

Serendipity, the art of discontinuous improvement and staying alive

Wasn't that new just yesterday?

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If Yogi Berra was alive and giving seminars on serendipity and the pressure for innovation in the marketplace, he'd probably say: "The trouble with serendipity is that you can't plan on it and you're always having to do new things!"

Our challenge for the present and late 1990s will be much like that of the baseball manager:

- All you have to predict the future of your team and the opposing team with are the statistics of past performances...
- You know that the opposing manager knows this and depends upon the same statistics...
- Your choice is always to: count on the statistics; guess that opponent will try to create an unexpected event; and/or try to create your own unexpected event.

Oftentimes the key to success in sports is a discontinuous improvement or action. In the past, organizations only felt a need to create a discontinuous improvement once a year, when a new model or service was introduced.

Over the past decade or so, organizations have been struggling with the meaning and application of this need/demand for discontinuous improvement. Some have done well with the concept, many have not.

Beginning yesterday and stretching onward into the turn of the century we have a new challenge: to continuously improve and foster an organizational environment that will support discontinuous improvements. With changing technologies and lifestyles, globalization and the shift to innovation as a way of life, firms will have to continuously improve just to hang on to customers.

To delight and excite current customers and to attract new customers, firms will have to produce products and services that cause consumers to say, "I never imagined that someone would offer me a ...XXXXX... that would enable me to increase my use/pleasure of ...XXXXX... so much!" Or to say, "I didn't know that's what I needed, but hats off to them for making it!"

If you can imagine a whitewater marketplace as a landscape, that's what you should be able to see outside of your window today. If you can't see it yet, consider some of the examples that will follow.

If you can see it and are wondering whether you'll need the skills of a river rafter to navigate in the new landscape, the agility of a world class soccer player, the prescience of Tom Peters or the persistence of Tom Edison, the examples and suggestions that follow should help to provide you with some clues about the skills and attitudes needed to become the creator of environments rather than a simply a good survivor.

In short, here is the challenge: business landscapes, today and tomorrow, are environments wherein new products and services, opportunities and technologies will arise and/or decline suddenly and often unexpectedly. In such landscapes, innovation, time and timing are critical strategic competencies.

The marketplace and discontinuous improvement

The marketplace today contains numerous examples of firms engaged in discontinuous improvement. For example, Apple Computer is moving beyond the *still picture, printed words and numbers* computer business and is positioning itself for the multi-media revolution that combines moving pictures, animation, sound, dialogue and printed words and interactivity between the author and user in a single document or database.

Such revolutionary shifts are by no means limited to high-tech firms. At Leggin Belts, a producer of clothing belts, the firm's salespeople were transformed into business consultants whose mission was to enrich both their customer's wardrobe and buying experience. Through the use of computers, they provided customers with information for making intelligent decisions about which products to purchase from Leggin.

The office and factory are also experiencing revolutions and transformations. Single function jobs are changing into multi-task positions linked to mini businesses. Continuous education is becoming a way of life rather than a periodic or procrastinated task given little value.

What's driving and energizing discontinuous improvement? A key element in the discontinuous improvement movement seems to be the phenomenon of *quantum fluxing*. What does that mean?

First, a quantum is an indivisible unit of energy which forms the interconnected network weaving together the whole universe.

The indivisibility of a quantum from the network within which it exists suggests the metaphor of individuals, teams and firms as quantum which form an intricately interwoven network or web.

Fluxing is the action/transformational event which takes place when the elements of solid solder and two surfaces of copper are momentarily heated sufficiently to transform the solder into a liquid which flows freely between the two copper surfaces and then creates an indivisible and solid bond between the solder and the copper as it quickly cools and becomes solid once again.

The two surfaces remain as one (as do customers and producers, diverse units of a business, or employees and the employer do) until and unless the solder is sufficiently reheated and the two

surfaces are jarred or the solder is vaporized. The introduction/appearance of a discontinuous improvement/change in the marketplace or the organization is analogous to reheating the solder and applying pressure. The result may be a rebonding or a new bonding that completely changes the marketplace or organization that existed before the heat was turned on again.

The desire for higher quality, greater participation in decision making, new expressions of style/beauty, greater ease in carrying out tasks, the ability to carry out previously impossible tasks are all drivers and energizers for discontinuous improvement, as are human imagination and creative intelligence.

