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No Individual Creativity, No Organizational Innovation

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Abstract

Innovation is important. Creativity is a necessary prelude to innovation. Academics and professionals need to pay more attention to creativity. One reason for inadequate innovation is the lack of attention to creativity. A related issue appears to be systematic stifling of creativity. Business schools should be preparing tomorrow's leaders for an exciting, stimulating, challenging and changing future. Too often universities train people to approach questions by looking at what has been done in the past. One confounding issue has to do with possible lack of clarity about terminology. Some confuse the two terms "innovation" and "creativity". They are not the same although some use the terms interchangeably. This leads to possible confusion regarding "levels of analysis". Creativity is an individual level factor. The term innovation is best applied at an organizational level of analysis. To foster and encourage organizational innovation, a recommended first step would be to encourage individual creativity.

Keywords: Creativity; innovation; right brain; left brain

Introduction

The business press says it over and over, innovation is crucial to your organization's long-term success (Henderson, 2017; Posner & Mangelsdorf, 2017). Innovation is needed in many areas. Research on innovation is also needed (Barczak, 2016; Eiadat, Kelly, & Roche, 2008; Kim & Chung, 2017; Nelson & Winter, 1977). As one expert said bluntly, It is impossible to get away from innovation. This is true in both a literal sense and a figurative sense. Literally, it is impossible to read business journals or newspapers, attend business conferences, or read annual reports without constantly hearing about the importance of innovation. Figuratively, it is impossible to escape the reality that corporations must be innovative in order to survive. But that was published in 1988 (Amabile, 1988). If anything, the focus on innovation has increased rather than decreased. Professor Amabile, in a 2016 update to her 1988 landmark paper, says "...attention to creativity and innovation has increased dramatically..." (Amabile & Pratt, 2016).

Amabile's 2016 paper is worth studying, and makes the following important point: there is a connection between creativity and innovation. But, they are not identical. And, to Prof Amabile's credit she does not make the same mistake that others make. As Henderson notes, "most people will mistakenly use them interchangeably" (Henderson, 2017). See for example at Andriopoulos (2001). Some of the confusion of terminology stems from a lack of precision about the "level of analysis." Careful study suggests that creativity is an individual level variable. Innovation occurs, or too often does *not* occur, at the organizational level. Based on the review of existing literature and of real-world observations, much of the attention given to innovation misses the requirement that before organizational innovation, there must be individual creativity. This essay suggests that the innovation can and would be facilitated by having more knowledge about, more attention paid to, creativity (Vartanian, Bristol, & Kaufman, 2013). Both business writers and academics sometimes confound the two very different concepts as if they were one factor.

A second weakness in the existing literature is paying insufficient attention to the factor that should come first, creativity. A few examples illustrate. One academic repeats the oft-repeated notion that "every year innovation becomes not only more vital for the success but also determines a company's very existing" (Taferner, 2017:48). But then that article does not mention creativity. Zhang and Hartley study innovation in China, but their paper does not mention creativity. They do note that "strong political ties may hurt a firm's ability to generate creative ideas" thus implying that creativity, if needed at all, would be a characteristic of FIRMS not individuals (Zhang and Hartley, 2018). Zeng, Phan, and Matsui (2015), report their findings about innovation performance: The word creativity is not mentioned anywhere. Mol and Birkenshaw (2009) do a good job uncovering "the sources of management innovation." Nowhere in their article is the word creativity to be found. Another study focuses on how important organizational innovation

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is to technological advances. In their well written paper based on a well conducted study the word creativity does not appear (Camisón & Villar-López, 2014). Other examples could be cited but the point is already clear. Often those who wish to increase innovation do not think of creativity as part of the solution.

