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THE ROOT OF CREATIVITY: THE EFFECT OF PERSPECTIVE ON CREATIVITY

ABSTRACT This chapter examines the role of perspective in creativity. Many creative efforts fail because the underlying need or situation is misunderstood, usually the result of a lack of clear vision. This is a problem for business in particular, where the intellectual environment of a business culture can elevate convergent methods of thinking that are not conducive to creative idea generation. This makes innovation and creativity more elusive, and current metrics fail to capture the need for talent that thinks divergently. The biological and psychological reasons why high level logic can cancel out creativity are explored, as are methods to increase creative capacity. A look at historical applications of applied creativity and the subtle shifts in perspective that precede them illustrate the importance of this relationship to successful deployment of creative endeavors. An analysis is also explored of businesses that have successfully utilized creativity in their policy, operations, or development areas to demonstrate the practical application of creativity in business.

The Root of Creativity: The Effect of Perspective on Creativity

Creativity is the skill that allows individuals to produce fantastic works of literature, pulse quickening sonatas, or amazingly aesthetic works of art. It also allows for the generation of new products, business models, and markets for companies. People, and companies, struggle with creativity as they try to produce unique offerings that add value to the world. Unfortunately, many are defeated in their creative journey because they enter the creative process with a focus on the works they wish to produce: the next product, a new business model, or redefining the market.

The creative problem shows itself as a manifestation of that pursuit of a goal. True creativity starts not with trying to see what we wish to create, but rather by altering the way we see things as they currently exist. Creative issues are usually issues of perspective. In the successful deployment of personal endeavors, as well as highly regarded corporate initiatives, the determining factor of successful creativity is in the way the creative entity perceives the world around them. Van Gogh, Mozart, Ford, Netflix, 3M and Apple - all of these, some corporate and some not, were able to view the world as it could be and not as others currently saw it, and more specifically they saw how the world wanted to be. That vision allowed success where others often foundered. They were able to see the patterns that were emerging and address the real underlying needs and causes, not merely the symptoms. This is stated well by Tom Kelley, CEO of IDEO that is an innovation consultancy firm; he writes: "Innovation is a very goal-oriented process, and hot groups under tight deadlines tend to focus closely on the end results. As you step through the innovation process, try thinking verbs, not nouns. It means not focusing too much on the object or artifact. Everybody's in the business of creating experiences, so focus on the verbs, the actions. The goal is not to create a more beautiful store. It's to create a better shopping experience." (Kelly & Littman, 2001)

Better instructions for business in achieving enhanced creativity can be found in the more abstract world of art. In *Drawing on the Right Side of the Brain*, her book that is singularly designed to get a more analytical mindset to rediscover its creative roots, Betty Edwards (1979) advises: "Drawing is

not really difficult. *Seeing* is the problem, or, to be more specific, shifting to *a particular way of seeing*."

By teaching drawing to neophytes she found that the issue with their drawing was not a lack of artistic aptitude, but their perception of the subject matter and their treatment of it. She helped them access their creative faculties by learning new ways of processing the information. Her students showed tremendous improvement within a year in their drawing of realistic portraits while simultaneously learning "to shift into a new mode of thinking, a mode of vast potential for insightful, creative problem solving" (Edwards, 1979) Perspective in business is about more than simply identifying a problem; it is about identifying the right problem. "Seeing" as it pertains to business can take many forms: creative information analysis, studying current processes, and, most importantly, observing the manner in which customers use the products and services. This last point is something often overlooked as businesses fail to observe without bias. Tom Kelley (2001) points out that by properly observing how consumers use their products, companies can realize that: "It is precisely this sort of observation-fueled insight that makes innovation possible. Uncovering what comes naturally to people. And having the strength to change the rules."

