

Learning Technologies 2009  
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## Learning and technology: success and strategy in a digital world

In October 28, 1906 a train heading to Atlantic City, jumped the track over a drawbridge at Thoroughfare Creek<sup>1</sup>. Train doors were locked, rendering it almost impossible for anyone trapped inside to escape. Fifty-seven people were killed. This event barely warrants mention in light of the enormous carnage of the 20<sup>th</sup> century. Yet, the way in which this event was covered by the press has impacted almost everyone in western society over the last 100 years.

### *Information shapers...*

After the railway accident, Ivy Lee<sup>2</sup> - a young ambitious partner in a new public relations firm – convinced Pennsylvania Railroad to issue what many consider to be the first press release. In spite of the tragedy, the railroad was applauded for its openness and transparency in the event. Newspapers, prior to Lee's press release, had difficulty finding accurate information. Corporations weren't cooperative. Eye witnesses could vary greatly in their accounts. Through more transparent communication with the public, businesses realized that they were able to shape information to create favourable views of their company<sup>3</sup>. Influencing the *interpretation* of information became as important as the initial provision of information.

The origin of public relations firms reveals how new ways of interacting with information results in the generation of new corporate and even societal processes, a relevant lesson for educators and learning and development professionals. Shaping information influences public perception, politics, and eventually government policy. AT&T was one of the first organizations to recognize the link between public opinion and government policy. Their PR initiatives generated public acceptance of a near-monopoly corporation, built on the message of AT&T as imperative to a prosperous American society<sup>4</sup>.

Public relations developed in tandem with media growth. Media formats were multiplying in the early 20<sup>th</sup> century. Radio and television offered alternatives to newspapers. Each new medium offered another opportunity to shape messages to an intended end. Pictures, movies, and billboards were used by government departments and organizations to create representations that moved the hearts, rather than minds, of society. The power of media and live speaker sessions (the famous four-minute men)

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<sup>1</sup> [http://query.nytimes.com/mem/archive-free/pdf?\\_r=1&res=9B05E5D7143DE733A2575AC2A9669D946797D6CF](http://query.nytimes.com/mem/archive-free/pdf?_r=1&res=9B05E5D7143DE733A2575AC2A9669D946797D6CF)

<sup>2</sup> <http://diglib.princeton.edu/eas/getEad?id=ark:/88435/m039k489x>

<sup>3</sup> See CBC's production of Spin Cycles for greater detail:  
<http://www.cbc.ca/news/background/spincycles/index.html>

<sup>4</sup> See Stuart Ewen's PR! A social history of spin for greater detail on AT&T's use of PR to influence the American public

were used by Committee on Public Information<sup>5</sup> during WWI to great effect in generating support for the war. Emotions, not logic, served to advance the aims of public relations, marketers and propagandists in the early 20<sup>th</sup> century.

In late 20<sup>th</sup> century as the web, and more recently, the participative web, matured, the field of public relations was dramatically altered. Information through a few centralized points such as television, radio, and newspapers can be shaped. Information through multiple decentralized points is largely unshape-able. Complexification of media reduced control-ability.

### **Vision-Less**

My talk has two arguments:

- 1) Our excessively small view of learning and its role in the organization is insufficient. We need a broader view; learning and development should be concerned with *all interactions* with information.
- 2) Learning in organizations is about developing the capacity for people to handle information in a meaningful manner. *Productivity with information*, leading to increased organizational capacity to adjust to changing strategies and external factors, is the only sustainable foundation on which to build future learning and development departments.

Essentially, our need is to *think in networks* in how we socialize, create value, relate to others, and in understanding how perceptions are shaped through fragmented information sources.

Networks help us to understand how a mandate from a division leader or the company president generates points of action at the ground level. Or how innovations and successes in one region translate into other regions. Or how hidden, undiscovered organizational knowledge combine to form new innovations in product or process.