The next few pages suggest but do not prove that creativity is a necessary prelude to innovation. The thesis is that there is a need to pay more attention to creativity, within businesses and in the academic world. One reason for inadequate innovation is the lack of attention to creativity. But a related issue appears to be systematic stifling of creativity. Business schools should be preparing tomorrow's leaders of commerce and industry for an exciting, stimulating, challenging and changing future. Instead universities too often train people to approach questions by looking at what has been done in the past. There are examples of educators, and educational institutions, encouraging integration of creative thinking into business schools (Amabile, 1997; Bartel & Garud, 2009; Kijkuit, & Van Den Ende, 2007; Perry-Smith, & Mannucci, 2017; Silvia, Martin, & Nusbaum, 2009). More such examples are needed.

Further, there is a tendency to train future managers and leaders to logically proceed through a series of rational steps when making decisions. What may be needed today are, if not illogical, at least non-sequential, breakthroughs. The next few pages explain briefly why this is so. First the paper looks at how the brain functions, discussing ideas about the roles of the right and left hemispheres of the brain. Second, we briefly review why innovation, and creativity, are essential for industry. Third, we look at the roles of business schools. Evidence suggests that the academic world, and in particular business schools, discourage innovation by systematically and at times stifling creativity. Lastly this essay discusses ways that the world of education, specifically including business schools, could facilitate innovation by encouraging creativity. Creativity can and should be taught in business schools, thus helping the industrial and commercial world innovate.

Literature Review

The process of innovation begins in the brain. With this in mind, it may be worth reviewing some of what is known about the human brain. In 1836 French doctor Marc Dax made a presentation at a medical society meeting stating that the left hemisphere handles speech. Dax documented cases where individuals had lost the ability to speak because of accidents involving brain damage. In each case it was the left side of the brain that had been damaged. He found no case of a person losing the ability to talk where the injury had occurred on the right half of the brain. Not everybody agreed initially but by the 1860s the idea became widely accepted. Speech is handled primarily by the left side of the brain (Geffen & Quinn, 1984). The notion also gained wide acceptance that the right hemisphere had few if any important functions. The left hemisphere was the dominant hemisphere. Later studies show that the situation is more complicated than originally thought.

The left hemisphere does control speech in almost all cases but it would be incorrect to call it "the dominant hemisphere." The next breakthrough came in an unexpected way in response to a serious medical problem. In California doctors were studying individuals with severe epilepsy (Gazzaniga, 2005). Most epileptic seizures could be controlled or eliminated by medication but others could not. Studies were conducted on patients with severe repeated seizures, searching for a way to help them lead a normal life.

One approach used an electroencephalograph, EEG, machine to monitor brain activity. A few patients with frequent seizures had seizures while connected to the EEG machine. A look at these EEG results showed an interesting pattern. An epileptic seizure is not unlike an electrical storm. The EEG would show heightened activity, a minor electrical disturbance, in one side of the brain. The patient would show no outward signs. The electrical disturbance would grow. Only when the disturbance grew in magnitude and crossed over to the other half spreading the disturbance to the other side -- only then did a seizure occur. If the electrical disturbance was contained only in one hemisphere then no seizure occurred. Neurologists then asked what would happen if the two halves of the brain were disconnected, so a nascent seizure could not travel from one hemisphere to the other side.