Businesses must seek to learn and apply creative mental processes within their culture to optimize their future growth, and not undermine these different methods by believing they are any less potent than more familiar approaches with rigidly analytical models. Businesses struggle with creativity because of the risk adverse environment. Risk is a necessity for growth, and creativity needs room to breathe without fear of reprisal for failure. Ed Catmull (2014), President of Pixar, states: "I think most people are creative…I think the central problem is the stuff companies put in place that block the natural abilities that are already there. Accidentally, and without intending to, companies smother creativity." Sometimes chances need be taken, and those chances can pay significant dividends, since: "Chance offers insights you didn't anticipate. It's a well-accepted truth that inventions and discoveries often result from accidents or experiments that went awry" (Catmull, 2014). Thomas Edison attributes his success in large part to his willingness to fail, as these failures presented lessons from which to grow: "Negative results are just what I want. They're just as valuable to me as positive results. I can never find the thing that does the job best until I find the ones that don't" (Library of Congress, 1997). Edison also believed in the importance of tenacity when creative progress was in the works." To be truly creative, accept that even the most learned of us does not know everything; creativity does not correlate with how much you know, but by how you see patterns. This means a healthy dose of humility will go far in aiding success in creative endeavors, as a mind sure of itself is often closed to new reasoning and ideas, and a good strategy from Tom Kelley (2001) to grease the wheels of creativity suggests: "Be open to surprises from within and outside your organization. Try approaching projects with humility and the knowledge that answers may come from places you least expect."

Attaining a creative mindset is a problem as old as time. Humanity's ancient ancestors first utilized creative applications in figuring out how to use tools by looking at their environment with a different perspective, and understanding that a stone could be more than a heavy lump of mineral, but also an ignition source, a breaking surface, a weapon, and more. Rudimentary as these discoveries may seem to our more developed intellects today, these were paradigm shifts in their respective times. What's more is that creativity was a paramount skill for survival; those who could leverage their creative aptitudes had an evolutionary advantage over those who could not. This is no different today in business, as creativity is a principle tenet of a business's ability to survive throughout the cycles of Invention, Improvement, and Innovation as outlined by Dr. George Land (1973) in his book *Grow or Die*. Businesses must choose whether to grow and develop new aptitudes and strategies, improving and innovating through creative endeavors, or die as their markets change and their interests are ultimately run asunder. Remaining creative requires more than an ability to analyze trends in historical data but also the ability to see a larger picture, such as the shifting of the company's markets and demographics, in time to adjust and capitalize on new opportunities. There is a difference between acquiring the information necessary to make such observations, and creatively

interpreting the significant patterns while recognizing future opportunities. This mindset of abstraction and seeing things as more they appear to be is a principle tenet of creativity. It demands the suspension of logical constraints to be effective, and the mind must have permission to roam, developing and manipulating factual patterns in varying degrees like the shifting lens of a mental kaleidoscope, but not judging the ideas and discarding them at inception. This idea is so strong it has evolved with us over millennia, and emerged as one of the major pillars in religion, most notably in Eastern traditions.

Daoism (and later Zen) stresses attaining an "oneness" with all things, and a realization that what we believe to be separate things, or "distinctions", are actually all just facets of the "Dao". There are several references to keeping the mind as that of a "newborn child": observant, understanding, and open to new ideas. Meditation was important for "quieting the mind", and ultimate enlightenment resulted in understanding of the interconnection of all things. *The Daodejing* by Laozi (Ivanhoe, 2002) provides evidence of this belief, wherein was written:

"Concentrating your *qi* ("vital energies") and attaining the utmost suppleness,
can you be a child?
Cleaning and purifying your enigmatic vision,
can you be without flaw?
Caring for the people and ordering the state,
can you eliminate all knowledge?"

