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CREATIVE GEMS

I had the pleasure and honor to interview Creativity Expert, Michael Michalko. Michalko is one of the most highly acclaimed creativity experts in the world and author of the best sellers Thinkertoys (A Handbook of Business Creativity), ThinkPak (A Brainstorming Card Deck), and Cracking Creativity (The Secrets Of Creative Genius). His web-page is http://www.creativethinking.net . I hope you enjoy this first interview of the series , Creative Gems. - *Michael Plishka*

(Plishka) In your experience, what is the most common obstacle to creative thinking?

(Michalko)The dominant factor in the way our minds work is the buildup of patterns that enable us to simplify the assimilation of complex data. These patterns are based on our reproducing our past experiences in life, education, and work that have been successful in the past. We look at 6 X 6 and 36 appears automatically without conscious thought. We examine a new product for our company and know it is a good design at an appropriate price. We look at a business plan and know that the financial projections are not good. These things we do routinely, because our thinking patterns give us precision as we perform repetitive tasks, such as driving an automobile or doing our job.

These patterns enable us to perform routine tasks rapidly and accurately. But this same patterning makes it hard for us to come up with new ideas and creative solutions to problems, especially when confronted with unusual data. This is why we so often fail when confronted with a new problem that is similar to past experiences only in superficial ways, or on the surface, and is different from previously encountered problems in its deep structure. Interpreting such a problem through the prism of past experience will, by definition, lead the thinker astray.

When we are confronted with a problem, our thinking patterns exclude anything that does not conform to our past experiences. Then we analytically select something from our past that has worked before and apply it to the problem. This is why so many people find it difficult to create new ideas or even to give fair value to new ideas. Chester Carlson invented xerography in 1938. Virtually every major corporation, including IBM and Kodak, scoffed at his idea and turned him down. Carbon paper had been the answer to copying for years. Why would any corporation try to replace it with a new copying process? They claimed that since carbon paper was cheap and plentiful, no one in their right mind would buy an expensive copier.

When Univac invented the computer, they refused to talk to business people who inquired about it, because they said the computer was invented for scientists and had absolutely no business applications. Then along came IBM and captured the market. Next the experts at IBM, including its CEO, said that according to their expertise in the computer market, there is virtually no market for the personal computer. In fact, their market research concluded that there were no more than five or six people in the entire world that had need for a personal computer. And along came Apple.

We're comfortable with the usual ideas. When confronted with a truly original idea, we experience a kind of conceptual inertia comparable to the physical law of inertia which states that objects resist change; an object at rest remains so, and an object in motion continues in the same direction unless stopped by some force. Just as physical objects resist change, ideas resist movement from their current state and change in their direction of movement. Consequently, when people develop new ideas they tend to resemble old ones; new ideas do not move much beyond what exists.

(Plishka) What is your favorite idea generating tool?

(Michalko) To discover a good idea you have to generate many ideas. Out of quantity comes quality. In addition to quantity, you need some means of producing variation in your ideas. For this variation to be truly effective, it must be "blind." To count as "blind," the variations are shaped by random, chance, or unrelated factors.

In nature, a gene pool totally lacking in variation would be unable to adapt to changing circumstances, with consequences that would be fatal to the species' survival. In time the genetically encoded wisdom would convert to foolishness. A comparable process operates within us. Every individual has the ability to create ideas based on his or her existing patterns of thinking. These patterns follow a route ingrained in our youth as we were being taught to think. But without any provision for variations, ideas like biological genes eventually stagnate and lose their adaptive advantages.

A major characteristic of creative thinking is the ability to generate a host of associations and connections between dissimilar subjects. This is difficult for the average person to do voluntarily because we have not been taught to process information this way. When we use our imagination to develop new ideas, those ideas are heavily structured in predictable ways by the properties of existing categories and concepts. We have not been taught how to process information by connecting remotely-associated subjects through trial and error. This is true for the vast majority of educated people. Thomas Edison once said that his greatest blessing in life was his lack of formal education. Otherwise, he would have learned that what he had done in his career was impossible to do.