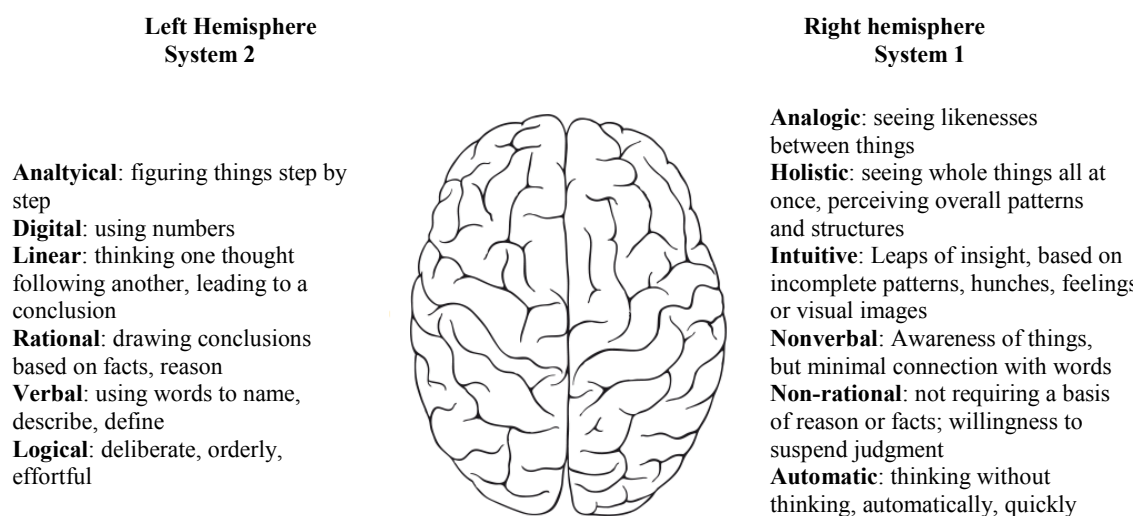
It was well known that the left half and the right half were basically separate. The only connection was a very small bundle of nerve fibers called the corpus callosum. This bundle of fibers wired the two hemispheres together. The idea then occurred to medical doctors working with severe epileptics to cut the corpus callosum. These were patients who had run out of options. Nothing else worked. The decision was made to try this risky operation.

In operations in the 1960s epilepsy was cured in almost every case. The post-operative patient could talk, walk, think just as before the operation. The split-brain operation left patients with no behavioral changes. In case histories of 25 split brain patients, reports specifically stated that there was no change in mental abilities (Blakeslee, 1980). But in fact, there were changes, subtle, hidden, but significant. A group of researchers at California Institute of Technology (CalTech) in the 1960s did follow up tests with split-

brain patients. A description of one test will illustrate. Two different pictures were flashed to a split-brain patient simultaneously so that one picture was seen by the left hemisphere only and a different picture seen by the right hemisphere only.

Behind a screen would be a group of objects including both a knife and a spoon. A picture of a spoon would enter the left half of each eye and go to the right brain. A picture of a knife would enter the right half of each eye, and go to the left hemisphere. The patient would then be asked to name the object just seen on the screen. As expected since the image of the knife went in the left brain, which controls speech, the patient would say "knife." Then, the patient would be asked to reach behind a curtain with the left hand (right brain) and pick out the object he saw in the picture. The patient would pick up the spoon. The visual image and the sense of touch registered spoon in the right hemisphere. If, while the patient was holding the spoon, you asked "what do you have in your hand behind the curtain?" the patient might hesitate, look a bit confused, and say "knife". The left hemisphere, the verbal hemisphere, says knife. In one famous test the right hemisphere, having no words but knowing something was wrong, started shaking the person's head. The verbal left hemisphere asked aloud "why am I shaking my head?"

From experiments with split brain patients patterns emerged. The left hemisphere, right hand, could do best at verbal, sequential, logical tasks. For tasks involving spatial relationships, holistic imagery, creativity, putting picture puzzles together, the right hemisphere did best. For doing a single task where logical, sequential activities were required the left hemisphere, the verbal hemisphere, excelled. For multidimensional tasks where several unrelated activities and elements would be handled almost simultaneously the right hemisphere did best. If this is true of split-brain patients, it could also be relevant in whole brain individuals, those who still have nerve fibers tying left and right together. The Cal Tech researchers concluded that the notion of the left hemisphere being the dominant one was incorrect and that both hemispheres had roles. There seemed to be a pattern of somewhat overlapping strengths and weaknesses.



Source: adapted from Edwards (2014); Kahneman (2012); and Springer & Deutsch (2001).

