



## INTUITION IN INNOVATION AND INVENTION

### WHAT IS CREATIVITY AND INNOVATION?

When we talk about creativity it is sometimes to describe innovative new breakthroughs in business and technology, sometimes to describe a modern work of fine art. These two fields are diverse in scope and application, so when it comes down to it, what is a useful definition of creativity?

Creativity is obviously the power to create, but the objects or concepts are not created 'out of thin air', so further clarity is needed. Creativity is perhaps most usefully defined in the professional sense as making useful connections between (often disparate) components that allow one to arrive at an original and unique solution.

Both the monumental and the lesser discoveries and inventions of the human race were arrived at in this manner. The printing press was invented (in Europe) in the 15th century by Gutenberg, after he made the connection between a small punch used for making coins and a large press for making wine, incorporating these two ideas and allowing printing to be done on larger pieces of paper with movable type. The coin punch and wine press had been around separately and were widely used for thousands of years, but it was not until one individual made the crucial (and in hindsight seemingly simple) connection between these two types of presses, that the art of printing was invented.

George de Mestral invented Velcro after a walk in the woods when he found that burrs stuck to his socks and wanted to know why. Countless others had walked through burrs but only he made this intuitive leap to producing clothing fasteners.

Steam power was understood thousands of years before it was harnessed on a huge scale and brought in the industrial revolution. Electrical batteries too had an exceedingly long existence and were used in isolated medicinal and ritualistic applications before anyone thought of electricity's eventual irreplaceable role in modern society.

These inventions: electricity, steam engines, and printed books, seem so obvious to us now that it is hard to imagine why they took so long to come to realization if the capability already existed. The greatest inventions and ideas in hindsight always seem the most obvious but, it took exceptionally creative and intuitive individuals to be able to see them.

But intuitively thinking of an innovative idea alone is not enough; innovation also requires ingenuity and hard work (see **Developing Intuition into a Product**). A genius is perhaps best described as someone who sees what had always been there and makes it functional in a way that has a profound effect upon our lives.

### HOW CREATIVITY, INTUITION AND INNOVATION WORK

So having discussed what creativity and intuition are; how do they work and how do we go about fostering new and innovative ideas in our personal and business lives? How does intuition come into it all?

Houston claims that our deep mind is making these associations all the time, it's just that we aren't usually aware of them. Some theorists suggest that up to 80% of our actions are based on unconscious motives. When someone has an intuitive insight and seems to grasp a concept or come up with an idea, this is our subconscious mind successfully communicating a connection. So if we are unaware of these intuitive insights, we could be leaving some of the most important decisions of our lives to be determined by unconscious processes.

Intuition is seeing the obvious without having to be told, and hence is a large part of creativity and innovation, and indeed is in many ways synonymous. Intuitive people develop superior insight that allows them to grasp connections to a whole pic-

ture. **Developing Your Intuition** provides an evolving pathway to recognizing, listening and trusting intuitive insight without conscious mind interference. However, intuition in creativity and innovation is quite a distinct field, and practical methods of idea generation will be discussed in the next section.

There are several factors that must be noted that can easily increase creativity and intuitive connection-making in everyday life and help to show how they function. Stimulus is one of the most important parts of connection-making. In research by Dr Arthur Van Grundy, two groups of students were asked to come up with marketable product ideas in the same time frame. One group was in a plain undecorated room with little to no visual and auditory stimulus. The second group was in a highly stimulative environment complete with images, product samples, magazines, music and plentiful food.

The group in the plain room came up with 29 ideas in the time frame, while the other group came up with 310. The quality of these ideas was then analysed and it was discovered that overall 6.5 marketable ideas were produced by the first group while the group bombarded with visual and other stimulus produced 36.3 marketable ideas.

These audio, visual, tactile, and other stimuli allowed the students to make plentiful and diverse connections that resulted in a higher number of innovative and practical product ideas.