Last summer, I visited an old friend who is now an engineer with a power company in the northwest and he described a problem that he and the other engineers in his company were

trying to solve. Essentially, the problem was how to de-ice power lines during ice storms so they don't collapse from the weight of the ice. The conventional approaches to the problem were proving to be very expensive and inefficient. I asked my friend to open a dictionary, close his eyes and point to a word. He pointed to the word "honey." I then asked him to think of the attributes of "honey" and to force a connection between each attribute and the problem. One attribute he mentioned was that honey attracts bears. Then he tried to force a relationship between honey and de-icing power lines. My friend laughed and said, "I got it. We can put a pot of honey on top the poles. The honey will attract bears and the bears will climb the poles to get the honey, causing the poles to vibrate and shake off the ice." Suddenly, he stopped laughing and said, "By God, that's it! The answer is vibration. Remember the downwash from helicopters in the military? The answer is to hover choppers over the lines and the downwash will vibrate the ice off the lines." This proved to be the most efficient and economical solution to the problem. The point is, that by introducing something "random" into his thinking, the engineer disturbed his conventional thinking patterns and he came up with an unconventional approach.

These different patterns catch your brain's processing by surprise and will change your perception of your subject. Suppose you want a new way to display expiration dates on packages of perishable food and you randomly pair this with autumn. Leaves change color in the autumn. Forcing a connection between “changing colors” with “expiration dates” triggers the idea of “smart labels” that change color when the food is exposed to unrefrigerated temperatures for too long. The label would signal the consumer--even though a calendar expiration date might be months away. Our notion of expiration dates was changed by making a connection with something that was unrelated (autumn) which triggered a new thought pattern which led to a new idea.

(Plishka) Is there a particular tool that you've found most people find helps them think creatively?

(Michalko) An easy way to get ideas is to take anything that exists and change it into a new idea. A quick and easy way to change any subject and change it into something else is to ask a checklist of questions. To help you remember them, they are arranged into the mnemonic SCAMPER. As you read the checklist, ask yourself how a hamburger, a pencil, an advertisement, toll booths, retailing, or any other object or process can be improved. The ideas will appear almost involuntarily.

SCAMPER

S = SUBSTITUTE
C = COMBINE?
A = ADAPT?
M = MODIFY?
= MAGNIFY?

P = PUT TO OTHER USES?
E = ELIMINATE OR MINIFY?
R = REVERSE?
= REARRANGE?

Apply these questions to your situation and see what ideas emerge.

Suppose you wanted to improve the ordinary paper-clip? You would start looking for ideas by asking:
- What can be substituted in the clip?
- What can I combine the clip with to make something else?
- What can I adapt to the clip?
- How can I modify the clip?
- What can I magnify or add to the clip?
- What other uses can I find for the clip?
- What can be eliminated from the clip?
- What is the reverse of a clip?
- What other rearrangement of the clip might be better?

One manufacturer **substituted** plastic for metal, **added** color, and produced plastic clips in various colors so that clipped papers could be color-coded thereby finding **another use** for clips. SCAMPER may directly suggest a new idea, or else the questions may indirectly stimulate combinations of ideas that will expand your imagination. Consider the Williams Companies. They had over 28,000 miles of oil pipeline buried all over the country. When the oil business became sluggish, they focused on **PUTTING pipelines TO SOME OTHER USE.** After several weeks of brainstorming, they hit the "big" one. They proposed that MCI Communications run fiber-optic cable through their pipelines and made a fortune.

A distributor suggested to his manufacturer that wallboard be widened **(MAGNIFY**) from 48 to 54 inches. This simple modification means that two pieces on their sides **(REARRANGE)** can cover a nine-foot wall without cutting (for fifty years the four-foot by eight-foot pieces had to be cut and taped together for any wall over eight feet). This simple improvement saves up to one-third of the time to "hang" walls. Sales exploded for the manufacturer. Even the hot dog, as we know it, is the result of the right idea-spurring question being asked at the right time. Antoine Feutchwanger sold sausages at the Louisiana Exposition in 1904. He first sold them on plates, but this proved too expensive. He then offered white cotton gloves along with the franks to prevent customers from burning their fingers. The gloves also were expensive, and customers walked off with them. Antoine and his brother-in-law, a baker, sat down and brainstormed. "What could be added (MAGNIFY) to the frankfurter that would be inexpensive and would prevent people from burning their fingers?" His brother-in-law said: "What if I baked a long bun and slit it to hold the frank?" "Then you can sell the franks, and I can sell you the buns. Who knows, it might catch on."