Quantum fluxing involves changes in the whole resulting from fluxes in any quantum in the network. A flux in a single unit/quantum may change the whole network.

The traditional business and economic maps which often assume that the business landscape is composed of independent or unlinked objects and firms that interact on the basis of known market forces are inadequate for today's fluxing marketplace.

Federal Express which appeared so suddenly and unexpectedly to create a new system of mail delivery is an example of such quantum fluxing, as is the almost overnight appearance of facsimile machines in the office. CNN surprised the big three network executives with its success when they had anticipated its failure.

The potential changes arising from direct satellite broadcast and receiving capability and the combinations of wire-based with wireless cellular communications and computing firms and technologies with entertainment and educational software companies and technologies point nothing if not a continuously fluxing of quantum in the information network that binds together the global marketplace/society for the foreseeable future.

Desktop publishing is another example of quantum fluxing. The editor of this publication has told us that just two years ago, it took two people and 10 to 14 days to piece together the edited articles of this journal on the computer. Then, several more days were required to add photographs and advertisements. Today, one person completes the layout (with photographs and advertisements in the electronic document) in 2½ to 4 days.

Quantum fluxing is also exhibited in the application of new knowledge and technologies. Again, Leggin Belts is an example. Leggin used applied technology to add value to its customers. The revolutionary changes/fluxes were energized with knowledge obtained from the CEO's scouting activities in business seminars and publications. He shared this knowledge with managers who applied it with fellow employees. The CEO's and manager's new orientation to experimentation created *new* knowledge which allowed the firm to improve its performance and position and to move into new niches.

Quantum fluxing and nanotechnology —

Nanotechnology is another example of quantum fluxing. Nanotechnology is the knowledge used to craft individual molecules from atoms. One of the first applications of such knowledge was by IBM's labs for chip manufacturing during 1992. Another application was the development of a fiber-optic sensor for monitoring chemical properties in a living cell. It is predicted that within ten to thirty years, nanotechnology will lead to the development of nanomachines assemblers. Such technology will allow us to "build almost anything that nature allows to exist." The cell sensor and IBM's chip work suggests such assemblers may be just around the corner. For as Mark Thompson, a research chemist observes, "Science proceeds in leaps. You just don't know when to expect them."

Quantum fluxing, chaos theory and business surprises —

Just because an industry appears stable and the competitors known does not mean it will not experience the surprise of quantum fluxing. Chaos theory indicates that regular and irregular systems can coexist in the same landscape. However, this may change with time. The irregular may influence the transformation of the regular into quantum fluxing.

Take the computer and printing industries in the 1980s. The former was extremely irregular and the latter was regular. This changed as the irregulars of Apple Computer launched the Macintosh which in turn resulted in desktop publishing. The printing industry changed from the picture of regularity to irregularity as customers used the new technologies to perform work previously done by printing firms. Many firms failed because of their inability to cope with the chaos created by a different system.

How can organizations deal with novelty and quantum fluxing?

Coping or flying along with quantum fluxing and novel landscapes require discontinuous improvements rather than over-dependence on traditional views of progress and/or discovery. Such improvements are characterized as innovations which transform rather than develop or continuously improve the existing system.

Serendipity and discontinuous improvement —

The need for discontinuous improvement requires adding something to the *now-conventional* work theories, concepts and tools such as TQM, continuous improvement, and problem solving. Serendipity is one such addition. (it can be characterized as unexpected or unintended and beneficial discoveries.) Serendipity also suggests some new *tools* for supporting discontinuous improvement.

The hidden art of serendipity in science...

Serendipity plays a critical role in both science and business. In his book, *Serendipity*, Roberts illustrates numerous discoveries that were accidental. Examples include the pap test, X-rays, Teflon, vulcanized rubber and penicillin.

Today's much celebrated chaos theory was itself a result of an accident. Edward Lorenz, the discover, typed in the rounded off numbers from a computer printout rather than those in the computer's memory. The result was the serendipitous discovery of the "butterfly effect" and the new river of chaos theory that now nurtures an expanding realm of new products and services.

Serendipity as 'normal' and a critical element in modern business...

