



Competition, accelerated technological development, diminishing returns from present methods, and a shift to creating wealth through knowledge require a new organization that is innovative. This article shows how the Osborn-Parnes Creative Problem Solving (CPS) Model can be integrated into decision-making processes, encouraging value-added creativity.

Add Creativity to Your Decision Processes

G. David Hughes

Innovation is the spark that makes good companies great. It's not just invention but a style of corporate behavior comfortable with new ideas and risk.... Companies that know how to innovate don't necessarily throw money into R&D. Instead they cultivate a new style of corporate behavior that's comfortable with new ideas, change, risk, and even failure, according to "America's Most Admired Companies," *Fortune*, March 3, 1997.

Why is Innovation Needed in an Organization?

Joseph V. Anderson has defined creativity as "...nothing more than going beyond the current boundaries, whether those are boundaries of technology,

knowledge, current practices, social norms, or beliefs. Creativity is nothing more than seeing and acting on new relationships, thereby bringing them to life."¹ While there are many definitions of innovation, it is defined here very simply: using creativity to add value. Value can be economic, social, psychological, or aesthetic.

There are many economic and technical forces that are driving an organization to be innovative. First, margins can no longer be sustained by downsizing and reengineering. Either all of the excessive costs have been squeezed out or reengineering and downsizing have not worked. Second, competition is fierce, coming from global sources and companies outside the industry.

New products and processes are necessary to compete. Third, product life cycles can be shorter than the time required to develop a new product. If there is a competitive product on the market, speeding up the process to get a “me too” product to market is not a profitable strategy because the market window will close before the “me too” product is ready.

The solution is to innovate one or two life cycles ahead, creating a product that the market will be moving into, thereby beating competition and earning a substantial margin. Fourth, continuous improvement will reach a point of diminishing returns. At some point an entirely new platform or category is needed. Motorola seemed to have made this mistake by improving analog cellular phones after the market had shifted to digital technology.²

After studying 17 companies that grew shareholder return by 35% or more per year, Gary Hamel concluded that their secret is strategic innovation that either defined new industries, such as the digital industry, or redefined existing industries, as Home Depot did to the home improvement industry. He suggests, “We have reached the end of incrementalism in the quest to create new wealth. Quality, cost, time-to-market, process improvement—these are important, but we are hitting the point of diminishing returns.”³ He notes further that, “Opportunities for innovative strategy don’t emerge from sterile analysis and number crunching—they emerge from novel experiences that can create opportunities for novel insights.”⁴

Finally, there is a paradigm shift in what adds value. Material is becoming less important in creating wealth. The high-growth electronics industry is based on silicon chips, which are sand with great quantities of knowledge added. Reengineering is the efficient use of existing knowledge, while innovation is the creation of new knowledge.

Can the results from using creativity processes be measured? Firestien, Sheppard, and Vehar reported the case of a Canadian chemical manufacturing facility with 120 employees. Facilitators were trained in a five-day program and everyone else received creative problem-solving (CPS) training in a two-day program. CPS methods were applied to the problem of a production line that was making only 28 tons of material per hour, instead of the rated 35 tons. In a few days production was increased to 35 tons per hour. Output finally moved to 40 tons per hour. Since the product sold for \$300 per ton, this amounted to an increased revenue of \$3,600 per hour.⁵

A small hand tool manufacturer was facing competition from cheaper products. A CPS consultant trained the staff in innovative thinking. The CEO formed four competing teams. Two focused on product costs and two focused on innovative product ideas. The outcome was a 52% cut in product costs and new tools with a value of over a million dollars. Thus, creativity can produce measurable results.⁶

Motivating Creativity

Is creativity a personality trait that is available to only a few? No. Research has shown everyone has some creativity, but it has been stifled by Freud’s thinking that artistry and creativity are associated with mental illness and the scientific emphasis on materialism and analytical thinking. Partridge notes that there are “...120 different, special, and measurable aspects of creative thinking which particularly distinguish humans from other species. These wide-ranging creative faculties have been, and continue to be, critical to mankind’s ability to adapt to changing situations, environments, and systems... Extensive studies of creative thinking have firmly established that individuals exhibiting higher than average scores in creative thinking also exhibit higher than average scores in areas of mental/emotional health. Systematic courses of instruction in applied imagination produce significant gains in personality traits such as confidence, self-reliance, persuasiveness, initiative, and leadership.”⁷ The challenge is to create an environment that will bring out the creativity of everyone and make those who have demonstrated creativity even more creative.