### **What is happening with inFORMATION?**

Walter Benjamin, in *The Work of Art in The Age of Mechanical Reproduction*, states that the “mode of human sense perception changes with humanity’s entire mode of existence”<sup>6</sup>. Changed methods of interacting with information and with others influences and drives organizational (re)design.

*As goes information, so goes the design of our organizations.*

Information fragmentation has increased personal control. Information containers – books, courses, newspapers, and even news broadcasts – have not (yet) been rendered obsolete, but their value has changed.

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<sup>5</sup> <http://www.archives.gov/research/guide-fed-records/groups/063.html>

<sup>6</sup> <http://design.wishiewashie.com/HT5/WalterBenjaminTheWorkofArt.pdf>

As a result, it has become difficult for messages to be broadcast centrally. The U.S. president, the Pope, and the Queen are turning to multi-channel and distributed approaches to connect with their audience. Twitter feeds<sup>7</sup>, Youtube channels<sup>89</sup>, and other new (social) media initiatives<sup>10</sup> abound.

Messages from governments, corporations, and spiritual organizations are quickly dissected and analyzed at great length in highly personalized forums (blogs, podcasts, videocasts). As early as 1916, using Web 2.0-esque language, Lee prophetically stated: “the people now rule. We have substituted for the divine right of the kings, the divine right of the multitude”<sup>11</sup>.

Hyper-fragmented information is accentuated by a parallel trend of increased participation with information and conversation. Centrally created messages have lost their impact over the last decade. Emerging technologies – sometimes called web 2.0, participative web, and so on – have low entry barriers to participation in conversations. Information shaping through central PR methods has given way to participatory, fragmented conversations.

When organizations attempt to utilize the energy of distributed participation, the desired effects are not always achieved. Openness reduces control-ability of messages generated. In 2006, General Motors launched a “design your own ad” campaign on the Chevy Tahoe in conjunction with the television program *The Apprentice*. The winning ad was intended to be used as part of a national campaign. The responses – and a hazard for any type of user generated content in open spaces – were largely critical of the Tahoe.

The speed of information dissemination through emerging media has also accelerated over the last decade. In 2004, the Asian Tsunami demonstrated how quickly images, first-hand accounts, and appeals for help could be handled through blogs. In 2005, Hurricane Katrina again raised the profile of participative/amateur media as a means of sharing information. In the 2008 American presidential election, the power of social networks – aided by technologies like mobile phones, Twitter, blogs, and video – were on display in full force, mobilizing substantial voter turnout. More recently, on January 15, 2009, Flight 1549 crash landed in the Hudson River. Within minutes, comments were posted on Twitter and images were being shared on Flickr<sup>12</sup>

The capacity of individual bystanders and observers to significantly augment traditional media is apparent. But it raises a problem for information departments – media, PR, learning and development: **How can a specific message be created and distributed in a decentralized world?**

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<sup>7</sup> <http://twitter.com/DowningStreet>

<sup>8</sup> <http://uk.youtube.com/theroyalchannel>

<sup>9</sup> <http://uk.youtube.com/vatican>

<sup>10</sup> <http://www.whitehouse.gov/>

<sup>11</sup> Stuart Ewan: PR! A social history of spin. P. 75

<sup>12</sup> Will Richardson offers a more detailed account of how the news developed and spread: <http://weblogg-ed.com/2009/the-news-according-to-twitter/>

The days of Ivy Lee's and Edward Bernays' (see "torches of freedom"<sup>13</sup>) ability to overtly shape information and discussion to generate certain views have been replaced by a fragmented information ecology. An accident like Thoroughfare Creek would receive very different coverage with today's media.

*What lesson can the learning and development field learn from the massive transformations in public relations?*

Swanson has stated<sup>14</sup> that "undiscovered public knowledge" is a by-product of the growth of information. Information is not being connected. We are often unaware of valuable information and, when we encounter it, its value is not recognized as it competes in a sea of inconsequential details.

Events such as 9/11, 7/7, Mumbai, Bali bombing, and even the current financial crisis, exhibited warning signs that were not understood in a context that could shape and influence action. After each event, information was discovered suggesting that the incidents were not as unforeseeable as initially thought. Access to quality information has limited value if it's not shaped in a manner that reveals potential impact.

