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Innovation: An Unconventional Perspective

Abstract. *Innovation as a means of gaining competitive economic advantage has garnered a great deal of recent scientific and popular interest in both the United States and in Poland. For example, a January 19, 2015, exploration of the Google Scholar search engine for the term "Economic Innovation" turned up 2,250,000 hits for the United States and 16,700 for Poland. This paper intends to offer its readers an unconventional perspective on the subject of innovation that is grounded in both business and psychology. It will offer some innovation strategies that are rooted in the fields of behavioral economics, biology, and neuroscience. The focus will primarily be on innovation strategies pursued by creative individuals and organizations in the United States and offer some parallels to innovation approaches currently being pursued in Poland and in the European Union.*

Keywords: *innovation, design-driven innovation, innovation strategy, biomimicry*

1. Why Innovation?

Renowned management thinker and author Peter Drucker once defined innovation as "change that creates a new dimension of performance" [Hesselbein, Goldsmith & Sommerville 2002, p. 1]. Current international management experts Fons Trompenaars and Charles Hampden-Turner [2010, p. 1] have since raised the issue "Is innovation a phenomenon of boom times?" Today's organizations face daunting challenges in managing the precarious balance between survival in the present and success in the future. What can we offer organizational leaders such that it will enable them to more positively survive and thrive in increasingly cha-

otic environments? As long ago as the early 1940s economist Joseph Schumpeter [1943] suggested that capitalistic economies were driven by gales of "creative destruction." Is there a stance through which individuals and organizations can gain a useful purchase between the extremes of doing nothing and over-reacting to Schumpeter's inevitable destructive waves? Perhaps exploring the concept of Innovation in non-traditional ways can provide some useful guidance that can be of service to economies and organizations wrestling with difficult times.

2. Innovation Strategies

Rather than being a monolithic concept, Higgins [1995, p. 47] has proposed at least four different varieties of innovation: product, process, marketing, and management. Product innovation relates to a physical product or service. Process innovation concerns a means for improving efficiency or effectiveness. Marketing innovation connects to new marketing concepts or actions. Management innovation conveys a new way of managing.

Strategies are typically concerned with approaches that can be used to accomplish desired future ends. Innovation strategies begin with the use of individual and group creativity to identify new ideas for thinking and solving problems. The essence of innovation is the translation of the best creative ideas into the practical reality of new or enhanced products, services, and processes. This transformation of ideas involves finding new possibilities, assessing their potential worth, trying them out, and then further investing in those that show the most promise.

In particular, after reviewing the state of innovation strategies in the United States, this paper will look at three unconventional strategies that may offer unusual innovation potential: use of metaphor, design-driven innovation, and bio-emulation innovation.

3. Innovation Strategies in the United States

Harvard professor Clayton Christensen [2000, 2003] has written extensively on innovation strategy. His basic premise relates to a perceived innovation paradox: good business practices can ultimately weaken a dominant firm. Great firms can become vulnerable to visionary upstarts, who court an unorthodox group of customers, who are initially viewed as non-threats, and who usually enter markets at the low end of profitability.

Christensen suggests that the most effective strategies are developed as the consequence of radical changes in technology or market structure. These changes are disruptive in that they interrupt or disturb an existing order among established players in an industry or economic sector. Christensen, Anthony and Roth [2004]

have also been advocates for using theories of innovation to predict industry change. They recommend the use of analytical models and tools such that decision makers can: spot innovative firms well in advance of major change actually being recognized within an industry, predict competitive winners and losers, and evaluate how an individual firm's choices can affect its chances of success in the marketplace.

Recently, Ariely [2012] has complied some of the most intriguing new American innovations identified by leaders in their fields. He has organized their innovations into categories of: bacteria/microorganisms, animals, humans, society and environment, and technology. Many of these innovations are the direct result of cooperative and synergistic arrangements between individuals, teams, and organizations,

Soliciting member engagement has been another major innovation theme among companies in the USA. Janov [1994] addressed the notion of organizations as inventive systems and promoted the idea of employee innovation at work. Using examples of companies such as Johnson & Johnson, Xerox, and Ford, Janov explains how these enterprises are seeking to make the transition to high performance inventive organizations. In particular, Janov notes how the use of task teams and suggestion systems has become popular as a means for capitalizing on discretionary worker effort. Companies such as W.L. Gore (the maker of Goretex fabric) have experimented with increased worker autonomy, decision-making discretion, and flattened bureaucratic hierarchies. Additionally, corporations such as 3M and Google offer employees the incentive of paid time off to work on their own innovative projects.