The 3M Corporation philosophy shows how creativity can be encouraged. David Windorski is a new product development specialist with the Stationery and Office Supplies Division of 3M. His management placed his idea for a Post-it™ Easel Roll on a very low priority, so he used the “3M 15% Rule,” which allows employees to spend 15% of their time on projects of their own choosing. He used the CPS process, plastic sewer pipes, and boards from the lumberyard to prototype his idea. The product is now on the market. It received an award from the Society of Plastics Engineers for innovative manufacturing and an award from the International Frankfurt Trade Fair for “exceptionally innovative, technological, functional qualities and superlative design.”⁸

Teresa Amabile’s research has confirmed what Nobel scientists have observed: Highly innovative individuals are driven by an inner curiosity, a need to know. It is

intrinsic motivation that drives them. It is not work because they love what they are doing. Extrinsic motivators must be chosen carefully to recognize creative ideas, clearly define goals, and provide constructive feedback. Extrinsic motivators to control behavior can be detrimental to creativity.⁹ Alfie Kohn has noted that rewards can be punishing, especially to those who did not get the prize. They feel like losers.¹⁰

The social environment can affect intrinsic motivation. Amabile and colleagues developed a reliable and valid 78-item instrument to learn how the work environment of highly creative projects differed from those of less creative ones. Their research identified six factors of environmental stimulants to creativity (freedom, positive challenge, supervisory encouragement, work group supports, organizational encouragement, and sufficient resources) and two environmental obstacles to creativity (organizational impediments and excessive workload pressure).¹¹ To create an innovative environment, the executive will need to examine the employees' perception of the state of these eight factors.

The Synectics Corporation, a consulting firm, had more than 700 responses to its survey of senior managers in more than 150 of the largest and best-known companies. The survey revealed that companies failed at innovation because the executives competed, rather than cooperated; cross-functional teams did not work; meetings did not produce innovative results; there were no formal innovation programs or techniques; and they were unwilling to consider fresh perspectives.¹²

Much of the blame for a lack of creativity, and therefore innovation, can be traced to our traditional educational systems. Most of the practice of creative methods is done outside the traditional educational institutions by consulting firms and by persons in companies who have been trained in creative problem-solving methods.

In universities not much has changed since 1950, when the distinguished psychologist J. P. Guilford in his inaugural address as president of the American Psychological Association stated that education's neglect of the subject of creativity was appalling.¹³ Some business schools have introduced creativity into their curricula and research centers, but it has not been the widespread trend that is needed to supply companies with innovative leaders.

Scott G. Isaksen and Sidney J. Parnes summarized the literature on education and concluded that while creative learning has been supported by Plato,

Montaigne, Milton, Franklin, Rousseau, Jefferson, Newman, Spencer, Dewey, and Whitehead, most of today's classroom activities are the result of curriculum developers preparing students for citizenship, which tends to mean employment that will make the economy efficient.¹⁴ Such training does not create independent learning free of a teacher or prepare the individual for solving problems that could not be expected while the student was in school. Adding to this sequence of events is the fact that textbooks are at least three years out of date when they are published and that Everett Roger's¹⁵ study of the adoption of innovation found that educational systems were the slowest adopters of innovation (25 years). Thus, we see that educational institutions need a strong dose of creative problem solving.

