CREATING CONDITIONS FOR CREATIVITY AND INNOVATION IN ORGANIZATIONS

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ABSTRACT

Competing in the technology marketplace in the 21st century will require constant adaptation to shifting market demands. The most successful organizations will have an environment where creativity and innovation are occurring consistently at all levels of the organization, and in all functions. This paper discusses how complex adaptive systems can be seen as a model for adaptive organizations and postulates attributes of healthy and dysfunctional adaptive attributes consistent with complexity concepts. Theoretical concepts are deconstructed to real world strategic approaches. An ongoing organizational assessment and intervention is summarized as evidence that these concepts have validity in the creation and sustenance of organizational innovation and vitality.

INTRODUCTION

The global explosion of computerization and communication capabilities is creating an overwhelming ripple effect on the nature of markets, the nature of work, and the nature of organizational structure. Imbedded information and programmability has made new classifications of products and features possible. Savvy customers who are more aware of quality considerations as well as more focused on service are redefining competitive advantage and barriers to entry. The internet and world wide web are creating distribution channels that give customers unprecedented tools for product research, price comparison, and instant gratification through purchase and quick delivery. Essentially we are moving out of the industrial era of mass production and into an era of mass customization that is information and knowledge driven.

Any company that is not prepared to meet the varied and multiplying demands of its potential customers is at risk of losing them to more agile competitors. Market viability hinges on creating value for the customer, and creating value for the customer in most companies hinges more and more on utilizing a broad range of the knowledge, skills, potential, and awareness of product capabilities residing in the employee population to provide innovative solutions for non-routine problems. Designing systems and processes that capture and capitalize on this knowledge and awareness is proving difficult. Perhaps the most difficult obstacle to generating these innovation initiating systems and processes has to do with the kind of information that gets generated, what gets done with it, and who gets to act upon it. Information, in order to be immediately useful, must be accurate; it must be complete; and it must be timely. Organizations have evolved in a way that inhibits the probability that all three of these characteristics are routinely present and intact.

THE TRADITIONAL FRAMEWORK

Management systems developed for organizations in the industrial economy focus on processes of standardization, specialization, economies of scale and expert knowledge. Information is gathered, defined, analyzed and utilized by experts in specialized functional areas. It is applied to the necessary and beneficial processes in order to identify the most efficient and productive techniques and to minimize variances from the standards imposed. Feedback loops are created to identify anomalies and provide opportunity to eliminate them. The objective is to achieve and sustain an effective “equilibrium” state. The requisite knowledge and models are assumed to be available through these experts who can access it and provide definitive direction. Once in place, these standards are expected to be conformed to by all members of the organization until improvements initiated by the appropriate experts supersede them.

[CHART I – Negative Feedback Loop Promoting Equilibrium]
In this model, the role of leaders and experts is to direct, control, reduce conflict and set direction. Their goals and “vision” are assumed to be sufficient for organizational direction and motivation. Organizational efficiency and effectiveness are a matter of figuring out or seeking out “best practices” and pushing this knowledge down through the organization.

This methodology has been very powerful and it has been the engine for success for countless companies over the past three generations. However, this linear model is predicated on an environment of slowly emerging technologies, the predictability of stable markets, and the rationality of a highly informed observer. Most technology companies today exist in a competitive environment where technology advance drives rapid product obsolescence, competition comes from unexpected sources, and complex non-linear dynamics reduce all models to partial and highly tentative. These are attributes consistent with what Jeffrey Williams describes in his recent book *Renewable Advantage* as “fast cycle.”

- Freestanding, idea-based, and information-intensive;
- Short profit cycles due to non-proprietary components that can easily be copied or improved upon;
- Followers enter the market with lower costs than introducers due to rapid learning and fast technology improvement diffusing throughout the industry;
- Rapid product obsolescence eliminates sustainable economies of scale;
- Innovation has multiple sources, keeping any single company from long-term dominance;
- Real-time lessons in Schumpeter’s concept of “creative destruction” where market exit is pre-planned, short-term, and tied to next generation introduction.

To quote Williams, “Knowledge-based advantage is slippery, easily dispersed and copied.” In this kind of environment, the ability to create, capture, and share ideas and information, and leverage these into new knowledge and innovation that can be broadly useful to the organization is critical in adapting to changing markets, to changing resources, and to changing sources of competition.