Psychiatrist, musician, management professor and leading expert on innovation John Kao believes that America is losing its innovation edge. Kao [2007] infers that the United States is being overtaken by innovation centers such as those in Denmark, China, Finland, and Singapore. He suggests that the United States in in the middle of a reverse brain drain where foreign professionals trained in US universities and companies are returning to their native countries to start competitive enterprises. Kao also suggests the United States does have the capacity to regain its prominence as an innovative country. He proposed that change should begin with a new national narrative around innovation.

4. Polish Parallels

Researching the origins of organizational creativity and innovation, management professor Barton Kunstler [2004] uncovered the influence of "creative hothouses" throughout history. The rise of several of these hothouses was attributed to the intellectual ferment of the European Renaissance. These innovative com-

munities acted as gestational vehicles for the spread of new, out-of-the-ordinary ideas that led to innovations like the printing press that eventually transcended cultures and nations.

In a similar vein, writer and entrepreneur Frans Johansson [2004] has proposed a "Medici Effect" named after the creative explosion in Renaissance Italy that was supported by funds from the Medici banking family. Johanasson suggests that innovators change the world by developing breakthrough insights through exploiting the intersection where different ideas, concepts and cultures intertwine.

More recently, Szabo and Herman [2012] have investigated innovative entrepreneurship for economic development within the European Union. Their work provides a short review of the literature on the relevance and role of innovation and leadership as related to economic growth and development. Additionally, Fagerberg, Feldman, and Shorde [2011] drew comparisons between U.S. states and European nations in the areas of technological dynamics and social capability. More specifically, Miller, Mroczkowski, and Healy [2014] have enquired into Poland's basic innovation strategy of smart specialization.

5. Metaphor as an Innovation Strategy

Clegg [1999, p. 55] has suggested that innovation works best in a culture of creativity that affords free communication and access to information. Additionally, to foster innovation successfully within a culture, risk-taking is to be encouraged, failing is allowable, and there are explicit rewards to be earned for being innovative. One model for the use of creativity that leads to innovation is via the thoughtful application of metaphor. Metaphor being defined as a thing that is representative of something else. The following is an example of the deliberate mining of metaphorical insights derived from a review of a selected work of world-class literature.

British author Lewis Carroll [1993, 1999] in his classic works of literature, *Alice's Adventures in Wonderland* and *Through the Looking Glass* described a world turned topsy-turvy. Carroll's central character is the brave and innocent young girl Alice. Dissatisfied with her current life's circumstances, Alice's inherent curiosity led her to spontaneously follow a furtive, oddly behaving, fast-moving, but intriguing figure. In her own garden, focused and in hot pursuit, Alice unexpectedly tripped and fell down into a well camouflaged hole.

Thus began a series of adventures for Alice in a new and exotic world, one she had never encountered before. Entry into this strange environment of the unusual and different as gained by passing through a looking glass. This magical mirror had the exceptional ability to both shatter and transform reality.

The inherent craziness of this enchanted realm was epitomized by the person of the White Rabbit. It was the rabbit that Alice had initially followed in her garden. The White Rabbit had an aura of authority about him and appeared to be in perpetual motion. Fashionably dressed, and carrying a large pocket watch, which he frequently and anxiously checked, the White rabbit scurried frenetically and randomly about.

In Alice's mixed-up world of talking animals, nothing was as it seemed on the surface. The usual clues the orient human beings to their surroundings were missing. Prior experience of reality was misleading. Little could be taken for granted. Adjustments had to be made to fit the changing circumstances.

Increasingly life in the world of contemporary organizations seems to reflect Carroll's fictional fantasy. Everything seems to be in fast, crazy, and simultaneous motion. Many of the old rules don't seem to work well anymore. The complexity and the chaos in the external environment also finds its mirror reflection in the interior of our institutions. In a manner analogous to punitive Queen of Hearts croquet game with Alice where the hoops move, the mallets are alive, the balls have minds of their own, the rules constantly change, and losing can cost you your head; organizations must regularly cope with risky and unpredictable conditions.

Paradoxically, along with death and taxes, constant disruptive change appears to have been added to the mantra of what's for certain in organizations. Externally, the internationalization of the marketplace, technological acceleration, the triumph of capitalism, and the growth of technology as expressed in the internet are some of the factors that have led to the current situation. Inside organizations, many institutional leaders must now cope with rapid turnover of staff, a growing lack of employee trust, increased pressures for conformance via regulatory bodies, more active and militant boards of directors, heightened threats of job dislocation and loss, fewer middle manager opportunities for promotion as result of down-sized organizational structures, and vocal concerns about lessened opportunities for continued regular employment.