The childhood of Stanley Mason, an inventor and holder of many patents, demonstrates the negative impact of some educational systems. He was locked in the principal's office in the third grade because he would not color within the lines. But in an art class outside of school he learned the importance of visualizing and his work in a library exposed him to diverse ideas. Until the ninth grade he received poor grades because of his daydreaming and his lack of focus on assignments. After a ninth-grade math teacher recognized how he liked to think, he turned into an honor student.¹⁶ One can only wonder how many inventors have never discovered themselves because an educational system would not let them "color outside the lines."¹⁷

The development of creative skills needs to be part of our educational processes, according to Alison G. Strickland and Louis T. Coulson, who argue that education today focuses on transferring knowledge that will soon be out of date, whereas creativity will never be out of date.

The Old Organizational Model Inhibits Creativity

A creative environment requires more than providing intrinsic rewards. It requires rethinking organizational designs. Margaret J. Wheatley notes, "At the end of the 20th century, our 17th-century organizations are crumbling. We have prided ourselves, in all these centuries since Newton and Descartes, on the triumphs of reason, on the absence of magic. Yet we, like the best magicians of old, have been hooked on prediction. For three centuries, we've been planning, predicting, analyzing the world. We've held onto the intense belief in cause and effect. We've raised planning to the

highest of priestcrafts and imbued numbers with absolute power. We look to numbers to describe our economic health, our productivity, our physical well-being. We've developed graphs and charts and maps to take us into the future, revering them as ancient mariners did their chart books. Without them, we'd be lost, adrift among the dragons. We have been, after all, no more than sorcerers, the master magicians of the late 20th century."¹⁸

We have made organizations fit Newtonian mechanical models by putting responsibilities into functions and people into roles with boundaries and a secure sense of control.¹⁹ When we studied organizations, we thought we confirmed these models because we used research designs that assumed cause and effect relationships. We assumed also that these relationships move toward equilibrium, when, in fact, they move away from equilibrium as they learn and renew in response to an ever-changing environment.

Explanations and predictions of organizational behavior were weak, but until recently the basic model was rarely questioned. We added more variables and more powerful analytical methods. We were making the same mistake as the astronomers who built more complex prediction models when their model with the Earth in the center could not predict the location of heavenly bodies. When they changed their model and put the sun in the center, the models became simpler and predicted better.

Ralph D. Stacey challenges the present organizational model when he notes that stability, harmony, predictability, discipline, and consensus, which are central to most Western management practices, are all wrong. Instead of equilibrium, he argues, we need bounded instability, which is the framework in which nature innovates.²⁰

The Newtonian model of the world is characterized by materialism, reductionism, determinism, predictability, equilibrium, and control. Moving away from this model to quantum theory radically changes our understanding of organizational behavior. The new model will be very discomfoting because we must abandon most control systems and the predictability of deductive processes.

When we accept that organizations are fluid, chaotic, and subject to unseen fields of energy, present concepts of leadership must change. Gone is the hierarchical model with the person at the top controlling everyone by holding all information. No one person possesses all of

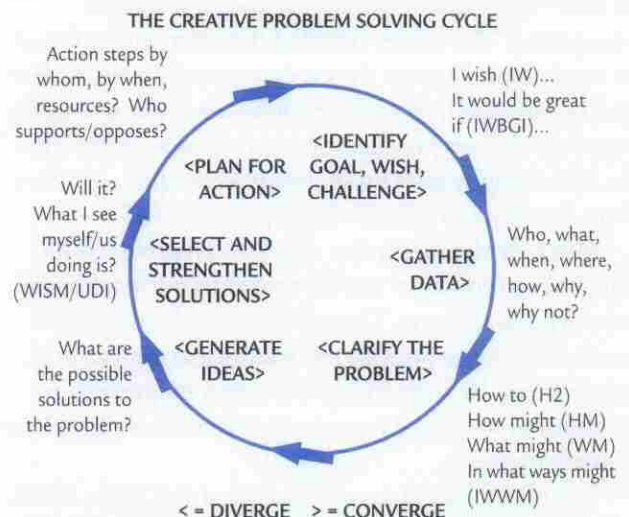
the knowledge or skills to control a fluid, rapidly evolving system. Leading gives way to facilitating relationships in a system where knowledge and skills are networked.