Figure 1. Left and Right Hemisphere

Although the sections above have appeal and have some truth, critics say lists such as these so grossly oversimplify what occurs in the healthy brain as to be useless. Richard Restak concludes that the hemispheres are "not nearly as narrowly specialized ... as we have believed" (Restak, 1981). Others are more blunt, suggesting that "people who call for right-brain education are individuals who want to win scientific respectability for their arguments by dressing them in neuropsychological jargon" (Mefoh & Samuel, 2013), or describing these ideas as "neuromyths" and dangerous (Goswami, 2006; Lindell & Kidd, 2011). McKean sees a right-brain consulting industry and calls it a fad (1985). Hines (1991) ridicules the entire notion: In this mythical model of hemisphere function, the left hemisphere is seen as the location of rational, logical and scientific thought... the right hemisphere is the sole possessor of creative and artistic abilities.

Hines (1991) is harsh in his criticisms of the entire idea and also of publications cited above: The myth linking the functions of right hemisphere to creativity is still alive, at least in some circles. According to that myth, the cognitive processes supported by the left and right hemispheres of the human brain [vary]

greatly [with creativity] ...being, somehow, "in" the right hemisphere, along with such other types of processes as "intuition".

Hines is partly correct, and to say "the right hemisphere is the *sole* possessor of creative and artistic abilities" would be wrong. Most likely no one reading this has ever had the corpus collosum cut, nor even met a person who has had this very specialized operation. But the left brain hemisphere in split-brain or un-split brain persons undisputedly controls most of the movements of the right side of the body and houses most speech in most individuals. Creativity and intuition can be seen as whole-brain activities but with right hemisphere in the lead (Baer, 1998; Gold, Faust, & Ben-Artzi, 2012). It now appears that it is in the right hemisphere that emotions, intuition, appreciation, and synthesis are more likely to find their home.

At first glance then the right hemisphere would seem to be important for the novelist, the poet, the artist, the musician, and maybe even for the person in a "creative" business job such as on-line advertising. But in business in general, it would seem that the left brain, the left hemisphere, would dominate. Carrying this further, those individuals who seem to be more left brain than right brain would "fit" in the business world. After all, business is business and should be conducted in a business-like manner. Organizations must be organized. Even the terms themselves suggest rational, logical, sequential thought processes. However this may be overlooking something important. The left hemisphere seems to take the lead in logical sequential organized matters, but it is the right hemisphere that seems to have the advantage in creative work.

Discussion

Whether it is called right brain or System 1 (a term used by Nobel-prize winning economist Kahneman, 2011) or non-rational or nonlinear or intuitive, effective business leaders take advantage of instinct, intuition, creativity, and have a sense for when to stop looking for additional data and start reflecting, cogitating, hoping for insight. Even Einstein saw this: "The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift." For organizations to be innovative, there is a need for leaders, participants, who use both the rational mind and the intuitive mind.

Further, perhaps, business needs creativity. This can link to a problem much discussed in the last half of the 20th century. The periodical *Business Week* bluntly described "the breakdown" of innovation (1975). For many years in the 20th century General Motors, nicknamed GM, was the number one firm in the Fortune 500 list of biggest firms. For example, GM was number one in 1955, 1978, and 1997. But in 2009 General Motors declared bankruptcy. Something went wrong. It has since recovered, but has not regained the number one slot in the Fortune 500 list. In 1980, a respected business leader Jay Kanter quit his job at the movie studio 20th Century Fox. In an interview, Kanter described why he quit, saying that the movie business was losing creativity, was being run more and more "like a business:"

General Motors is not a mom and pop business. It's run with great efficiency, and managers have to do certain things along the way. The movie business, the entertainment business — any creative group, I suppose --- are not constructed that way. You can't exchange the head of General Motors for the head of production of Warner Brothers. It just doesn't work (Collins, 1980).

Kanter's views are not shocking. Common sense tells us that the head of production at the Warner Brothers movie studios must be creative. But there may be something drastically wrong with Kanter's statement. Perhaps the head of General Motors should also be a very creative person. Perhaps the common-sense notion that creativity is needed at Warner Brothers but might be out-of-place or irrelevant at GM helps explain why General Motors is no longer Number One on the Fortune 500 list.