Another factor that seems to influence connection-making and creativity is music. The corpus callosum is the link that allows the left and right brain to communicate with each other, resulting in a more efficient use of all of the mind's resources. The corpus callosum of musicians has been found to be both thicker and more fully developed, leading to the theory that playing or listening to music can stimulate learning and creativity.

Music can also lift a person into the theta brain-wave state, the highly creative brain-wave state associated with innovation, invention, intuition artistic development and spiritual insight.

Further specific research on music and the brain was conducted by Bulgarian psychologist George Lozanov, who found that certain types of music (especially slow Baroque) put students into a state of mind much more receptive to learning. The corporate world certainly hasn't been ignoring research such as this, and 43 of the world's 50 largest companies provide music to their employees.

## BARRIERS TO CREATIVITY AND INNOVATION

Things, however, aren't as simple as all that and there can be factors interfering in our learning, creativity and intuition that we do not realize. Just as with intuition in everyday life, intuition in the area of creativity and connection-making can often be impaired. Mark Twain said 'never let formal education get in the way of learning', and this seems to be a valid point.

Dr Paul Torrance of the University of Minnesota has shown that in many cases imagination (read: creativity) tends to contract as knowledge expands. This is because in the Western world there is great educational emphasis on left-brain ('analytical') thinking. This emphasis on analytical thought has the side-effect of excluding and suppressing right-brain ('creative') thought, for all intents and purposes excluding from our resources a large part of our creative and intuitive thinking capability.

This right-brain suppression increases the further we progress in formal education, even when we are expected to conform in areas as seemingly 'liberal' as the fine arts.

In addition to creativity being marginalized in the education system, there is the inbred cultural notion that creative people are somehow 'different'; Research by Mihaly Csikszentmihalyi notes that most people consider creative people to be impulsive, nonconformist; make up the rules as they go along and do not know their own limitations. It also shows that most consider creative individuals to be lacking in basic character values such as dependability, practicality and sincerity.

Professor Howard Gardner notes that 'most cultures throughout human history have not liked creative individuals. They ignored them or killed them; it was a very effective way of stopping creativity.'

While in today's world things are not quite as drastic, we are still quite capable of repressing creativity and innovation. The conservative corporate mindset rising from the industrial revolution does anything but encourage new ideas; its purpose is to encourage people to do their isolated job unquestioningly within the larger system. Some change has been occurring since the 1980s and a few large multi-level corporations now encourage creative input on all levels, however the overall rate of progress in this area is slow.

So what can be done to counteract this culture of idea and innovation repression? Change needs to occur in the overall business paradigm. Business needs to recognize and transform their cultures to facilitate and nurture creative expansion in their employees or they will not survive the fast changing global markets. They need to look to the future in their product development cycles and use the visioning and visionary capabilities of their leaders and managers to grow new opportunities.

Companies that facilitate in-house creativity programs are more likely to sustain new product developments and develop new markets at least 50 times more effectively than their competitors or other businesses in general.

### IDEA-GENERATION TECHNIQUES

These days there are many methods of stimulating idea-generation, some more effective than others, some simple and some in-depth. Once you master and begin working with any one or multiple methods, you will start to develop ideas ever more easily. After all, Steinbeck said 'Ideas are like rabbits. You get a couple and learn how to handle them and pretty soon you have a dozen.'

The first idea-generation technique we will look at is the simplest, a kind of shortcut to stimulating big ideas, and can give results in as little as twenty minutes. This method is called Mind mapping, and was created and popularized by Tony Buzan. You begin by briefly thinking about the problem at hand, then writing or drawing the problem in a circle in the middle of a large piece of paper. Then, concentrating on the problem at hand, start drawing branches out of the circle and writing down important factors and possible solutions. Each branch can keep branching off itself, leading to detailed notes on any one factor. These can then be examined and linked to the rest of the diagram.