**THE ORGANIZATION AS A COMPLEX ADAPTIVE SYSTEM**

A competing framework to the traditional top-down “expert” approach to understanding organizational processes, and one that is gathering growing attention, is the organic patterns of behavior common in complex adaptive systems. Complex adaptive systems (CAS) are composed of simultaneously independent and interdependent agents who, operating for their own benefit, self-organize into emergent patterns of behavior that tend to maximize the likelihood of mutual success. As a complex adaptive system, every company exists is a series of consecutively imbedded systems: an economy residing within a global sociopolitical system; an industry within that global economy; a company within the industry; divisions, departments, and other subgroups within the company and its stakeholders; and individuals within the subgroups.

Complex adaptive systems self-organize around “attractors,” points in the system that have the power to gain a constituency. These are often anomalies that in the traditional “equilibrium” organization would be seen as a deviation from preordained conditions, established norms, or the status quo, and duly eliminated. In an adaptive organization, variances that are attractive enough to collect a consistently growing constituency eventually amplify the variance to a degree that destroys the status quo. These attractors can exist in any of the embedded levels. Where they arise is unpredictable. And as they induce movement in one level (in complexity terms, this is movement along a ‘fitness landscape’ in order to increase the likelihood of success or survival), the impact upon that level and on other levels is also unpredictable. In organizations, this is an example of the creative destruction that Schumpeter was talking about.

[CHART ! – Positive Feedback Promoting Amplification]

It is useful to encourage and sometimes even to accelerate variances that lead to changes that promote the organization’s achievement of its goals and objectives. We cannot “make” this amplification happen. It is a condition of the environment contained within the system. Likewise, we cannot stop negative or dysfunctional variances from gaining a constituency. We cannot legislate them out of existence or declare them invalid by fiat. We can only attempt to identify the drivers, often intangible, that promote the disruptive constituencies and try to influence their presence within the system.

**THE SPACE FOR CREATIVITY**

In order to be an adaptive environment where creativity and innovation thrive, a paradoxical state must exist – both stable and unstable, where both cooperation and
competition are valid, and where variances might be either amplified or inhibited. It is an area that complexity scientists refer to as the “Edge of Chaos,” between the place where rules and conformity impose inhibiting rigidity, and the place where turbulence and factionalism create fragmentation and disintegration.

Ralph Stacey calls this environment “The Space for Creativity.” In Stacey’s model, whether the conditions for creativity and innovation exist in organizations is primarily dependent upon five variables: 1) how information is channeled and used within the organization; 2) the degree and quality of connections between components of the organization as well as its external stakeholders; 3) with whom power and influence within the organization reside; 4) the degree of diversity in the organization, along both cultural and cognitive parameters; and 5) the degree to which the organization is able to contain the level of anxiety in the system’s members naturally generated by the destruction of the status quo that is part of any creative or innovative activity. It is the “Space for Creativity” that enables today’s knowledge worker to respond inventively to the demands of the emerging context of the information-based economy.

What are the implications of this new framework on the access to and use of information toward the generation and harvesting of knowledge in organizations? What are the attributes of a vital organization that has the ability to respond effectively to the challenges of today’s marketplace? And what is going on in organizations that are having difficulty meeting these challenges?

**DYSFUNCTIONAL ATTRIBUTES**

For most of us, it is not difficult to relate to dysfunctional attributes around Stacey’s five variables. For instance, in many traditionally hierarchical industrial model organizations, information is protected, distributed on a “need to know” basis, and accessible to a selected elite who control when and to whom it is passed. In these organizations, most employees are not expected to think outside the established rules and processes. In fact, when they do, they generally get into trouble. Connections and communication within the organization, who talks to who, and under what circumstances, are well entrenched and prescribed. These processes are not fluid. Power and influence is a factor of title and position, and the answers are expected to reside in the experts at the top. There is pressure on the individual to conform and assimilate to the overriding cultural norms. Alternative perspectives or opinions are not sought out, in fact, the environment makes people, especially those outside the ‘power group,’ tend to be cautious and even fearful of expressing diverse points of view. Perhaps counterintuitively, anxiety levels in this atmosphere tends to be low because people are insulated from having to solve non-routine problems by the strict adherence to established rules and practices.