In a recent article, *Inc.* presents a number of stories illustrating the importance of serendipity in the founding of enterprises and the discovery of new products. Examples include the discovery of such products as the Mambosok, Velcro, the Slinky, Dorothy's Ruffled Originals, 3M post-it notes™ and Starving Students, a moving and storage company.

In a *Harvard Business Review* article, Ikujiro Nonaka states that high performing Japanese firms use "highly subjective insights, intuitions and hunches of individual employees" for developing new products. Says Nonaka, "Managers everywhere recognize the serendipitous quality of innovation. Executives at these Japanese companies are managing that serendipity to the benefit of the company, its employees and its customers."

Jay Conger, in *The Charismatic Leader*, also observes that serendipity plays a critical role in business. Both Nonaka and Conger suggest that business is excessively dominated by a myth of rationality.

Tom Peters notes, “Managing by accident, making friends with happenstance and enemies of dreary plans, is a useful antidote to *professional* management run amok.” To his credit, Peters notes that serendipity and not the myths of rationality and the super hero was the explanation for the success of *In Search of Excellence*.

In *Riding the Tiger*, Harrison Owen states, “Over the years, I have collected what can only be called anecdotal evidence from clients and colleagues concerning the circumstances surrounding real breakthroughs. The interesting thing is that absolutely none ever occurred according to plan... I am still searching for a breakthrough which happened the way it was suppose to.” Owen also suggests that firms manage out the mess from which serendipitous breakthroughs arise.

The development of Rubbermaid’s Work Manager Station illustrates “improving through accident.” This product was not developed through analysis, rational decision making or continuous improvement but came from Bud Hellman’s recognition while touring another subsidiary that its plastic blow-molding technique could be used to develop an inexpensive line of office furniture.

Harvesting the fruits of the serendipity tree

How can managers support the harvesting of serendipitous fruits? First, all employees need to be aware of four myths limiting their acceptance of serendipity. **I**

This means recognizing the limitations of linear analysis, rational problem solving, marketing research and planning. To this end, they need to unearth their own myths and compare them to the actual reality they are currently experiencing.

A which myths miss the mark? exercise —

This can be achieved by gathering a multi-level group of employees in a room and asking them to recount how discontinuous or unexpected improvements in their organization happened.

Three myths for debunking of serendipity...

Unfortunately, serendipity has been downplayed in the world of business and by quality professionals with three myths.

1. The myth of linear time. This myth suggests that time is a straight line or a river flowing from past to present to future. It suggests that improvements flow in a similar fashion (continuous improvement methods are based on this belief). The facts suggest otherwise. Carl Sagan, writer and astronomer, observes that people living in the 1860s could not have predicted the outcomes of James Maxwell’s changing certain equations for aesthetic reasons. Using the river of time myth, they may have assessed Maxwell’s work as an interesting spring but not relevant to the river of continuous improvement. However, Maxwell’s spring gave birth to a new stream that became a river now known as the quantum physics rivers which are the source of our current high technology sea.

2. The myth of rational science. This myth suggests that science is logical, rational and objective — an extension of the Newtonian paradigm. As the Maxwell example illustrates, rational science is more myth than fact. He is not the only one. Einstein, Paul Dirac and Roger Penrose have also made profound discoveries that resulted from their need for esthetically pleasing equations.

The participant-observer effect, discussed in quantum mechanics suggests that objectivity is an illusion. Quantum mechanics suggests there is no independent world out there — the participant and the observed are a whole rather than separate objects.

3. The business myth of planning, analysis and rational decision making. The prior two myths support the third. It is based on the beliefs of the positive contributions of prediction, preparation and fragmentation. It suggests that competent managers need to be analytic and masters of logical decision mak-

ing who should conduct rigorous analytical studies, such as market research, and engage in extensive planning before acting.

This myth is based on the outdated vision of Newtonian science and quantum mechanics has burned down the house of Newton. Reality is no longer viewed as based upon a predictable universal machine with deterministic laws and principles. Quantum mechanics suggests serendipitous events are as natural as the predictable events.

The marketplace has become more quantum-like than Newtonian as illustrated by the shift from continuous to discontinuous improvement as the ticket to success.