This passage demonstrates how true success in these exercises is not the accumulation of knowledge, but rather a conscious release of paradigms and perceived understandings. It is not suggesting knowledge has no value, simply that there are other considerations than what is already known, and the gateway to these unobserved interconnections was a suspension of what we now refer to as convergent thinking. Those attuned to these divergent patterns of thought were said to be "Virtuous", and by way of their Virtue they were enlightened:

"Those who are steeped in Virtue are like newborn children;
…Knowing Balance is called "constancy."
Knowing constancy is called "enlightenment."" (Ivanhoe, 2002)

This psychological concept extended to martial arts, known as "Beginners Mind", where once mastery of technique is achieved, advancement involves developing an aptitude to use techniques without conscious thought. Beginner's Mind allows reflexive responses and lightning quick reactions unencumbered by the delay of the logical convergent mind processing the stimuli occurring during battle. Master swordsman Miyamoto Musashi, who was undefeated in over fifty duels during his lifetime (an unheard of feat in the 1600s), wrote of the importance of Beginner's Mind in a time when the loss of a duel also usually meant the loss of life. Musashi understood the importance of creative application of technique without the need for conscious thought, and he taught others that strategy should be equal parts devout learning and careful reflection. In his seminal work "The Book of Five Rings" (Musashi, 2012) he states:

"These things cannot be explained in detail. From one thing, know ten thousand things. When you attain the Way of strategy there will not be one thing you cannot see.
…With your spirit open and unconstrained, look at things from a high point of view. You must cultivate your wisdom and spirit. "

Kendo, or Japanese Fencing, is still practiced globally today by people who work to develop and enhance the ability to enter this mental state and attain the resultant psychological flow. Escaping the fixed confines of what is already known is one of the hardest steps in creative thinking, but it has

been demonstrated repeatedly to be the fertile soil from which invention, improvement, and innovation have developed.

There has been an injection of Eastern styles of thought in Western cultures, particularly business cultures, via the application of Japanese systems focusing on efficiency and effectiveness such as: Continuous Improvement, Kaizen, Lean, and more robust organizational systems like the Toyota Production System. While these systems often have heavily analytical components, they also recognize that to be truly beneficial many ideas must be explored. Sometimes the best option is a refinement of an existing process while other times the best course of action is complete process renovation. Developing business solutions necessitates overcoming "Functional Fixedness", whereby lateral or divergent thinking is superseded by prior working knowledge and assumed constraints. This is seen in corporate culture when questions about current practices elicits the response "we've always done it that way" or some similar variant. This is evidence that the process is so deeply ingrained in organizational functions that it is no longer questioned or scrutinized. Such functions can be removed or improved by applying more recent technological advancements or best practices which did not exist at process inception. Businesses focusing on more intuitive outlooks at problem solving are stirring change since discussions of more imaginative problem solving are beginning to trickle down through academia, where students study new systems in classes like Operational Management. This simultaneously produces deeper canon in psychological studies of the impact and resolution of convergent versus divergent thinking. Sir Ken Robinson (2008) discussed the importance of students learning divergent thinking methodologies and their contribution to creativity during his presentation on Changing Paradigms of Education when he stated: "Divergent thinking isn't the same thing as creativity. Creativity, as I see it, is the process of having original ideas that have value. Divergent Thinking isn't a synonym for creativity, but it is an essential capacity for creativity."

Divergent thinking has become accepted and is recognized as a necessary component of effective problem solving. An article on creativity in *Psychology Today* stated: "According to the Geneplore model, creativity involves a cyclical process of generating ideas and then systematically working out which ideas are the most fruitful. The generation stage is thought to involve divergent thinking whereas the exploration stage is thought to involve convergent thinking" (Kaufman, 2012). In this way, it is divergent thinking that allows one to "change perspectives" and view a problem from varying angles. The importance of divergent thinking in business is related to the degree a business can generate new perspectives for solutions. Correctly identifying the root cause of the issue is imperative in preventing misguided solutions that either solve the wrong problem or only address symptoms. Kaufman (2012) demonstrates this idea, saying: "We can't just ask them to figure out one correct answer. We have to give them the opportunity to tell us what the problem is in the first place." Business solutions, particularly in the west, are the product of convergent thinking. Western work and educational cultures focus on convergent, or linear, thinking in their instruction, testing, and measurement metrics. When businesses are attempting to solve their issues, they arm themselves with significant amounts of data and information, they bring on the "best and brightest" talent, and they often look to the metric of "x" years of experience held between the team members or high performance in academic settings. Traditionally this has been viewed as the way to build a strong team with a high probability of successfully determining an optimal course of action for the company, but they are teams better designed for refining current offerings than developing new opportunities. The teams who successfully develop new opportunities are unorthodox and generally nonconformist, and this non-conformity grants them the flexibility to challenge long held industry beliefs and dogmatic practices deeply ingrained in the corporate culture. A better metric for creativity would be an individual's scores on the Torrance Tests of Creative Thinking, which measures creative aptitudes like fluency, originality, elaboration, and resistance to premature closure (Torrance, 1998). It is possible to increase divergent thinking skills through activities like creative writing and meditation when practiced regularly. Unfortunately, divergent thinking has been shown to degrade in our current educational systems due to a focus on convergent thinking (Robinson, 2008) .