Information abundance is not more of the same, but rather something different altogether. P.W. Anderson declared, succinctly, that "more is different"<sup>15</sup>. As the scale and complexity of systems increase, fundamental rules change. "More information" requires new methods and new approaches for filtering and recognizing important elements.

Herbert Simon addressed the value of "grouped complexity" in his well-known 1962 article "The Architecture of Complexity"<sup>16</sup>. To make his point, he introduces two watchmakers: Hora and Tempus.

Both men were well-reputed as creators of exquisite watches. Their shops were similar in setup, with a phone located in each. As artists with exceptional reputation, their customer base grew rapidly. Over time, however, Tempus lost his business while Hora flourished. Why?

The answer is found in how they created their watches. With each watch containing over 1000 pieces, the manner in which they assembled watches was important to their success. The phone – their main contact with customers – rang frequently. Tempus assembled his watches in a holistic manner. If he put the watch down to answer the phone, it would fall to pieces and he'd have to start over. Hora, in contrast, designed his watches in subassemblies of 10 pieces each. He could readily be distracted without his work being impacted. His method of watch making matched the needs of his circumstance. The main challenge was not to build a superior watch, but to build a watch through a process aligned with the context of how the watchmaker gained new customers.

If learning and development models reduce employee productivity (to attend training out of context), method has been mismatched to intent and the context of the learner

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<sup>13</sup> <http://www.culturewars.com/CultureWars/1999/torches.html>

<sup>14</sup> Swanson, D. R. (1986). Undiscovered Public Knowledge. *Library Quarterly*. 56(2)

<sup>15</sup> <http://www.sccs.swarthmore.edu/users/08/bblonder/phys120/docs/anderson.pdf>

<sup>16</sup> <http://www.informatics.sussex.ac.uk/courses/ModDis/Internal/SimonAoC.pdf>

### *Learning and Development as Information Shaping*

The relationship between public information (news) and corporations was altered by the development of public relations. Through PR activities, the interests of a corporation were translated into language understood by the public and in the service of the organization's goals. The fragmentation of media and PR has resulted in greater need for corporations to be transparent and exhibit characteristics expected by the public, rather than to shape information to create a perception that isn't reflective of reality. The PR field shifted from information shaping to engagement with consumers.

This opportunity (challenge) also exists for learning professionals.

The full spectrum of information interaction should be the focus of organizational learning and development departments. Bringing these concepts together in a meaningful manner can help L & D departments play a much more critical role in the organization.

*Productivity with information*, leading to increased capacity to act in complex environments, is the new value point.

Consider teleconferencing, marketing, or even customer relations. Learning and development has traditionally been assigned a role of helping people develop skills to perform their work. Learning should, however, be woven through the entire company, touching all points of information interaction and capacity building.

Those in the learning field who work with emerging technologies are uniquely positioned to play an important role in how information is shaped and shared across an organization – whether in service of developing work skills or in inter-departmental communication. The tools to solicit engagement, to communicate across geographical distances, and to function in distributed teams are now readily available. Regrettably, to date our field failed to **conceive a compelling vision** for the use of new technologies beyond serving existing narrow views of learning.

In the past, learning needs have been addressed through various approaches: knowledge management, performance support, learning and development, and talent management. Integration across these fields was often lacking, resulting in diminished capacity and effectiveness of information use. Impact was reduced by weak implementation and fractured and isolated organizational silos.

### **Trailing Productivity with Technology: Existing systems as barriers**

Productivity benefits of new technology are often delayed because existing systems act as barriers. Paul A. David<sup>17</sup> addressed the productivity paradox as expressed by Robert Solow: "We see the computers everywhere but in the productivity statistics" (p. 355). Heavy investment in computing technologies, over many decades, had not substantially impacted productivity. David turned his attention to a

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<sup>17</sup> David, P. A. The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox. *The American Economic Review* 80(2).

previous instance of a large-scale investment in technology that failed to return immediate results: the dynamo or electric generator.