A number of high performing enterprises have either consciously or unconsciously recognized this transformation. They are shifting to a new metaphor for the enterprise: “organization as mind.” Such concepts as the “learning organization”, “intelligent enterprise” and the “knowledge creating organization” are examples of attempts to define the new metaphor. Each implies organizations possessing intelligence which, in turn, suggests the existence of an organizational mind. To extend this metaphor, the organization as mind exists within a vast ever evolving and transforming sea of creative intelligence. As with human intelligence, this sea is continuously evolving and transforming through creative processes and the network of many interconnected minds.

This suggests that effective managing must reflect the play of human intelligence rather than the dominance of the traditional machine model. And, the facts, as we will see, indicate that serendipity is critical to the advancement of human knowledge.

Suggested principles for supporting the harvesting of serendipitous fruits...

1. *Support imaginative purposing, experimentation and innovation.* Recognize that discontinuous change can change the purposing of the enterprise.
2. *Develop a new world view.* Recognize we are living in an age of transformational change. Recognize that creating new knowledge and innovation is critical to organizational development.
3. *Cease dependence on the rational management and linear time myths.* Recognize organizations are networked minds and not unitary, solitary machines. Recognize and celebrate the uncertainty principle and chaos theory. Expect and encourage surprises.
4. *End the practice of allocating resources solely on the basis of traditional financial analysis.* Instead consider the lost opportunity costs of not supporting experiments. Recognize that economic and financial theories and practices do not exist for assessing the value of knowledge and innovations creation.
5. *Discover the novel and weird.* Make friends with happenstance and engage in nondirective scouting. Trust hunches and intuitions. Engage in continuous questioning of everything.
6. *Institute scouting and learning for all employees/associates.* Take associates on scouting (searching useful paths through unknown or new territories) adventures and support uncertainty learning. Support people following their loves and blisses. Engage the making of weird connections.
7. *Transform supervisors and managers into scouts and supporters of the impossible.* Stop managing out accidents. Encourage variations. Encourage associates to become arsonists, burning down the organizational house and then support them in the rebuilding process to create designs in greater accordance with the new environment.
8. *Encourage curiosity, wonder, awe, experimentation and fun.* Recognize workers can discover novel ideas. Treat each person as an intelligent and growing human being. Recognize that becoming a supervisor, manager, executive or CEO does not automatically confer SUPER-VISION.
9. *Break down walls between departments, customers and outside sources of intelligence.* Encourage cross-pollination. Support amateurs and creative people who roam around. Encourage team work to develop novel ideas. Don't limit R&D to a single department.
10. *Eliminate numerical goals, posters, slogans and cute training games to encourage creativity and provide resources for experimentation and adventuring.* Create time-space for people to come together or go alone or walk-about as do the original inhabitants of Australia when in search of inspiration or new vision.
11. *Create innovation assessing systems which are ambiguity tolerant.*
12. *Learn to manage a company of creative and crazy people.* Remove barriers that stand in the way of people being inventors, amateurs, and discoverers and expressing their creative gifts.
13. *Support continuous learning and education.* Don't limit people to what seems logical and rational. Support them in taking weird courses and exploring outside their discipline and work.
14. *Create a organizational system in which executives actively support serendipity and discontinuous change.*
15. *Make chaos an ally rather than an enemy.* Don't immediately suppress, control or fix disorder. Chaos is a natural aspect of the creative process. Recognize constructive chaos can induce serendipitous discoveries.
16. *Create information and knowledge creating teams.* Don't focus only on problem solving and fixing. Create fusion and network teams which are multi-intelligent and disciplined.
17. *Support people with love of "the business," service and product.* Recognize profit lovers or bottom line addicts can destroy a business out of their lust for dollar signs rather than their love for the enterprise, customers and products.

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Did innovations here occur according to a plan? Or, were they happy surprises and/or chance encounters? They may also need to explore the reality of the four myths about/against serendipity:

- How effective has the myth of rational management been?
- Can we predict tomorrow on the basis of yesterday?
- Or, will tomorrow bring unknown surprises and chance encounters?

Discover the value-adding potential of serendipity.... This may be achieved by examining the fruits of serendipity through reviewing case materials and their own stories.