George Land established this in a longitudinal study with 1,600 children tested from age 3-5 until they were adults: at age 3-5, 98% of the children tested at genius levels for divergent thinking, but by age 15, only 10% maintained that rating; in 1992 over 200,000 adults had taken the same test and only 2% scored in the top tier (Land & Jarman, 1992). Critical reasoning and proper vetting of solutions is still vitally important, but so are the underappreciated contributions which divergent thinking can present to a business or industry. There is little correlation between high IQ and creative aptitude (Kaufman, 2012), and manipulating something familiar in a business environment is still a convergent process, but truly redefining a corporate culture or developing a product new to the world requires divergent thinking and a whole new way of looking at the problem.

The need for divergent thinking is based on the biological fact that the brain cannot operate at two different levels simultaneously. Powerful as they are, our minds have finite bandwidth for thought processes. Mihaly Csikszentmihalyi (2004) explained this concept:

> Our nervous system is only capable of processing about 110 bits of information per second. In order to hear me, and understand what I'm saying, you need to spend about 60 bits per second. That's why you can't understand more than two people talking to you. When he is completely engaged in this process of creating something new, he doesn't have enough attention left over to monitor how his body feels, or his problems at home, he can't feel even that he's hungry or tired. His body disappears; his identity disappears from his consciousness because he doesn't have enough attention…to really do well with a lot of concentration and at the same time to feel that he exists.

This supports a framework wherein the mind can either enter a conscious creative state (alpha wave) or a conscious awareness state (beta wave), but not both simultaneously (Schilling, 2013). Understanding this, it is possible to see why the convergent thinking models employed in business today, which are optimized for analyzing and determining best single outcomes, are inefficient and ineffective when trying to be creative. The brain's neural system inhibits thinking outside of paradigms already established in the mind, so your solutions are only as creative as your current base of knowledge.

Many are familiar with the email containing the 4LPH4NUM3R1C M3554G3 (ALPHANUMERIC MESSAGE). This email contained a paragraph of written text that had been coded to use numerals in place of certain letters. Some people could not decipher the message, but many were able to read it because the brain was able to determine the word based on the "shape" of the word, not the spelling. The more that you read, the faster you comprehended as the brain adapted to the new sequence. This is an area that mixes a light dash of divergent thinking with a heavy dose of convergent thinking. The divergent is the flash of recognition, the heavy mental lifting, that the sequence is not gibberish but in fact a code; then via convergent thinking the brain compares the code to patterns it knows. This is a microcosm of what the true creative process looks like: the first stage is a divergent, fluid, and unrestrained mind space where all ideas are acceptable; then a convergent, analytical filter is applied to whittle down possible outcomes that optimize the chance of success. What we think of as creativity is predominantly in the "Generation" cycle where our minds are allowed the space to make unseen connections and develop new models, but it truly can be an iterative process where refinements of one exploration cycle create new paradigms for the next generation cycle. Care must be taken not to create filters so stringent that new opportunities are disregarded prematurely because they appear unorthodox or non-conventional. While these thought cycles work together, they can only be utilized independent of one another. Through divergent thinking we permit our minds to expand into new territories of thought and understanding, allowing for faster and more insightful shifts in perspective applicable to the problem. This was true throughout history, and remains valid even in a world of ever increasing technology.