When the dynamo was deployed, its first use was to replace the existing steam engine that powered multi-story buildings, modelled on a central-shaft and belt system. In spite of the dynamo, the entire system of production continued on the model of the steam engine. Productivity benefits of the electrical engine were delayed for decades as factories were wired and newer factories were designed as single story buildings, setting the stage for the assembly line.

The method of “overlaying of one technical system upon a preexisting stratum is not unusual during historical transitions from one technological paradigm to the next” (p. 357). Overlaying new technology on existing mindsets is now happening in learning and development departments. Classroom and course-based learning continue as prominent models. Technology has not yet transformed L & D. Innovations are hampered by the design of existing systems.

Learning and development is (should be) concerned with any type of information creation and exchange. Competence with shaping and sharing information in the pursuit of strategic organizational objectives logically reside in the L & D domain. The so-called future corporation - distributed and global - will utilize many of the skills and competencies that we have been developing for decades. The tools and process now being used for learning, communication, and content creation are those that will be the foundation organizations. To date, however, promised institutional change<sup>18</sup> has been slow in coming.

Can our existing expertise and organizational positioning be transformed into a broader, more relevant role?

#### *Organizations and learning as networked*

Understanding information and organizations as networked entities raises new opportunities for evaluating effectiveness. Unlike hierarchical models, network elements (nodes) can be precisely pinpointed. How information flows, how people communicate, the impact of one element on the larger network (such as the cascade effect of the so-called credit crunch) can be observed and understood with appropriate metrics.

Unfortunately, most organizations have not yet created an information structure capable of recognizing the primacy of networks in value creation and development employees. Informatics are surprisingly lacking. For example, an employee working with a client should have access to previous interaction others in the company have had with the client. The networked (and integrated) nature of information, when used to improve productivity, can yield substantial returns to organizations.

Software for personal productivity must advance beyond its current state. Software should recognize personal development of concepts and reveal, to the end user, patterns of thought and related resources from previous projects. Individuals should be presented with patterns of information, drawn

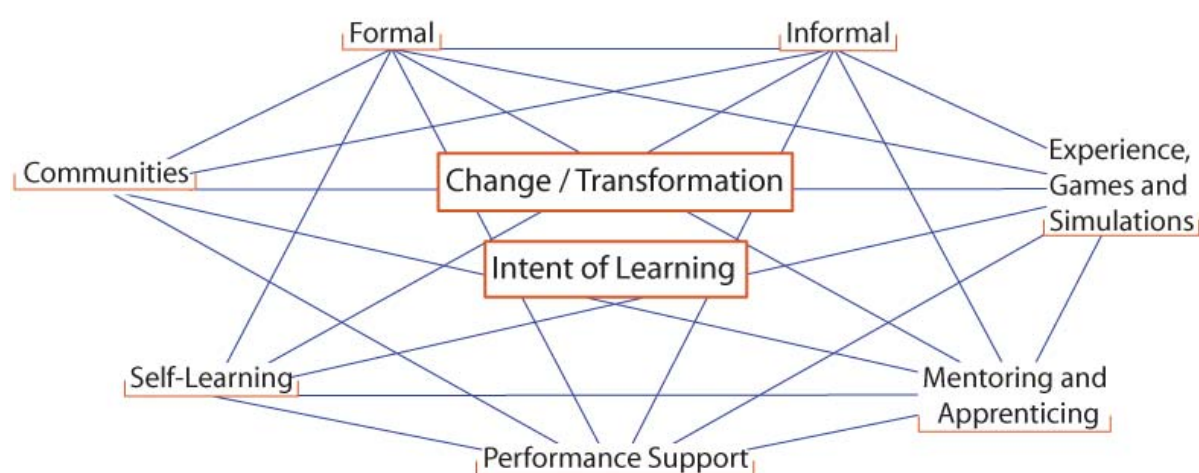
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<sup>18</sup> Technological revolutions, paradigm shifts and socio-institutional change:  
[www.carlotaperez.org/papers/TRs%20TEP%20shifts%20and%20SIF%20ch.pdf](http://www.carlotaperez.org/papers/TRs%20TEP%20shifts%20and%20SIF%20ch.pdf)

from the entire organization, that reflect their current needs. Technology must be employed for productivity enhancements beyond information creation (such as is currently the case with word processors and email programs).