Creating a new worldview... New principles need to be formulated for supporting serendipity. These principles are not habits to be followed but suggestions for inspiring the imagination. Each firm must discover its own unique principles. Such work will begin the adventure of discovery with many surprises and will break the mechanical practice of habit following that is current in so many firms. **2**

Serendipity strategies for managers

Managers may need to enact strategies and tactics for supporting and harvesting the fruits of serendipity. Here are a few example strategies.

Traveling and scouting — Management can support traveling and scouting to encourage chance encounters and enrich the organizational mind. Says inventor Charles Kettering, “Get going and the chances are that you will stumble onto something.” The Bud Hellman story illustrates the value of this practice. At Starbucks Coffee, executives travel to a dozen cities each quarter to conduct open forums which support discovering and harvesting new ideas. They have gained insights for addressing environment concerns, improving customer service and employee performance.

Scouting activities must not be restricted to the executive ranks... It must be an organization wide process. This tends to be the case in Japanese firms such as Mitsubishi Materials. Funmio Kodama (Saitama University) says “At every level, employees assume responsibility for keeping tabs on the marketplace and for bringing new innovations into the organization.” Stew Leonard also supports scouting by all employees. Teams are sent to competitors to discover new ideas.

Scouting and working with customers...

Scouting and working with customers on developing new products or improving existing products and service may encourage serendipitous experiences. At Ingersoll–Rand a scouting team discovered that workers in their customer firms were taping their shop tool handles. This serendipitous experience led the team to recognize the importance of tool comfort and to design a new and highly profitable set of products.

Creating space–time for serendipities to be birthed

— Another strategy is creating space–time for people to come together to explore and experiment. Most enterprises don’t support this because they suffer from the goal or idea syndrome. However, David Packard and Bill Hewlett didn’t have a goal or a clearly defined idea or plan when they began Hewlett–Packard. They just wanted to start a business together in the electronic engineering field. And Masaru Ibuka had no idea what kind of business his new company would enter. For weeks, Ibuka, Akio Morita and their associates sat around discussing what kind of business the new firm would enter. Today, this confused, lacking in purpose group is known as Sony.

These stories suggest the value of creating time–space for people to come together without a clearly defined goal, idea or management provided challenge. From such gatherings, highly beneficial serendipities may arise.

Future Search and Open Space conferences can be used by organizations to create such serendipities... Both processes create the space–time for people to discover common purposes, create information and knowledge and to enact them. Both encourage messiness, are relatively nondirective and are self–organizing — such attributes are fertile soil for sprouting serendipities. And, as illustrated by the Hewlett–Packard and Sony examples, potentially new enterprises.

Space design and chance encounters

— Space design can also be used. At 3M’s Austin operation, the facility design supports chance encounters. Functions are jumbled together. The space between people is small to encourage the sharing of ideas. Couches and chalk boards are placed next to space where people come together — bathrooms and coffee machines.

Space design is a necessary but not a sufficient condition for encouraging chance encounters... Values and norms must also encourage people to come together. At a large utility company, a large open space exists with chairs and couches; however, few people gather in this space. Why? Organizational norms and values emphasize staying in your space and keeping your nose to the grindstone. Sitting around talking to other organizational members is thought to be nonproductive and punished. The reward system focuses on individual and departmental success rather than on improving the whole enterprise.

Intentionality energizes serendipitous outcomes

— The founding of Walden Paddlers and the development of its product illustrates how strong intention can lead to discovery of necessary skills and serendipities. Paul Farrow, its founder, had been laid off and was seeking a new business. He discovered his new product and business during a family outing: an environmentally friendly kayak. After scouting the market, Farrow decided to find a manufacturer. By chance, the owner’s son of the first firm he contacted was a kayak lover. The firm had also explored going into the kayak business.

Next, Farrow sought a designer and again by chance, came across a person who was a canoe racer with the necessary skills. While starting out by creating his own dealer network, Farrow's big break came when IMTRA, a wholesaler of marine products, ordered 100 boats. Farrow didn't seek out the order. He met the president through a friend of a friend.

Critical to intentionality is confidence in the outcome even in the midst of failure and the willingness to be open to new means for achieving the outcome. There are countless examples of first attempt failures. Sony's first product failed. Sam Walton's first dime store was a failure. Walt Disney experienced numerous failures. However, these failures did not destroy their confidence in the intended outcome.

