same magnitude, i.e. we are likely to feel the loss of a thousand dollars much more greatly than the commensurate gain of the same amount. Libraries have been anchored in a conservative tradition, and we are well-known for loss aversion. Are we too sensitive to having to give up any of our current resources or services, rather than seeing potential trade-offs for resources or services that could be more beneficial from a strategic, longer term perspective? What is worth giving up, and what are the pros and cons? What analysis needs to be done to provide sufficient information to make these difficult decisions? Library administrations have to develop an instinctive mental calculus in which the advantages and disadvantages of various options, and decisions being made at an institutional level need to be closely assessed against the library's interests. There is intense competition for scarce resources between departments, services, and faculties in any university; how we react to relative losses and gains in the planning process of the institution will say much about our understanding of the outcomes of risk, and how we mitigate risk.

According to Prospect Theory, individuals in experimental settings exhibit a diminishing sensitivity to gain or loss as the scale is increased: "This element of prospect theory is known as diminishing sensitivity because it implies that, while replacing a \$100 gain (or loss) with a \$200 gain (or loss) has a significant utility impact, replacing a \$1,000 gain (or loss) with a \$1,100 gain (or loss) has a smaller impact."<sup>25</sup> This is associated with reference dependence, since the value of a gain or loss diminishes as the amount increases. It is not hard to see how this would apply to an academic library, where for example the increase or decrease in the Collections budget varying over time would be perceived differently, depending on the size of the budget and the shifts that occurred each year over a multi-year period. Similarly, the acquisition of ebooks on a large scale implies that there is a diminishing sensitivity once a critical mass of knowledge and experience in managing this content has been developed. Once a research library has acquired say, 600,000 ebooks, it is likely that the next 100,000 titles will be much less problematic to acquire and manage than the existing collection, all things being equal. A serial that costs \$100 this year and jumps to \$500 next year is seen as a dramatic increase, versus a serial that costs \$5,000 this year and \$5,400 next year. In both cases, the dollar amount is \$400, but the scale of perception and sensitivity are very different, since the increases are 500% and 8% respectively.

Probability weighting: if we are underweighting low probabilities and overweighting high probabilities, how does this affect the thinking that goes into our decision-making around risk? For example, the risk of a building disaster, such as a flood, or a natural disaster or earthquake, is generally low. If contingency plans and protocols are out-dated or non-existent, this could lead to huge problems if such a disaster ever were to occur. This question returns to probability weighting, and the natural inclination to focus on high

probability events that are clearly on the radar screen, and overweight them accordingly. Will project x or project y be approved, and what depends on inter-institutional dynamics and collaborative partnerships versus local, internal decision-making? Therefore it is valuable to review the full spectrum of high and low risk events, in relation to our understanding of probability, and ensure a realistic understanding of the risk status of each of these contingencies.

While we need to ensure that we do our due diligence for any risk assessment, technology plays a huge role in how we conceive of innovation and adding value. In this context, it is instructive to apply Christensen's seminal thinking on the distinction between sustaining technologies (ones that add incremental value to existing products) versus disruptive technologies that "bring to a market a very different value proposition than had been available previously."<sup>26</sup> There are many disruptive technologies that affect academic libraries – mobile computing, MOOCs, Big Data, altmetrics, and social media come readily to mind. These bring new forms of value and needs to our patrons and our institution. These can be harnessed to the library's advantage, or ignored at our peril. This is where Christensen points to the importance of risk-taking and leadership: "Failure and interactive learning are, therefore, intrinsic to the search for success with a disruptive technology... Disruptive innovations entail significant first-mover advantages: Leadership is important."<sup>27</sup> Therefore risk involves a keen sense of leadership and the ability to identify new value in emerging, disruptive technologies, and to act upon this awareness before it is too late. As we transform our libraries and harness innovation to our services and activities, leadership is crucial to how we will succeed in relation to disruptive technologies.