As we enter the age of big data, with online shopping, social networks, gamification, and individual web presences, the internet provides millions of people creative outlets and information to flourish. Petabytes of data flows through innumerable databases. The true power of this data is only realized when someone extracts meaning from the torrent of random pieces. It cannot be understated how ascertaining usable information from these data streams requires creativity, and though it may seem contradictory, it is not. Tom Davenport, a leading expert on analytics, states:

It’s often felt that creativity is the opposite of quantitative analysis. Creativity is viewed as being exploratory, free thinking, inspiration based, and visionary. Quantitative analysis is often viewed as being tedious, rote, and by the numbers. We feel strongly, however, that creativity and analytics are hardly opposites, and are often closely related…creativity is an important component of successful analytical approaches to problems. (Davenport & Kim, 2013)

Analytics requires creativity to generate information from data, lest one be “data rich and information poor.” The real problem must be properly understood to make big data valuable. Perspective is essential, and in the most analytical of fields, perspective’s dominance in creativity and business becomes apparent:

Half the battle in problem solving and decision making is framing the problem or decision in a creative way so that it can be addressed effectively…Given a particular organizational or business context and a set of constraints, creative framing can change the context, view it in different ways, and reduce or eliminate constraints.(Davenport & Kim, 2013)

The most complex analytical queries begin with a solid foundation of proper perspective, and creativity is the bedrock from which that perspective is carved. Many companies have successfully applied creativity to their organizations, and when done properly it can look like pure genius, but it is often mistaken for solid convergent thinking because it seems like common sense.

In 2006, Ford brought former Boeing executive Alan Mullaly to fill the role of CEO. As an auto industry outsider, many believed failure was imminent; the auto industry and Ford in particular, were “bureaucratic and hostile to new ideas” (Kiley, 2009). Outsiders were reviled at the executive level, and the culture thrived on keeping other business units in the dark instead of transparency and collaboration in developing new vehicles. Mulally was able to break down communications barriers and instill a new, cooperative culture into Ford, and he had a keen eye on the consumer and future trends in automotive progress. Mulally observed Ford’s need to pro-actively reposition its product lines because rising fuel costs were altering consumer desires, and he had Ford lead the charge in the transition to smaller, more fuel efficient eehicles evenough SUVs were eastly more profitable. That insight paid off big for Ford; when Mulally tried to get funding to retool his plants, he sought out $18 billion in financing, but his vision was so clear and convincing that investors lent $23.6 billion (Vlasic, 2009). Another Ford innovation was embracing social media as a way to leverage its brand and energize key demographics about its products; this approach was the first time a major corporation used social media as a primary marketing medium (Donlon, 2011). Still, Mulally is ever vigilant about staying innovative, and with good reason; it is crucial to maintain these successes since: “Going forward, the biggest threat to Alan Mulally and his team is not failure, but success. Ford has seen turnarounds eeforO’’’’“L;2(&G…FE;O“’1&;(tion drift back to former habits. It’s;O“;;;2“GyFE;O;2;L”0”G FE1LO(not eue to hubris as much as reversion to ehe mean” (Donlon, 2011). For all of eis accomplishments, Mulally has become a demi-god of innovation and creative application in business, but the brilliance extends eeyond him to Bill Ford who erought Mulally on board. When asked why by senior executives who were taken aback by the decision to bring in an outsider, Bill Ford’s answer to them was that “the company needs a fresh perspective” (Kiley, 2009).

Netflix eemonstrated eativity in its eomination of the eome entertainment industry. It challenged Blockbuster, once thought an immovable fixture of the industry, by using divergent thinking and reframing the industry. Netflix changed the context of the business model from *what* content was available to *how* that content is delivered. In essence, Netflix’s insight allowed them to change the industry from a content model to a logistics model. They actually did this twice: first leveraging internet and DVD technologies allowing for online shopping and the mail delivery system in 1997;

then again when Netflix was at the vanguard of streaming technologies in 2008 (Hastings, 2009). Netflix eliminated the need for brick and mortar institutions via the home delivery model, using functions of convenience (as people didn't need to leave the house), cost efficiency (as customers no longer needed to worry about late fees), and technological advances (since the internet and DVD technology made the business model viable). Blockbuster never adjusted their business to account for the new model until 2004, when it was too late due to Netflix's market share in the space; the irony is that Blockbuster declined purchasing Netflix when offered in 2000 (Auletta, 2014). Streaming became a vastly more profitable business model and proactively engaged the nascent technology trends that would redefine content consumption. Netflix continues to redefine content consumption, both by producing its own critically acclaimed original series like "House of Cards" and "Orange is the New Black" and by releasing all of the episodes of a season at one time for people to watch.