**Innovation is constrained by our inability to conceive a compelling vision for the learning and development department in a world of constant change.**

The success of learning and development departments will be determined by their ability to conceive a broader role. Inability to make this transition will result in subsumption by, or integration with, departments that are able to build on a *productivity with information* model.



*Image 1: Limitless dimensions of learning*

The full spectrum of learning – formal, informal, simulation, mentoring, performance support, self-learning (awareness of self and thinking habits), and communities – must be attended to by L & D. Learning as capacity-development emphasizes attention to each of these domains. An engineer working in a distributed team requires different learning assistance than a salesperson making contact with a new client. Addressing needs of customers, and accessing needed information and support, varies by region and country. Context is king. Classroom and course-based learning is only a single point in a broad spectrum of learning needs.

#### *Thinking about change...*

Change is a constant. Surprisingly, change as a discipline of study is underdeveloped. In reviewing large-scale change cycles of history - democratic and industrial revolutions - five key stages can be observed (see image 2):

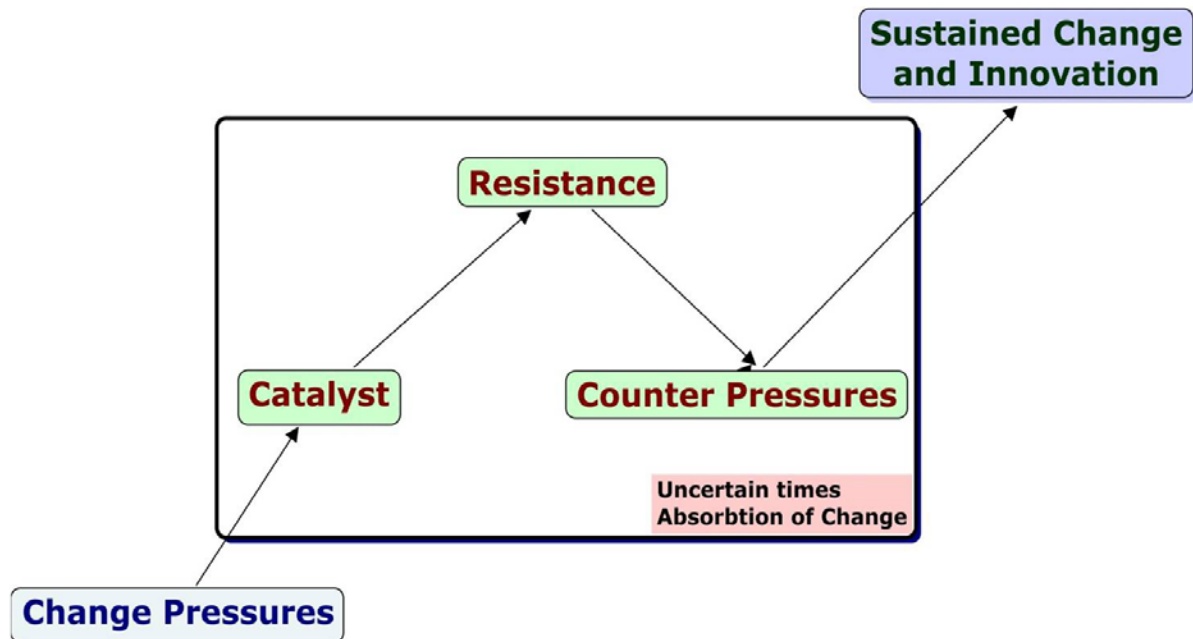


Image 2: Cycle of change

1. **Change pressures** – change is ongoing. In most instances, organizations are able to adapt to change without systemic redesign. For example, L & D departments have to date adapted practices to reflect changing external environments. Instructional design, talent management, and knowledge management have been accommodated by the existing role of L & D.
2. **Catalyst** – periodically, change pressures are of such a substantial nature that a catalyst can set off a cascade effect of reforms, ultimately transforming an entire system. When external environments (political, economic, social, and technological) are fundamentally different from the design of organizations, accommodation is no longer possible. Systemic change is required. The political, industrial, and social revolutions of the 18<sup>th</sup> century in America and Europe are illustrations. Monarchical models of government were incapable of meeting the growing democratic calls of the French population. Colonial rule was fundamentally opposed to the desire of self-governance in America. Catalysts can occur rapidly (such as an event that mobilizes a population) or slowly over a period of many decades (such as the industrial revolution).
3. **Resistance** – a catalyst for change calls into question existing practices and organizational design. Those with power are reluctant to acquiesce. Resistance to new or transformative approaches can be expected. Resistance may involve attempts to control through legal, political, or financial means. The music and recording industries sought first to control innovation, and have only more recently reacted with fundamental change (Hulu<sup>19</sup> embodies the spirit of experimentation in response of disruptive trends in the traditional field of television programming).

<sup>19</sup> <http://www.hulu.com/>