If as stated above organizational innovation, or lack of it, is the problem, then one should look at the antecedents of innovation, one of which should be individual creativity. Additional historical background on this one case, the American automobile industry, centered in city of Detroit, may help illustrate. In a 1975 article *Business Week* discussed "why Detroit resists change." That article quoted a 1956 speech by Jacob Goldman:

If there is any industrial area ... where an important idea is absolutely essential for survival, it is the automobile industry... this largest of all American industries must have an important, original, inspired breakthrough sometime within the next 25 years.... We must have something so new, so radical, and so unanticipated that it would be folly to compartmentalize our thinking into how to go about pursuing this (*Business Week*, 1975).

Those warnings from 1956 were basically heeded, and an industry once dominated by the USA has now largely shifted out of America. The "totally unanticipated" breakthrough may come from innovative organizations such as Tesla, led by creative individuals such as Elon Musk, producing electric cars. As of 2019, there is no certainty that Tesla will survive, much less revolutionize the entire industry,

but Musk is a breath of fresh air in an industry where innovation is essential. Detroit insiders seem to lack creativity. That same 1975 article cited above quoted one auto engineer as saying "we've been playing with the same deck of cards for at least 25 years, what we call a new car is just a reshuffle." And that article also quoted a former GM President, Ed Cole: "all cars, be they Japanese, German, or American, come out of the same box" (Business Week, 1975).

Business Week concludes that the need is for innovation. It seems plausible, if not obvious, that the first step towards innovation is creativity. The auto industry example here came from the USA. But the need for innovation is global and is widely accepted that similar examples could come from anywhere (Indonesia Investments, 2017). One article is entitled "Palm Oil in Indonesia needs innovation" (Said, 2015). Another reminds readers that "ASEAN must be innovative" (Balakrishnan, 2018).

There is a need for investigations looking at innovations in business, economics and management. This essay suggests that creativity is a valuable step towards innovation. To advance innovation, one place to begin is our academic home, the university. There is evidence to suggest that universities, business schools, need to pay more attention to creativity.

Surfing the web one may find a document about a conference called "examining the process of innovation." The fact that such conferences are held can be seen as a positive sign. However, the program announcement of that conference lists some 90 individuals delivering papers focusing on innovation. However, it is interesting to note that the word creativity appears nowhere in that program announcement, nor in the titles of any of the presentations (Bentley, 1983). An hour spent in our university career center looking at college catalogs was also informative. Curricula from about 50 business schools, mostly for MBA programs, were reviewed. No school offered any course with the word creativity in the title. Two had courses including the word innovation in the course title but the rest did not. For a typical business school program it is business as usual. Innovation is important, creativity facilitates innovation, but the business school is apparently not the place to learn about either.

In the field of marketing, for the past half century or so, the dominant philosophy has been "the marketing concept." Organizations should not focus on products to sell, but on customer needs to be met. At least one academic paper early on questioned this shift away from products:

This strict adherence to the marketing concept has damaged American business. It has led to a dearth of true innovation, and it has shifted the strategic focus away from the product... A market-driven new-product strategy provided little encouragement for technological discoveries, inventions, or significant breakthroughs; the "technology-push" model has given way to the "market-pull" model (Bennett & Cooper, 1981)

Marketing is an important, required, part of the business curriculum everywhere. Marketing is pertinent here as it is often thought of as the creative, innovative, part of many business organizations (Atuahene-Gima, 1996). But according to Bennett and Cooper (above) even marketing has turned its focus in such a way likely to minimize the chance of creative breakthroughs and innovation.

Other parts of the business curriculum seem even more likely to stifle creativity. For many years now the AACSB, the US based but global "Association for the Advancement of Business Schools" has pointed out the need for "non-cognitive" training in the business school curriculum:

Corporations need help in developing more understanding and learning about the "soft" side of management, values and ethics, leadership and creativity... Business schools have a lot of learning ahead (AACSB, 1983). The need for business school learning apparently continues, with the AACSB Board Chair declaring in July 2018. It's time for reinvention: whether business schools are embracing new technologies or experimenting with new pedagogies, they will find that adaptation and innovation are their watchwords (AACSB, 2018)