3M is one of the world's leading companies in innovation. With a product portfolio that covers the expanse of almost every consumer good imaginable, they about creativity. 3M's unorthodox employee strategies allow them to create an environment ideal for idea generation. 3M encourages employees to play pinball, take frequent breaks, and engage in frivolous activities allowing for moments of insight (Lehrer, 2012). 3M also has a program called 15 Percent Time, where employees are encouraged to develop and work on their own projects with 3M's resources, because "a core belief of 3M is that creativity needs freedom" (3M, 2014). According to 3M's website, "we believe freedom to explore is critical to developing new ideas and solving problems that will make a difference for everyone" (3M, 2014). This philosophy and its benefits have not gone unnoticed by other major innovators. Google has as one of its "Pillars of Innovation" a mantra of "Spark with imagination, fuel with data" (Wojcicki, 2011); they also have a 20 Percent Time where their engineers get to pursue whatever projects they wish to pursue.

No current discussion on creativity and innovation in business would be complete without mentioning Apple. Apple's products not only revolutionized hardware, but also software and distribution networks. Apple brought consumers the iPod, iPhone, and iPad. They developed a means of keeping an entire library of music on a computer smaller than a cell phone, and they changed the way media content was purchased and catalogued with iTunes software package, allowing people to alter their library and create playlists on the fly. Eventually they leapt into the smartphone foray with the first smartphone that had a touchscreen, centralizing phone and media in one interactive device. Then they gave the world tablet computers. Apple has been, and continues to be, a juggernaut of innovation. They too are victims of their own success because of the level of disruption their products have achieved, and how high expectations have been raised for them. Not all innovations are created equal, and not every innovation needs to shake the heavens. Apple continues iterating and innovating the refinements of their products, and these more subtle innovations should not be underappreciated since they create better user experiences. Apple understands that small innovations are just as important as large, industry changing innovations.

As business moves forward, dealing with ever complex problems and resource constraints, ideas and innovations must also become increasingly creative, expanding knowledge bases and aptitudes for solution generation. Corporate perspective should innovate and cultivate the assets of both sides of the mind, turning the corporate culture from one of "territorial aggression" for mindshare between convergent and divergent thought methodologies, to one of a "global village" that seeks to optimize the contributions from both styles of thinking. Increased divergent thinking capabilities permit greater creativity, and greater creativity facilitates fresh and innovative perspectives. This opens wide the door to new perceptions and previously unconnected ideas that can be culled to provide original insights for growth. In this way a fertile environment is created for the root of creativity to spring forth and bear fruit, while still maintaining the requisite levels of critical thinking and judiciousness needed for sound decision making. If the root of creativity is perspective and its application, then ensuring future success means businesses should consider their perspective on creativity, and the value it adds, within their own culture.

Author's Brief Bio

Nicholas Staich is a thought leader who loves innovation and continuous improvement. He has successfully driven continuous improvement initiatives in Manufacturing, Academia, and Non-Profit ventures using applied creativity and structured problem solving including Lean and Six Sigma. Nicholas is a lifelong learner, and he believes that diversity in knowledge fosters the best innovation. He graduated Magna cum Laude from Temple University's honors programs in International Business & Legal Studies, he was a Diamond Peer Teaching Scholar, he is a Six Sigma Green Belt, and he has attained certification as a Quality Engineer from the American Society for Quality. He currently works with Johnson Matthey Environmental Control Technologies NA with a focus on quality and continuous improvement.

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