So, what are the innovation strategy lessons to be derived from the *Alice in Wonderland* fictional metaphor? One lesson is that fictional literature is a rich and potentially untapped source of innovation approaches. Here, temporarily adopting the naivety and openness to new experiences of an Alice may uncover new world wonderlands of innovation possibility. A second lesson is that selected innovation should consider capitalizing on opportunities inherent in a chaotic world. The Chinese written character for crises represents this well, since it can be interpreted as a "dangerous opportunity."

As a third metaphorical message, when given the choice, humans generally prefer the avoidance of negative outcomes to the possible gain of positive outcomes. Numerous studies by Behavioral Economists show that the propensity to

weigh the potential for negative outcomes occurs at a much higher level (some think that the ratio may be about two to one) than that of a positive payoff. This tendency to be risk adverse appears to have been selected for as a way to enhance the survival of our species. Additionally, the pressure to react right away to a perceived threat can interfere with a rational appraisal of the longer term likelihood for success from an innovation.

And, as a final lesson, that the risks of innovation can be obscured by apparently well-meaning individuals with a personal agenda. These persons may offer an upbeat and one-sided perspective of future possibilities to enhance their own personal gain. Today's business environment appears to feature many consultants and change advocates (the White Rabbits of the Alice fantasy) eager to sell their own particular brand of innovational wares to needy institutions and organizations.

One idea relating to innovation that is presently gaining acceptance is that deliberately going slow now will enable going much faster later. This permits the rational-reflective human System Two decision process, as expressed by Nobel Prize in Economics winner Daniel Kahnenman, to override the more intuitive and subconscious System One process. Kahneman [2011] described System One thinking as mostly driven by below conscious awareness brain processes that make blink-of-an-eye judgments based on emotion and impulse. Alternatively, System Two thinking depends primarily on consciously aware brain processes that use reason, logic, and deliberation to weigh options.

6. Design-Driven Innovation

Pioneered by Italian professor of management innovation Roberto Verganti, Design-Driven Innovation attempts to change the rules of competition by radically altering what things mean. Verganti suggests that previous studies of innovation have emphasized radical innovation impelled by technology or incremental innovation driven by markets. He proposes that significant innovations do not necessarily come from market need nor from the invention of new technologies but from the engineering of radical new human meanings.

Using examples such as Nintento's Wii, Apple's iPod, Bang and Olufsen's consumer electronics products, Verganti advocates going beyond customers and users. He advocates the utilization of external "interpreters" as a principal means to support successful innovation. Interpreters are defined as knowledgeable individuals such as artists, technology suppliers, anthropologists, members of cultural organizations, and design school faculty. These experienced, well-connected individuals are available to assist companies in understanding and influencing how people derive meaning from the things they use.

Verganti [2009, p. 236] contrasts typical innovation design policies of organizations that support incremental innovation of meanings and those that promote radical innovation of meanings. Incremental supporters tend to: center on collaborations, encourage local collaborations, focus on collaboration between firms and designers, and educate designers on business. Radical innovation promoters: center on how to collaborate and with whom, encourage global collaborations, focus on collaborations between firms and multiple interpreters, and educate business leaders on design.

Another proponent of design-based innovation is Tom Kelley, general manager of the innovative design consultancy, IDEO. Kelley, author of the business classic *The Art of Innovation* [2001] and *The Ten Faces of Innovation* [2005], is a world authority on innovation. In the IDEO innovation process ten roles are utilized to foster new ideas and innovation. Representative roles include: the Anthropologist who goes into the field to see how products and services are actually used by customers; the Cross-Pollinator who combines ideas, technology, and people to create better new ideas; and the Experience Architect who sets the stage for positive encounters with participating organizations.

Marcia Giudice and Christopher Ireland [2014] further expand the innovative designer idea into the field of leadership. In their book *Rise of the DEO* the authors suggest that in advanced parts of today's world the Information Age is being already being superseded by the Conceptual Age. In this nascent era employees are more highly skilled. They are highly networked and seek challenge and growth over security and predictability in their work assignments. DEOs, or Design Executive Officers, are seen as the next evolutionary step as logical replacements for present CEOs or Chief Executive Officers. The DEO utilizes design thinking as a problem solving skill that seeks to innovate new products, processes and opportunities. DEOs are envisioned as being more aspirational, systems thinking, experimental in outlook, disruption permitting, adaptive, comfortable with ambiguity, and open to new experience than the typical CEO.