For example, the problem might be thinking of a new toy for a 5 year-old. The branches could be things like 'existing toys', 'favourite toys', 'competitors', 'features wanted'. 20 minutes into the exercise this map starts acting as a useful visual tool, allowing you to pry out some ideas you had not previously considered. When this method is done with groups the results are impressive; ideas increase exponentially, and widely divergent ideas as able to be brought together.

Idea-Generation techniques in the business world go much beyond this however, although older companies often have set procedures that make internal creativity difficult. However, there are some exceptions such as 3M, Sony Corp, Disney and Motorola, companies that emphasize innovation, despite being established in the early 20th century. These companies hold creativity sessions, so if anything there is peer pressure to probe the intuitive and creative part of the brain. This group creativity also means that there is no social stigma attached to coming up with seemingly radical ideas.

Many companies also use ideation experts who have proprietary idea-generation techniques such as Synectics, The Infinite Mind System and the 6 Hat technique. These experts use their own intuition and these techniques to penetrate to a child-like part of us that existed before we were taught to conform to conventional thinking patterns.

### Synectics - The Mind Free Excursion

Synectics was faced with a problem: how to teach people to be more creative and intuitive. They devised a solution to this problem in the Mind Free Excursion technique, a technique used by countless business both large and small.

The technique itself is this: people who want to come up with a new product gather around a table, first defining the objective or problem as carefully and in as much detail as possible.

Once this is explained, the group goes into a wishing mode, where each person states his or her wishes for the product, whether practical or outrageous- anything goes. The client then selects one of the wishes and a creative discussion on this topic begins.

This is an easy but thought-stimulating activity that allows the participants to find connections between unlike components, increasing activity between the left and right brain.

This method was used effectively in the past by the Bell Telephone company when they had the problem of trying to prevent their phones being vandalized. After a group analysis, two desired features emerged from the wishing process: that the phones were to be enduring, and that they are indestructible.

The group then choose two words from a list of 'worlds'- the world of the 'Wild West' and the world of 'politics'. Each person then connected the word 'enduring' to these two concepts. Ideas came to mind such as the fact that cowboys and Indians were enduring reminders of the Wild West, that large stone monoliths in the desert were enduring monuments.

The client was asked to choose one concept to pursue further, in this case the pillars in the desert. From this evolved the idea of building payphones into 'pillars' or walls to prevent vandalism. What was two hugely disparate ideas, pillars in the desert and the vandalism, became a practical synthesis that was taken up by the company and is now common-place.

This synthesis was formed by creating connections between unlike objects, choosing from a list of words that was arbitrary, apparently at random. This exercise is useful in forming a link between the conscious and unconscious mind. When a useful connection is made, the mind will intuitively know it. When the link between pillars in the desert and phones protected in pillars is made, the participants can picture phones in a wall and recognize the practicality of this good idea. Word association allows recognition of what was already known but below the level of conscious awareness.

### **The 6 Hat Technique**

The second technique to be discussed here is the 6-Hat Technique, one that works in a way entirely dissimilar to the Mind Free Excursion but with similar results. Instead of word-association, the 6 Hat technique works on the principles of synonymous and appropriate 'mood'.

Whilst logical thinking requires negative thinking, e.g. 'What is wrong with this?', creative thinking requires a positive attitude and not automatically dismissing what on first glance does not appear to work.

The 6 Hat Technique, developed by Edward De Bono, guides a project through 6 distinct development and thinking/mood stages. The 'White Hat' stage for neutral discussion of information and mission. The 'Green Hat' for creative idea generation. The 'Yellow Hat' for optimism and feasibility and idea development- at this state there is no criticism of the idea allowed and only the positive aspects are discussed. The 'Red Hat' follows, for intuitive, hunches and for allowing people to express their feelings on the project. The 'Blue Hat' is an overview which looks for the next step and asks for conclusions and comment on the thinking used. The last stage is 'Black Hat', eliciting the image of judgement. This is the stage in which critical judgement and trouble-shooting occur, preventing any ill-conceived mistakes.