## Conclusion

Librarians act as change agents in an era that is fraught with risk. The problems with risk assessment in relation to library management are many. Understanding cause and effect in the wider landscape is not always evident; the process is highly imperfect, and conducted under pressure; there is too much information and too many variables to sift and analyze. Uncertainties riddle our knowledge, and there is the inevitable loss of corporate memory when someone leaves. Disruptive innovation is a reality of our times that depends upon our understanding of risk; how we respond will determine the impact, positive or negative, upon our libraries. We can gain insights from the basic principles of Prospect Theory. It can give us a better understanding of psychological reflexes around reference dependence, loss aversion, diminishing sensitivity, and probability weighting. These affect how we respond to and manage risk. No theory can provide us with a full understanding of organizational realities and the decision-making process, but Prospect Theory, as an analysis of risk attitudes, can give us useful information. Reframing is an integral aspect of risk assessment and leadership. Bolman and Gallos astutely note that "expanding one's frame of reference requires knowledge about alternative perspectives, appreciation for their potential contribution, and opportunities to practice looking at the same situation through multiple lenses."<sup>28</sup> We need to be attuned to the attitudinal and situational dynamics that play a significant and subtle role in our decision-making processes. This can help contextualize the broad range of risk factors facing academic libraries in the digital information economy, and ultimately inform a better understanding of our

organizational cultures and ourselves, thus giving us more tools with which to manage our environment.

## References

- 1 Thomas J. Chermack and Tiffani D. Payne, "Process Level Scenario Planning," *Academy of Strategic Management Journal* 5 (2006): 116.
- 2 Stuart Hannabuss, "Scenario Planning for Libraries," *Library Management* 22, no. 4/5 (2001): 169.
- 3 Nancy Rea and Stacey Aldrich, "Scenario Building: Creating Your Library's Future," *Serials Librarian* 38, no. 1/2 (2000): 15-21.
- 4 Graham Walton, "Theory, Research, and Practice in Library Management 6: Managing Uncertainty Through Scenario Planning," *Library Management* 30, no. 4/5 (2009).
- 5 David J. Staley and Kara J. Malenfant, "Futures Thinking for Academic Librarians: Higher Education in 2025," *Information Services and Use* 30 (2010): 57-90.
- 6 James G. March and Zur Shapira, "Managerial Perspectives on Risk and Risk Taking," *Management Science* 33, no. 11 (1987): 1413.
- 7 March and Shapira, 1404.
- 8 Kenneth R. MacCrimmon and Donald A. Wehrung, *Taking Risks: The Management of Uncertainty* (New York: Free Press, 1986): 287.
- 9 Nicholas Joint, "Applying General Risk Management Principles to Library Administration," *Library Review* 56, no. 7 (2007): 545.
- 10 Eric Schmidt and Jared Cohen. *The New Digital Age: Reshaping the Future of People, Nations, and Business* (New York: Alfred Knopf, 2013): 253.
- 11 Mary Casserly, "Collection Management as Risk Management," *Library Collections, Acquisitions and Technical Services* 28 (2004): 80.
- 12 Patricia Pitcher, *Artists, Craftsmen, and Technocrats: The Dreams, Realities and Illusions of Leadership* (Toronto: Stoddart, 1996): 151-52.
- 13 Kees van der Heijden. *Scenarios: The Art of Strategic Conversation* (Chichester: John Wiley, 1996): vii-viii.
- 14 Thomas Kuhn, *The Structure of Scientific Revolutions*, 2nd. ed. (Chicago: University of Chicago Press, 1970): 175.

15 Nicholas Barberis, "Thirty Years After Prospect Theory in Economics: A Review and Assessment," *Journal of Economic Perspectives* 27, no. 1 (2013): 173.

16 Investopedia, accessed November 19, 2013,  
<http://www.investopedia.com/terms/e/expectedutility.asp>

17 Barberis, 175.

18 Barberis, p. 175

19 Barberis, p. 175

20 Barberis, p. 175

21 Barberis, p. 175.

22 Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, 47, no. 2 (1979): 268.

23 *ARL 2030 Scenarios: A User's Guide for Research Libraries*. (Washington, DC: Association of Research Libraries: 2010), accessed November 19, 2013,  
<http://www.arl.org/storage/documents/publications/arl-2030-scenarios-users-guide.pdf> .

24 ARL 2030 Scenarios, 41.

25 Barberis, p. 175.

26 Clayton Christensen, *The Innovator's Dilemma* (New York: Harper, 2011): xvii.

27 Christensen, 260.

28 Lee G. Bolman and Joan V. Gallos. *Reframing Academic Leadership* (San Francisco: Wiley, 2011): 28.

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