7. Bio-Emulation Innovation

Venture capitalist Geoffrey Moore has noted that great companies appear to innovate at every phase of their evolution. Using an extensive analysis of Cisco Systems as a case example, he employs Darwinian concepts of biological evolution to explain technological innovation. Moore [2005, p. 14] has proposed biology-based Category-Maturity and Technology-Adoption Life Cycles as well as various Technology-Adoption strategies.

Dyer, Gregersen and Christensen [2011] further the connection between biology and innovation by relating it to DNA. These university-based professors and

authors researched the behaviors of some of the world's most innovative executives and entrepreneurs including leaders at Amazon, Apple, Google, Skype and the Virgin Group. Their research identified five distinguishing behaviors of successful innovators: associating, questioning, observing, networking and experimenting.

Originally espoused by biologist Janine Benyus [2002], Biomimicry is strategy for innovation that parallels and leverages nature. According to author Jay Harman [2014, p. 2]: "Whether finding inspiration on hippos to reduce skin cancer or developing better road systems by studying the tracks made by slime molds seeking food, biomimicry, or bio-inspiration as some call it, very simply means applying lessons learned from nature to solve human problems." Passino [2005] and Baumeister and Smithy [2014] have also made contributions to realizing the innovative potential of the field of Biomimicry.

8. Some conclusions

Neuroscientist Elkhonon Goldberg [2001, p. 70] has advocated that the frontal cortex in human beings is the equivalent of an organization's Chief Executive Officer. He has also proposed that the right cerebral hemisphere of the brain is specialized to process novelty whereas the left hemisphere is primarily concerned with routine and stability. If so, innovation appears to first require processing novelty (something new and different) and then stabilizing and transforming it into a product or service that can be of use to others.

Currently, a variety of organizations appear metaphorically to be like mountaineers clinging precariously to the sheer side of a mountain rock face in a storm while they struggle to reach the top. These institutions operate in a perceived world where they are hanging on for dear life battered by seemingly unrelenting and uncontrollable external and internal elemental forces. For them, existing and working in the midst of substantial organizational chaos is an immutable daily fact of life.

Unyielding change pressures act to alter and distort the leader's reality. On the positive side, innovation strategies and techniques are available to assist leaders in adapting and even thriving in a chaotic world. The artful application of thoughtful questions, reflective listening, the insights of neuroscience, understandings from biology, and the use of helpful tools such as success stories and metaphors are available to assist in the identification and choice of innovation strategies.

9. Summary

The spur of chaotic times, with its implicit need for adaptive changes, can also offer organizations the chance to unlock from historically-based themes of

thought and non-helpful habitual behaviors. The impetus of operating on the edge of chaos can unfreeze paralyzing patterns and encourage experimentation with new and different innovational forms. The use of metaphors and analogies to characterize and organization's circumstances may free them to come up with creative approaches to employ in the future.

For many leaders it is their strong beliefs, personal values, and direct engagement with the organizational mission that helps them sort through the often conflicting and ambiguous messages about innovation that constantly compete for their attention. Psychologists tell us that our beliefs filter what we see, reinforcing some aspects of reality and diminishing or blocking others. It appears that in today's brave new world of accelerated change, what leaders tend to believe conditions what they actually sense and remember. The good news and the bad news is that the act of believing alters what is observed and what is expected including economic innovation.

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Innowacja – niekonwencjonalne spojrzenie

Streszczenie. *Innowacja jako sposób na zyskanie gospodarczej przewagi konkurencyjnej przyciąga ostatnio uwagę wielu naukowców, i nie tylko naukowców, zarówno w Stanach Zjednoczonych, jak i w Polsce. Ilustruje to choćby fakt, że 19 stycznia 2015 r. na zapytanie o „Economic Innovation" wyszukiwarka Google Scholar podawała 2 250 000 trafień w USA i 16 700 w Polsce. Niniejszy artykuł ma na celu przedstawienie niekonwencjonalnego spojrzenia na temat innowacji – pojęcia, które zakorzenione jest równie mocno w biznesie jak w psychologii. Przedstawione zostaną strategie innowacyjności ukształtowane w takich dziedzinach, jak ekonomia behawioralna, biologia i neuronauka. Najwięcej uwagi poświęcone zostanie strategiom innowacyjności stosowanym przez twórcze jednostki i organizacje w Stanach Zjednoczonych, przy czym ukazane zostaną analogie do podejść stosowanych obecnie w Polsce i w Unii Europejskiej.*

Słowa kluczowe: *innowacja, innowacyjność, innowacje napędzane wzornictwem, strategia innowacyjności, biomimetyka*