The great advantage of this system is that it limits people making critical and emotional judgements at inappropriate points in the development process and stifling other people's ideas. It keeps everyone in the same thinking-mode and 'mood' at the same time and thus prevents two or more individuals having a 'pro' vs. 'con' argument.

### **The Infinite Mind System**

The Infinite Mind System (also called the Intuition Mastery Program) was developed by Bob Jajko of New Vision Institute in Australia. His work is based around Whole Brain processing and the need to keep the conscious mind from interfering in the intuitive and creative process. This program is a system of integrated steps rather than a technique.

The foundation of any creative/intuitive process is to maintain inward focus long enough to allow the other than conscious mind to reveal the answers, whilst at the same time preventing the conscious mind acting as the referee or inner critic.

The program involves teaching people to reach states of inward focused consciousness which facilitate the connections between the left and right hemispheres of the brain, thus generating theta waves. Once this is achieved a technique called imageflow is used to generate a flow of internal pictures, words and feelings about the issues at hand.

Individuals are taught to recognize their own internal dialogue/language, particularly where the answers to issues or problems are presented in metaphor. Furthermore what is taught in this program is the technique of asking the appropriate question and developing the question to further enhance the answers, whilst still maintaining the internal focused state. This technique is called dimensional questioning and is the key to delivering the correct answer to any problem or issue.

### HOW DO BUSINESSES CREATE?

Every organisation needs to keep up with current developments, and to predict the future. Innovation is a necessity according to Jack Welch, Chairman of General Electric Company (the annual earnings of which are over 15 billion dollars), who says that 'If the rate of change inside an organization is less than the rate of change outside, the end is in sight'.

Every business wants to know how it should adapt next year and the year after, and what new products it should develop. Unfortunately, reliable methods for predicting the future are scarce. Market research reveals the present situation but is far from trustworthy in predicting the future. The hit-rate for successful products using comprehensive market research is only 10-20 percent.

The importance of new and innovative ideas is such that John Martin, former CEO of Taco Bell, stated that 'the value of a new idea could be worth 500 to 700 million to his company in the first year'. Market research and detailed studies are useful for product development and invention, but are inadequate. Companies now realize the importance of creativity and intuition on all levels, and are starting to manage appropriately, using both internal and external intuition and ideation consultants.

### Quaker Oats: Product Adaptation

Lynette Hinch, Director of Marketing Development for The Quaker Oats Company, describes how her company develops old products into new: 'One way is line extensions. This means taking the oatmeal and finding another reincarnation for it, such as putting the cereal in individual cups that can be micro-waved in one minute.'

When asked what she does when she comes up with an intuitive insight for a new product she says:

*'In the food service industry, there is usually not much quantitative research available, or if we take the time to do it, it will prolong getting the product to market. Then it becomes intuition versus risk-taking. The intuitive idea is supported if it can be test-marketed. For example, we had the idea that a generic line of ready-to-eat cereal would do better if it were restaged to look like a branded line by improving product quality and changing the packaging.'*

*'After restaging the line, it is now holding market share in the ready-to-eat cereal category, which demonstrates that the product was not the problem; it was the way the product was perceived. It needed to be presented as more upscale. Because there is very little data available in food service, for most decisions you still have to make the gut judgement.'*

### Black and Decker: Turning Innovative Concept into Practical Reality

Bryan DeBlois, Manager of New Business Development at Black & Decker, invented the original, and now quite common, snake-light. However an original new idea wasn't enough, it also had to be produced in a way that would cater to the greatest market and provide the most utility. The development process had to be every bit as innovative as the idea, and tailored

to suit the consumer. DeBlois says:

*'They defined the rules of the game early. Think high quality, high volume and automation. Resist the temptation to design and market a 'one trick pony'. The team took over ownership of the mission: to provide consumers with a true hands-free task lighting.'*

*'We believe in a prototype driven process. We began with making a prototype that functioned with a good flexing and bending action. We then brought potential users into the problem and let them experience it. What happens is when the new concept is better understood, the end user finds more uses for it than we had anticipated. This helps us find more reasons why people will buy this product and makes its proposal to the company that much stronger.'*