Follow your bliss and support the energy of love — Another strategy is presented by James Austin in *Chase, Chance and Creativity* — *Follow Your Unique Bliss*. Encourage employees to follow their own interests and loves. Research suggests that geniuses in both science and the arts love their work.

Love is the psychic energy which is the source of their devotion to their work. With love, the long hours of work become enjoyable and enriching as spending time with a beloved. James O'Toole notes, "It's like asking whether marriages with love are better than marriages in which there isn't. You can't prove it but it's obvious." The life of Glenn Miller illustrates this strategy. Miller followed his bliss of discovering the "right sound."

This strategy is not alien to quality professionals. Deming's constancy of purpose and driving out fear can be perceived as encouraging organizational members to follow their bliss. HP supports bliss by allowing/creating the time-space for researchers to pursue their own interests.

There are also an expanding number of enterprises that recognizing that love of product, team and customer is far more effective in supporting high performance than reward systems designed to manipulate employees into behaving a certain way. Love is the soil from which serendipitous encounters arise. Love leads associates to want to contribute and supports them in acting as geniuses.

The miracle of a problem — Be open to troubles as miracles. That means, seeing problems as

indicators of the potential emergence of serendipities. Glenn Miller's discovery of his unique sound illustrates this. Miller searched for years for his unique sound. When he was a day away from launching his second new band, a key musician hurt his lip. Miller had big troubles; however, from this disaster an inspiration was created. He spent all night re-arranging his music. The Glenn Miller sound was created.

RailTex also discovered opportunity in the midst of adversity. An economic down turn led RailTex associates to engage in consulting for feeder line railroads. To their surprise, they discovered that these firms weren't managed effectively. This led CEO Bruce Flohr to contract to operate a small line which was the beginning of the firm's new business.

Practicing mindful curiosity — This is illustrated by T.E. Lawrence in the film *Lawrence of Arabia*. When asked what his mission was, Lawrence replies, "To appreciate the situation." Lawrence's attitude is one of openness and mindful curiosity towards the Arabs and their potential. Lawrence's attitude was expressly different from his British peers who are blinded by their fixed mental maps. Lawrence's appreciation of the situation led to development of an effective strategy for using the Arab forces during World War I.

Openness to freshness... Appreciating the situation and mindful curiosity may involve seeking fresh perspectives and being open to hunches and intuitions may lead to fresh perspectives. While quality professionals may decry the value of hunches and intuitions, the facts indicate their value to discontinuous improvement. Weston Agor and Roy Rowan have documented that effective executives and entrepreneurs employ intuition to navigate their enterprises towards opportunities. Denis Waitley and Robert Tucker have also documented that successful innovations result from intuitive thinking. James Brian Quinn's studies of the process of large scale innovations indicate the complexity of this process requires intuitive and not analytic thinking.

Stop making sense... Seeking fresh perspectives also involves the discontinuous questioning of the conventional wisdom. In the words of David Byrne and Talking Heads, organizational members need to "stop making sense" to make sense.

That means, a return to the core meaning of experience. The Latin root of experience is, *experiri*, a verb rather than a noun, which means to risk, try out, dream, imagine, probe, learn and suffer. *Experiri* people stop making sense to gain fresh perceptions. Experiencing is novel and changing rather than living work as a grooved record that is played over and over again.

The Macintosh's development illustrates the importance of "stop making sense". The mouse and Mac's hardware were developed by Xerox's PARC. However, Xerox's professionals couldn't understand how the computer could fit into the copying business and were focused on the corporate market. All this made perfect sense to Xerox executives and associates. It didn't make sense to Steve Jobs and associates who toured the PARC's lab and experienced the computer. They stopped making conventional business sense and focused on a computer for the individual. The Japanese also surprised Xerox with a stop making sense strategy in copiers. Canon and other Japanese firms, captured the personal copier business from Xerox because executives thought such copiers didn't make sense.

The development of IBM's personal computer also is a "stop making sense" story. When Peter Drucker asked why IBM launched a personal computer when it made "no sense," he states that he received the same answer, "Because it didn't make sense." In other words, IBM executives and the PC team decided to "stop making sense" and to their surprise, it did.

Support training, education and learning — Education and learning are different from training. Training involves putting in information while the education and learning evoke and create new information and knowledge. Training prepares the mind, education encourages the mind to see beyond training. Learning is the applying and playing with serendipities to transform them into new products, services and organizational practices.