Leadership in the new organization consists of facilitating shared values. This facilitatorship must take place in an environment that has relationships that freely share ownership, information, and ideas. Facilitation and sharing are basic to creative problem solving (CPS) processes, which is why CPS is needed to transform an organization into a continuously innovative one.

The Osborn-Parnes Creative Problem Solving Process

In 1941, Alex Osborn wondered why some people in his advertising agency, Batten, Barton, Durston, and Osborn, were more creative than others.²¹ His study of the process used by creative people broke the 2,000-year-old assumption that only a unique few can produce creative ideas. He originated the widely used process of brainstorming. In 1954 he established the Creative Education Foundation.

Figure 1



Sidney J. Parnes, a professor at Buffalo State College, NY, collaborated with Alex Osborn to develop what is known today as the Osborn-Parnes Creative Problem Solving Model. It consists of the following six steps: identify the goal, wish, or challenge; gather data; clarify the problem; generate ideas; select and strengthen solutions; and plan for action.²² These steps are shown in the center of the circle in Figure 1. The activities in the first part of each step are designed to stimulate

divergent thinking, hence the diverge symbol (<). The concluding part of each step converges (>) this thinking for transition to the next step. Some people may find it more comfortable to think of divergent and convergent thinking as imaginative and practical thinking.²³

The goal of the divergent phase is to make as many connections as possible, using methods that provide a stimulating environment to expand one's vision. The convergent phase distills and translates these connections into practical ideas that can be taken to the next step. The final convergence is a practical, actionable plan that will be accepted and implemented by stakeholders. Each step makes extensive use of the Socratic inquiry method by asking questions to facilitate idea generation.

Samples of questions that are used by facilitators appear outside the circle. This is the basic tool for transforming a team into an innovating one. We focus here on the Osborn-Parnes model for stimulating creativity because it is the oldest, the most widely used, in a continuous state of evolution, and the author's study of many subsequent models has yet to find one that does not have its roots in the Osborn-Parnes model.

Many executives are presently using pieces of this model, but they may be missing important steps. For example, many strategy sessions begin with a definition of the problem, without a clear statement of the goal, wish, or challenge. Or an alternative may be selected without considering an action plan that identifies those who will support or resist some of the actions. Furthermore, one pass through these steps is rarely enough. It will be necessary to iterate around the circle to refine the plan. The convergence of one step becomes the point for diverging at the next step. Strategists sometimes focus only on divergence or convergence. For example, brainstorming (an Osborn invention) is a popular means for generating ideas, which is divergence. But without a convergence process for reducing and refining ideas there can be a lot of fun but no plan for action. Conversely, it is easy to get stuck in a convergence mode. Excessive analysis of data is an example of this trap.

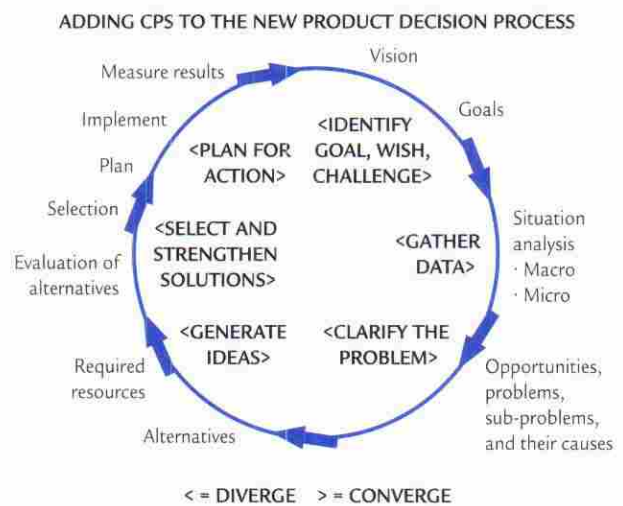
Integrate Creativity Into Current Decision Processes

The CPS model should be regarded as a generic model that can be integrated into any decision process. For example, in Figure 2 the CPS steps inside the circle are linked outside the circle to the following steps for a

typical business decision process, the development of a new product:

- Vision
- Goals
- Situation analysis
 - Macro
 - Micro
- Opportunities, problems, sub-problems, causes
- Alternative solutions
- Resources required
- Evaluation of alternatives
- Selection
- Action plan
- Implementation
- Measure results

Figure 2



Political, governmental, educational, health care, or any other organization can match the CPS steps to its decision process. It is critical to note, therefore, that introducing creativity does not require a drastic redesign of an organization's decision process. Using the present process will speed the acceptance of creativity.