*'Informed intuition is insight into consumer trends. Our mission is to create new products for household use. Beyond new products, however, I believe intuition also plays a role in whether a culture change will be successful in any organization. To change the way people interact with one another and keep the business moving is a monstrous expenditure of time and energy. And without intuition, it may become dead in the water.'*

### 3M: Looking to the Future

Ron Kubinski is 3M's Manager for Advance Planning. He is responsible for new product commercialisation, from concept to delivery. 3M itself is a highly innovative and creative company, starting in 1902 selling masking and sandpaper products, and in the next century diversifying exponentially. They now record sales of over \$18 billion worldwide, have 67,000 employees and develop a huge range of products in fields as varied as communications, printers, pharmaceuticals and aeronautics.

Kubinski says that the company is highly focused on stimulating innovative new ideas. Creativity is encouraged everywhere: they have a '15 percent rule' where everyone is encouraged to spend 15 percent of their time on any new product idea of their own choosing. This corporate mindset is what led to the Advance Planning department.

One of their roles is to assist business units within 3M to generate new product ideas, but they do so in a drastically unconventional manner. They draw up a plan to create ideas for products that will be marketable 10 years in the future. Once they have that plan in mind, they backtrack to now with new product ideas that are possible with today's technology. They then predict which additional products will be added year by year that will build upon each year's new technological advances to achieve their tenth-year vision. This process is called Customer Inspired Innovation.

The team determines whether some concepts are more interesting than others. If there is one particularly compelling idea it could stimulate several others. They develop these products to the tenth-year vision, although fully aware that the final product may never come to fruition.

In future-predicting the team involves marketing and customer relations people; Kubinski says that the left brain is also an integral part of the future-development process. He prefers people on his team who have a degree of naïveté towards business and who aren't locked into a paradigm, who like to go out of the box and are creative team players. He says:

*'Our core team goes all over and outside the company talking to academics, consultants, and end users. Then we get together and share all the information to determine where we have the most dimensions or factors that will offer products based on our moving from the future to the present, not present to future. This has been a very successful system for coming up with excellent ideas.'*

In strategic planning, most companies go from the present to the future in increments. Doing it in the opposite way and looking forward to such a large extent results in a vision that is unique and exciting. It has already dramatically improved the outlook of three 3M business units and has opened up new products and new markets. Advance planning no longer uses companies that chart trends and the like, because they are so beyond them.

30-40 percent of Kubinski's work is intuitive. He defines intuition as 'when I have insight and foresight and ideas all aligned together. It's when I have an idea for the future that bridges concepts by synthesizing ideas'.

## ENTREPRENEURIAL INTUITION

These intuitive and creative concepts have been used to great success not only in large, established corporations but also in jump-starting innovative new business plans. The case of Dragon Systems is a clear example.

Janet and James Baker began Dragon Systems in 1982 to make speech recognition software for use with a computer. When it was founded, Dragon Systems had 4 employees, all working at first without a salary. By 1990 they had 15 employees. By 1998 they had 250 employees with offices in the United States, England and Germany. They now lead the world in speech-recognition sales.

Throughout Dragon System's history their products have been both successful and innovative. Janet Baker attributes intuition to a lot of her success, saying that although she initially did not always trust it, she trusts it more as she gets older and more experienced. She gets up as early as 5-6am in order to listen to intuitive insights in the peaceful early hours.

Dragon System's products are amazingly flexible and adaptive, and are used by doctors, lawyers, business people, writers and handicapped people. Christopher Reeve used it to record his thoughts and maintain both his personal and business correspondence.

During its development, Dragon Systems released products according to people's needs and financial capabilities, in 1998 having products ranging from \$99 to \$299 with different capabilities. It now has specific packages catering for specialized professions such as legal and medical which are priced accordingly, whilst keeping the general product at an affordable level for the average consumer.