4. **Counter pressures** – many change initiatives are slowed, or even halted, due to resistance by those with existing power and control. However, when change pressures are of a significant level, resistance is at best a temporary setback (consider the re-establishment of the French monarchy for a short period in the 19<sup>th</sup> century). As organizations and individuals align practices and systemic design with the nature of external factors, transformative change is enacted.
5. **Sustained change and innovation** – sustained change and innovation is a by-product of periods of uncertainty, where systems react to, resist, and respond to change pressures. Broad scale changes - where societies and corporations morph into new entities - are rare. When they do occur, a period of uncertainty and even confusion ensues. Organizations built on existing value generation models (such as General Motors, newspapers, and, to be provocative, learning and development departments) must conceive a new role and a new identity. For many, this change is difficult as existing mindsets prevent the recognition of a new value basis. Some organizations, like IBM in the 1990s, are able to create a compelling vision of the future as well as a strategy of response. Most, however, are bypassed due to their inability to respond to disruptive changes.

Current trends – globalization, economics, creative work, networked design of organizations, green movement – exert pressure on organizations to rethink the role of learning. The catalyst for systemic reorganization of learning and development may be found in the *current constellation of change pressures*. Resistance and counter pressures will be mounted, but reorganization – either by recreating our field or being subsumed by another - as a response to major trends seems likely.

### New Skills

Individuals require new skills and mindsets to participate in an information-rich, participative environment. Information acquisition is less important than the capacity for people to continue to learn. Barnett defines this as a shift from epistemology (knowledge) to ontology (being)<sup>20</sup>. The ability of individuals to continue to make sense of new information is more important than what they currently know. *Being exceeds knowledge*.

In the absence of value derived from pre-constructed models (such as courses), productivity with information will be increasingly defined by new skills and mindsets:

- **Recognizing important information.** Access to information is no longer the most challenging aspect of work. Recognizing important information from an overwhelming abundance of inconsequential information has become a vital skill. Once important information has been recognized, the next skill becomes apparent: understanding what information means.
- **The meaning of information.** What is the impact of important information? Trends are generally noted and discussed well before they are fully felt. Since the late 70's, awareness has been growing about the weakness of Detroit's automobile sector. Why was this important information not followed through to the point of action? Individuals and organizations, to be effective in the future, will be required to act quickly on new or emerging information.