The serendipitous discovery by Lori Vermeulem of a potential material for storing solar energy illustrates training, education and learning in practice. While walking across the Princeton University campus, Vermeulem, trained in chemistry, noticed a change in the material she was carrying. This wasn't suppose to happen. For Vermeulem's and Mark Thompson's, her adviser, training provided no answers for this phenomena.

They are currently engaged in the process of educating themselves through experimentation to understand the reasons why this material stores solar energy. They are also learning how to increase storage efficiency and to extract the stored energy.

Novelty assessing — The Vermeulem story illustrates the importance of the novel.

Unfortunately, the novel is, all too often, ignored in business. There is an overemphasis on linear or trend line thinking.

- Mainframes were the trend in the 1970s but were eclipsed by the novel, personal computer, in the 1980s...
- TQM and employee involvement were ignored for years because of the conventional command and control wisdom of management theory...
- Sears was the merchandising giant when Wal-Mart was a novelty in the backwoods of Arkansas.

Trend analysis needs to be augmented by novelty assessment... In novelty assessment, it becomes clear that adhering to rigid conceptual frameworks is a mistake.

While hiking in Australia with Tom Bunnell, co-founder of Mambosok, Dan Hoard cut off a pant leg to deal with the heat. Upon their return, the two decided to sell their new product as a joke. Their market research involved scouting the Pacific Northwest for people who might purchase their product or look good in their *invention*. What would have happened if Bunnell and Hoard had used conventional market research rather than their novel approach. In all likelihood, they would have never launched the product because it didn't fit within any existing framework.

When encountering novelty, it's wise to experience it first hand, to ask questions and listen — but don't analyze. Allow the phenomena to create the theory through experimentation. Or as Leslie Wexner, chairman of The Limited, suggests, "Approach each situation with the view that everyday is a new day, and I've got to win from scratch."

Supporting wholeness and connecting —

Serendipity may also arise from connecting and wholing. (*Wholing can be characterized as a process which considers the whole primary and the parts secondary.*) Mini-businesses, self-organizing work and multi-functional teams have shown us that fragmentation or parts thinking doesn't support quality.

Research suggests that geniuses open their mind to new connections amongst seemingly nonsensical fragments of knowledge and information.

Aggressive serendipity

Providing employees with the discretion to act on their surprises is critical to the success of all these strategies. This means, going beyond cosmetic participation and empowerment to responsibility and authority. And it suggests creating a company of *business people* — putting an end to parental management. It also requires less emphasis on specialized knowledge professionals.

Human resource, legal and accounting professionals must learn to support the creation and application of new knowledge rather playing the role of maintainers of the status quo.

The leader's task — Leadership also needs to continuously ask associates:

- “How can we apply our new insights, surprise discoveries and knowledge in a more productive fashion?”
- How can we become more responsible?
- How can we induce and support revolutionary changes while still engaging in continuous improvement to serve the continuing needs of existing customers?

Leaders and organizational members must commit themselves to developing a new mindscape that allows for uncertainty and chaos. Both are critical to discontinuous change. Managers and associates need to stop being obsessed with always making sense in accordance with archaic logical standards.

The garden as good and the jungle as evil... While gardens do produce food and planned flowers as does control, order and stability produce planned and predictable products, it's the jungles which are the sources of new surprises, biological and otherwise. Such is the case with the founding of many new products, services and enterprises. The discovery of *Velcro* didn't come from the arranged garden of a *well managed* R&D lab or enterprise. It was discovered by a hiker who recognized that if nature's burrs could stick to clothing, an artificial burr could also be developed.

New findings from chaos, quantum physics and system theory suggest that rather than seeking to eliminate chaos, uncertainty and the jungle; leaders and organizational members need to accept

and play with them. Chaos is a natural aspect of the change from one order to another. Seeking to eliminate or control chaos and uncertainty may be disastrous because it may only inhibit necessary serendipities and their application. It may also frustrate associates supporting the change and lead to the sense that management isn't really committed. In all likelihood, eliminating chaos will backfire in a world of quantum fluxing because chaos is natural to this form of order. A more successful approach might be to support the chaos; thereby, allowing it to create a new order. ♦

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