Creativity can be introduced at any point in the circle, but it is critical to continue around the circle to determine if a decision at one stage will require a re-evaluation of a decision that was skipped. At times it will be necessary to check back to a previous step and at other times it will be necessary to anticipate a stage in the next iteration, thereby jumping across the circle. For example, it will be necessary to check with the client to make certain that the ideas generated are consistent with the objective, which is a step backward in the process.

It is necessary also to think ahead. Will the solution be consistent with the facts that exist in the future? This type of question must be asked in the next iteration around the circle. Perhaps the market, technology, regulation, and competition will change in predictable ways, and these changes should be considered now. In the micro fact finding stage, the evaluation of the organization's openness to change will have an important impact on which stakeholders will support or oppose the implementation of the plan. The circle provides a picture for facilitating the flow of the creative process and for allowing participants to see where they are in the process.

Four Ironclad Rules to Facilitate Creativity

The Osborn-Parnes model stresses four critical rules that must apply to each divergent stage: withholding judgment, freewheeling, generating a quantity of ideas, and hitchhiking on the ideas of others. The reasons for these rules are supported by psychological research.

Judging, more than any other event, will shut down idea generation. The physiological reasons for this shutting down require an understanding of the functions performed by the three sections of the brain known as the triune brain.²⁴ In basic terms, they are the outer layer, the neo-cortex; the middle layer, the limbic system; and the innermost layer, the brain stem. Each performs a different function. The brain stem, known as the reptilian brain, focuses on food, fight, flight, and reproduction, i.e., survival of the species. It responds immediately to physical and psychological threats.

Judging is a psychological threat. The limbic section governs emotions and feelings. The neo-cortex controls thinking, speaking, and problem solving. Creativity occurs at this outer level. Because judging is a threat, the brain shifts from the neo-cortex, through the limbic to the brain stem to assure social-psychological survival. This shift shuts down the creative process. Because the creative solving process requires lots of creative ideas, judging during divergent activities must be avoided at all costs. Conversely, research has shown that positive feedback increases the combination of divergent stimuli in new ways.²⁵

Unfortunately our culture has taught us that large doses of judgment are prerequisites for extrinsic rewards. Professor Melvin Tumin, a Princeton sociologist, concluded that "...nothing is quite so hostile to the maximization of creativity as the competitive grading system which prevails in our schools."²⁶ Furthermore,

he believed that intrinsic, not extrinsic, rewards should be used. Thus, the joy of creating and learning is a reward unto itself.

A study of students showed that it took four praises to one criticism to keep them on track and a ratio of 8-to-1 to change behavior.²⁷ This same study found that teachers' most common methods for changing student behavior were pain, fear and anxiety, frustration, humiliation and embarrassment, boredom, and physical discomfort with positive comments last. If this pattern is common in classrooms, we can see why conformity, not creativity, is the outcome of our educational systems.

The process should be freewheeling to take the participants past the mental conformity blocks that they have learned in school. Freewheeling means it's all right to be off the wall. Even your craziest idea cannot be criticized because of the no judgment rule.

Hitchhiking creates ideas that combine the best ideas of everyone on the team. It can also help during implementation if all members see a piece of their idea in the final solution.