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<sup>20</sup> Barnett, R. (2000). Supercomplexity and the Curriculum. *Studies in Higher Education*. 25(3)

- **Wayfinding.** Personal productivity is a function of how well an individual can find her/his way through complex and ambiguous environments.
- **Thinking and functioning in networks.** Over the last several years, networks have grown in prominence. Driven partly by increased publications on networks and the growth of social networking services, the primacy of networks in organizations, social systems, and business functioning is increasingly acknowledged. Unfortunately, the reconfiguration of hierarchical organizations into network organizations is severely restricted by current systemic design. Successful organizations of the future will likely be those that are able to reposition their value-creation process on a networked model.
- **Capacity for connections,** ability for relationships. Teams may comprise individuals from several countries. Physical location of employees is no longer a restricting factor. The development of quality video conferencing, social networking tools, and mindsets of participative engagement (reflected in discussions of web 2.0 and enterprise 2.0), negates much of the value of being physically co-located.
- **Creativity & innovation.** Entire economies are in a transition period from manufacturing to creative work<sup>21</sup>. Innovative and creative approaches to problem solving and the generation new products (and even organizational forms) are expected to drive future economies.
- **Recognizing and responding to change.** Flexibility and adaptability in response to fundamental changes in information is important. Current information, ensured through personal networks of learning, enable individuals to make timely decisions. On a larger scale, organizations need to develop systems for information obsolescence, offering a systemic response to relevant and contextual information.

## Future

Effective future learning systems will build on distributed models, acknowledging complexity and emphasizing integration of information in the service of capacity building. In particular, the future will be defined by:

1. Productivity with information in the achievement of adaptive organizational strategies.
2. Information as constant and in context. Not device centric. Not isolated. Instead of explicitly seeking information we need, previous patterns of information search and use are utilized to provide us with relevant resources. We will be known by information.
3. Organizations will develop information models that off-load cognitive functioning to technology. Reliance of software to present and analyze patterns: i.e. extensions of cognitive capacity through software and technology.
4. Advanced informatics. More than any aspect of learning and development, informatics are least developed. Information *is* the new work. Better analysis of trends, contextual access, filtering, and patterning is essential.
5. Capacity building. Uncertain and complex environments raise the importance of individual and organizational capacity to respond to shifting circumstances. Networks are, by nature, flexible

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<sup>21</sup> <http://martinprosperity.org/media/pdfs/MPI%20Ontario%20Report%202009%20v3.pdf>

and adaptable. A networked organization possesses greater capacity to sense and respond to trends than traditional hierarchical organizations, as the flow of information is less encumbered by systemic flaws.

6. Development of *the person* not *the employee*. In industrial-era work, the physical skills of an employee are 'hired' by the employer. In creative work, the limitless potential of the human mind is hired. As such, work is no longer bounded to a location. The development of the whole person influences success within an organization.

### Concluding thoughts

My presentation is intended to draw attention to the current systemic flaws of learning and development, not to provide a comprehensive path forward. Providing a solution would demonstrate a misunderstanding of how complex and uncertain systems behave. Engagement with change pressures is a more desirable response rather than creating answers in advance. The hard work of conceiving a new role for learning and development will require time.

*What must happen for the learning and development field to rethink its role and function?*

A CLO or learning leaders forum is an important starting point. The leaders of a field must begin the process of conceiving a compelling vision for the future of organizational learning. In the process of forming this vision, however, leaders have an important obligation to mirror democratic and open principles. Distributed networks of innovation, comprised of the entire learning and development community, are crucial to advancing the discussion.

Many questions remain: What is the role of training, development and talent in achieving organizational strategies? How does information abundance influence the achievement of these objectives? How do organizations learn to function in distributed environment? How can organizations achieve strategies when fully distributed? How can expertise be developed through informal, in-process methods? How can a full spectrum of learning and development experiences be addressed?

Ultimately, a stark reality faces L & D professionals: **fields that fail to adapt to changes in their core products and processes are quickly rendered obsolete**. Limitless dimensions of learning are now a click away for most employees. How will our field respond? We can respond by transforming our field so we are better aligned with the information needs of organizations. Or we can continue to provide development options based on systemic models that are now in the beginning stages of significant upheaval. The future, and our fate, is in our hands.