Sometimes academics know what is needed but fail to change. Some educators do encourage inclusion of creativity and innovation in business schools (Mintzberg in Hooper, 2017; Mintzberg, 1976). However there is still additional need for change within education. Business schools still emphasize rational, logical, sequential, and if possible quantitative approaches to problem solving. Universities are training tomorrow's managers and leaders today. In the future they will assume leadership positions around the world, and then may announce that, essentially, all products come out of the same box. Universities seem to be continuing the process started in elementary and secondary education, where Madeline Hunter years ago worried that we were dealing with "right-brained kids in left-brained schools" (Hunter, 1976). We still today spend a great deal of time developing rational skills with very little time spent on the creative element.

Can anything be done? If so, what? To some extent it may seem inappropriate or even impossible to teach "intuitive" right brain thinking. Certainly today less is known about training the right side of the brain, however many are making the attempt. There are popular books and articles as well as academic

papers suggesting where to start. Harvard Business School sells their books “Innovation Handbook: A Road Map to Disruptive Growth” and “Managing Creativity and Innovation.” Most airport bookstores have books on both creativity and innovation available for reading on long international flights. There are many relevant books (Durnaz, 2013). However, there are not many TEXTBOOKS on innovation or creativity suitable for business schools. A good place to find ideas might be the Stanford University “Creativity in Business” course. According to business author Jim Collins, that “is the most profoundly life changing course taught at the Stanford Graduate School of Business” (Ray & Myers, 2012). Topics in that course include the creative process, conceptual blockbusting, lateral thinking, and the inner world of problem solving.

In one management department course “creativity and innovation in industry” the first part focuses squarely on creativity as an essential element in innovation. Efforts are made to *train* for creativity. Seminar participants play with riddles, invent, work on puzzles, and build models. The seminar has instructional techniques aimed at the left hemisphere also (reading, writing reports, etc.). The factor making this elective course different would probably be the components aimed at the creative or right-brain side. Students are given things to do, to feel, and to sense, in addition to read or to hear. Participants seem to gain an increased willingness to offer unconventional, innovative solutions to real problems.

Will 6 or 10 or 15 hours of mental intuitive fluidity training solve the world’s problem of insufficient innovativeness? No. However, we must start where we are, and we are in business schools. We can do more than we have done thus far to encourage use of the entire brain. We should recall again the words of Einstein: “The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift.” Business as usual is not enough. Education needs to make a creative leap.

One step might be to do what Jay Kanter said we cannot do, exchange the head of General Motors with the head of Warner Brothers Studios. It may be that Warner Brothers would suffer, but might be the best thing that ever happened to General Motors.

But that would be attacking the problem retail, piecemeal. What is needed is to make a wholesale, widespread, change of perspective. We should change what we do in the business school at the graduate and the undergraduate levels. One specific step would be for every business school to review and revise the business school curriculum. We could mandate training for the intuitive creative side of the brain. Given the realities of the difficulty adding any required course to any curriculum an intermediate step might be to offer such a course as an elective. Then, as happened at Stanford, such a course may “become one of the more popular courses at the Stanford Business School” (Stanford Observer, 1983). Adding “another course” in the business program may seem like a left-brain, rational, step towards solutions. But, the longest journey begins with a single step.

Conclusions, suggestions and limitations

Scholars and practitioners agree, innovation is needed. Creativity is related to but is not the same as innovation. Creativity, an individual level variable, is a necessary prerequisite to organizational innovation. Academics and professionals need to pay more attention to creativity. One reason for inadequate innovation is the lack of attention to creativity. Business schools are an excellent place to start, to increase the study of and explorations of, creativity. This essay has obvious limitations. One cannot “prove” that creativity is the first step towards innovation. However, this essay is based on years of observations and study, and firmly suggests that creativity is a necessary prelude to innovation. The next steps might be to look in business schools and find ways to increase attention to creativity. The goal is innovation, not creativity. But the challenge for academics, such as those reading this essay, is to start where we live and work, the university. In order to facilitate innovation, added attention is needed on creativity.

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