Instead of criticizing people who come up with ideas that are outside the cultural box, they should be encouraged by giving praise for wild, crazy ideas that others may turn into something very practical. For example, a company's problem was that their repair crews had to be sent out to fix telephone wires broken by ice on the lines. The creative session was started with a random word, "bear." The first idea was very crazy: train bears to climb the poles and shake the wire. This required getting honey to the top of the poles. Using a helicopter was suggested. Then the group realized that the solution was that the helicopter propellers could shake off the ice.²⁸ Here is an example of how a group turned a crazy idea into a practical one by building on the idea. Criticism at the outset would have turned off the group process that led to a practical solution.

The importance of a high quantity of ideas is like mining for gold: You need to dig a lot of dirt to find a nugget. Experiments have shown that the last ideas, the ones beyond the mental blocks and into the subconscious, are the highest quality ideas.

Forcing participants to create more and more ideas in less time is a stretching process that takes them outside their comfort zone. They complain about the magnitude of the task in the imposed time constraints, but this psychological stretching helps them to be more creative in the future. It is applying the "no pain no gain" principle. If you take the group "temperature"

at this point in the session you will find a lot of hostility. When it all comes together at the end of the session, the evaluations become very positive.

Create an Environment That is Comfortable With Creativity

The quotation from *Fortune* at the opening of this article stressed the point that innovation requires a style of organizational behavior that is comfortable with new ideas, change, risk, and failure. Creating an environment that is tolerant of mistakes is difficult. It must be made clear that mistakes are acceptable if they are based on solid thinking, enhance learning of what will not work, and are caught early before the damage is severe. There must be support for the people who were on the team of the project that failed. One company has a “wake,” complete with black candles on a black cake, to shorten the grieving time and move on. Another company calls a project an experiment, thereby recognizing that experiments fail, but they provide new knowledge.

As noted earlier, our educational systems have destroyed innovative thinking styles by requiring conformity and by giving rewards based on easy measures. Innovation is very difficult to measure. To encourage innovation, we must help individuals to understand each other’s preferred problem-solving style. Creative problem-solving sessions require teamwork among individuals who have different thinking styles because of their training and experiences. Effective teaming requires that each member understand his or her style and the styles of others on the team.

There are many measures of individuals’ decision styles. One of the most familiar tools is the Myers-Briggs, which places individuals along the following four dimensions: extroversion-introversion, sensing-intuition, thinking-feeling, and judging-perceptive.²⁹ The individual can be classified by four letters, such as INTJ or ESTJ. The behavior of persons so classified is quite different. For example, the INTJ is an innovator, uses intuition, and has an inner vision. The ESTJ is practical, realistic, and has a natural head for business or mechanics. Both can be strong-willed persons who want to dominate a team. The

facilitator must bring out the strengths of each type by demonstrating that the team needs both kinds of styles.

The Kirton Adaptor-Innovator (KAI) Inventory measures preferred styles for problem solving.³⁰ The adaptor prefers to be creative within the present system. The innovator wants to create new definitions of the problem and new systems. Thus, both types are creative, but their styles are different. Adaptors include bank managers, accountants, production managers, and programmers. Innovators include persons in marketing, finance, fashion buyers, and R&D managers. The relative position of persons along the scale is more important than their absolute score. Thus, two adaptors with a 20-point difference in their KAI scores would view each other differently. The higher-scoring person would view the lower-scoring person as an adaptor and the lower-scoring person would think of the higher-scoring person as an innovator.

The Herrmann Brain Dominance model divides the brain into four components—holistic intuitive, interpersonal feeling, sequential organized, and logical analytical. Coulson and Strickland developed a card

game to help team members understand and accept the need for a team to have diversity in decision styles.³¹

Adaptors and innovators are perceived to behave differently, to take a different approach to problem definition, to generate solutions differently, to prefer different policies, and are vital at different times in the life cycle of an organization. Adaptors are seen by innovators as predictable, safe,

inflexible, and intolerant of ambiguity. Innovators are seen by adaptors as glamorous, exciting, unsound, impractical, and threatening to the system. Adaptors tend to accept the given definition of the problem, while innovators redefine it. Adaptors tend to generate fewer novel ideas, preferring to do things better. Innovators tend to generate many ideas that may not seem relevant, and are generally focused on doing things differently. Adaptors prefer structured situations, while innovators

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do not. Adaptors are essential for ongoing functions, but have difficulty operating outside their expected role. Innovators are essential for change, but dislike ongoing organizational activities.