(Plishka) How do you dissociate yourself from particularly difficult problems so that your brain has time to pull together the information and process it?

(Michalko) A well-known physicist once said that all the great discoveries in science were made when the scientist was not thinking about the problem. Others in other fields report the same. Bertrand Russell was quoted in The Conquest of Happiness as having said: "I have found, for example, that if I have to write upon some rather difficult topic, the best plan is think about it with very great intensity---the greatest intensity with which I am capable---for a few hours or days, and at the end of that time give orders, so to speak, that the work is to proceed underground. After some months, I return consciously to the topic and find the work has been done. Before I discovered this technique, I used to spend time worrying because I was making no progress; I arrived at the solution none the faster for this worry and the worrying time was wasted." When Norman Mailer had writer's block, he would instruct his subconscious mind to work on the problem and to notify him when it was resolved.

The most famous example of this principle is Archimedes, the Greek physicist, who had been wrestling with a very difficult problem. The king, suspecting that a golden crown contained more silver than gold, had asked Archimedes to devise a method for determining the crown's purity. For days, Archimedes wrestled with the problem. Finally, he put it out of his mind and decided to relax and take a hot bath. While sitting in the bathtub, he noted that the bath water was overflowing. All of a sudden he came up with an ingenious method for solving the problem, involving the amount of water that would be displaced by a pure gold crown. According to legend, Archimedes was so excited by his discovery that he rushed naked into the streets of Syracuse shouting, "Eureka!" ("I've found it!").

Incubation makes use of subconscious processing of information. It usually involves setting a problem aside for a few hours, days, or weeks and moving on to other projects. This allows the subconscious to continue to work on the original challenge. The more interested you are in solving the challenge, the more likely your subconscious will generate ideas.

(Plishka)What are your least favorite buzzwords in the idea generation/problem solving business?

(Michalko) "Thinking out of the box" should be replaced with "thinking without boxes." "Lateral thinking" should be replaced with "generating alternatives. "

Many of us speak of "creativity" as a noun, as if it is some kind of physical property that you either own or not. We hear scholars define creativity with reverent words like "bisociation," " janusian," "dialectical," "lateral," "synectics," "morphological analysis," "Triz," "Ariz," "Genoplore model," "CPS" model, "cognitive integration theory," "associative theory," and so on and on," whose academic tones suggest that they refer to clear and definite ideas.

In fact, what the various theories best illustrate is our almost universal tendency to fragment subjects into separate parts and ignore the dynamic interconnectedness of its parts. The ongoing fragmentation of creativity and resulting chaos are not reflections of the real world of creative thinking but the artifacts of scholarship. Scholars have co-opted the subject of "creativity" as their own, to be expressed in their own language and in their own framework of formal thought. The result is confusion and paradox which places a limit on understanding what creative thinking is in terms of ordinary thought and language.

This is why our current understanding of creativity is a patchwork of ideas all based on definition and separation. Few of us understand that creativity is not a noun. It is a verb. When I say something like "The cat is chasing the mouse," we think of two distinct entities, a cat and a mouse linked together by a verb. The cat and mouse are the primary objects of our thinking. Theoretical physicists and artists, on the other hand, see "the chasing" as primary and the cat and mouse being secondary to the experience of the process of chasing. John is falling from the roof to the pavement. Here we tend to concentrate on John and the "splat" he will make when he hits. When Albert Einstein had a thought of a man falling, he concentrated on the process of "falling." Almost immediately, Einstein realized that as the man fell he would not feel his own weight. This essence of this insight meant free falls are equivalent in both gravitational fields and gravity free regions. This observation became the foundation of the general theory of relativity.

The Einsteins, Shakespeares, and Picassos of the world understand that all things in the universe are processes, transformations, and symmetries, that nothing is static and nothing lasts forever. Even this page is slowly dissolving into dust as you look at it. Still, scholars write of creativity as if it were a stand-alone static object. When I say something like "Lateral thinking generates many alternatives," we, again think of two distinct entities, lateral thinking and alternatives as primary with "generates" as secondary. Yet "lateral thinking" is simply empty definition and tautology; whereas the verb "generates" is the dynamic process that creates ideas. Creativity is not a thing, it is a process.