When there are team members with a large gap between their scores, there will be problems with communication and collaboration. This range will stimulate creative problem solving, but tolerance will be required. The bridgers, persons between the extremes, could help in such situations. A person who is alone at one extreme will try to conform to the style of the rest of the team. This coping behavior can be very stressful.³² Without revealing individual scores, the facilitator can emphasize how the team needs both styles.

Thomas Edison embodied all of the characteristics and risks of an innovator. He generated 3,500 handwritten journals. He was a divergent thinker, musing about cosmology, making observations about the natural world, sketching, and writing poetry. He created a diverse environment by stocking samples of metal sheets, rods, pipes, 8,000 chemicals, and every kind of screw, needle, cord, and wire made, along with natural products such as hair, silk, and sharks' teeth. He was not afraid of failure. Before settling on carbonized cotton for the light bulb filament, he had 3,000 failures with material from bamboo to platinum.

Lessons learned in one failure led to success in another project. In addition to the light bulb, his 1,093 patents included familiar ones such as the phonograph, microphone, mimeograph, batteries, and an unfamiliar one for poured concrete. The last invention was an attempt to build a middle-class house in six hours.

His most trailblazing contribution was the invention of a scientific laboratory. He directed a dozen colleagues in as many as 40 projects at one time. He set as his goal a minor invention every 10 days and a major one every six months. Clearly he practiced the concept that quantity will produce quality. But Edison's divergent thinking ran into industry's need for convergence. Even though General Electric was founded in part by Edison and he had worked on x-ray tubes, the company gave its manufacturing to a competitor because corporate managers viewed him as unreliable and unpredictable.³³ Here is another example of the need for a team of divergent and convergent thinkers.

Conclusion

Creative leadership must facilitate positive relationships in organizations to produce profitable

growth through innovation. We now know that creativity is not a personality trait that is available to a few geniuses. Everyone has unique knowledge and experiences that can be tapped, given the proper environment. This environment must be free flowing and nonjudging to take people through the mental blocks that they learned in early childhood. These mental blocks are associated with the risk of being wrong. Many educational processes give rewards only for getting the right answer, not for experimenting with new approaches or exploring the risky unknown.

The motivation for innovating comes largely from the joy of doing something that has never been done before. It is like going on an expedition and risking everything to be the first person to climb a mountain or sail alone around the world. It taps the same drive that exists within a composer or an artist who wishes to create something for immortality. It is rewarding to be part of the base camp that supports the climber who is the first to reach the top or the ground crew that supported the winning sailor. Creativity can transform a dream or wish into a new form of retailing, a fast-food concept, a new form of government, an airplane, a light bulb, a new way to grow rice to reduce hunger, a creative approach to world peace, or it may be a dream by an individual to lead a fuller life. The Osborn-Parnes model of the creative problem solving process is scientifically sound, very practical, continuously evolving, and can be readily adapted to present decision processes for rapid adoption by teams.

But the facilitator of sessions in these environments should remind the group that the facilitator is like an expedition's guide into the unknown: There is no trail. Making the trail can be the most exciting and risky part of the expedition. Each team member must contribute knowledge and skills to the expedition, expect risks, learn from mistakes, and share in the success of having been on the team that was the first to reach the dream.

Executives who want detailed cases that prove the effectiveness of CPS may be trapped in the Newtonian mechanistic model that stresses cause and effects. Creativity, it has been noted above, is outside this model. Thus, in waiting for such proof the executive will miss opportunities. The only real proof is to try the process by mapping the decision process into the CPS steps, as in Figure 2, and then asking the questions in Figure 1. A few short sessions on a small problem led by a trained facilitator should demonstrate that the process can move an organization toward a state of continuous innovation.

The executive who applies CPS to the organization's decision processes should remember the advice of Machiavelli as noted in *The Prince*, "There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things, because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new."

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