We can describe these organizations as being rigid. New knowledge is difficult to generate, and when it does occur, it is rarely spread throughout the organization, and made available to others who may find it advantageous. Therefore, it is frequently lost or buried, rather than duplicated and leveraged into an innovation from which the entire organization can benefit.

On the other side of the continuum is another dysfunctional construct, this one fragmented and verging on disintegration. This kind of organization is overwhelmed with information, usually because it is distributed indiscriminately or in a way that makes separating the important from the useless difficult and time consuming. Everyone is connected to some degree, but communication tends to be focused on self-interest and politics is often rampant. It is often difficult to get anything effective to happen because power and influence are so widely distributed that decision making founders. Rather than seeking conformity, each faction tends to emphasize its differences in an effort to promote its own agenda, making problem solving slow and difficult. There is little sense of common purpose. The atmosphere is highly pressurized because most people feel that it’s “everyone for themselves” and there is no one they can trust.

**ORGANIZATIONAL VITALITY**

An organization where creativity and innovation can thrive is on a boundary between the two constructs above. Information is freely accessible, but retained and acted upon at the local level, with each entity determining what is important to them. Connections are widespread both to internal and external sources, but the intensity varies with need and importance, for example with the creation of “red teams” or cross-functional task forces. Influence is based on knowledge and expertise rather than on position or title, and shifts as the need of the project shifts. A high level of literacy about the business is encouraged and expected, providing a broad understanding among employees of how the parts of the business fit together and of the influences that external forces have on the company’s strategies and success.
The “individuality” of each person’s ability to contribute is recognized, honored, and rewarded. Different ways of thinking, learning and communicating inherent in individual cognitive diversity are seen as contributors to a variety of potential solutions. Expression of opinion and subversive creativity are pathways to innovation. There tends to be a high tolerance for ambiguity and recognition that uncertainty is the nature of the beast. The ‘glue’ that provides cohesion in this potentially volatile environment is a commonly held sense of purpose and “reason for being.” Processes include ways to resolve different approaches, perspectives, and priorities based on that commonality. The organization places as much importance on the improvement of interpersonal and leadership skills as on developing technical, functional and management skills. The interplay of all of the above creates a “good enough” environment that contains the natural anxiety that dealing with continuous change processes inevitably generates in human beings.

With anxiety contained, employees as individuals and within their work groups can devote their energies and attention to finding new and better solutions to the increasingly non-routine problems that arise in the constantly more competitive marketplace that technology related companies exist in. Creating, capturing and sharing ideas and information happens more rapidly and more naturally.

A clear sense of purpose – Who are we? What are we here to accomplish? What makes us distinctive? What values do we base our business decisions upon? -- provides a way to understand what knowledge is critical and what people have to learn in order to keep up with and surpass their competitors. It allows a focusing of learning efforts in order to increase competitive advantage. This sense of purpose and values must be clearly defined and consistently reinforced throughout the organization. This provides the guidelines that help define the shape and flow of effective information harvesting and sharing techniques and methodologies. It helps identify where information is useful, but must not constrain non-obvious areas of usefulness from access.

**CAPITALIZING ON KNOWLEDGE CAPITAL AND INTELLECTUAL CAPITAL**

There is nothing more personal than what is in a person’s mind. Competing in the “Knowledge Economy” requires drawing as much value from the individual minds of the organization’s employees as possible. By recognizing and capitalizing on the unique capabilities of each employee, an organization can leverage that diversity into new learning and new knowledge. That knowledge, when successfully harvested and shared, can then be leveraged into increased intellectual capital, the driver of innovative products and services that is recognized by the financial markets in increased stock valuation. And of course, high market capitalization provides the financial ability to invest more in the acquisition, development, and retention of additional talented employees, adding impetus to the virtuous cycle.

[CHART III – Leveraging Human Capital into Market Value]

Managing in this kind of environment is less a matter of controlling and directing people and things than a matter of creating and sustaining an environment conducive to curiosity, exploration, continuous learning (the corollary on the human level to continuous improvement on the process level), creativity, and innovation. Given access to the tools, those meant to survive in the system will find their own ways to peaks on the fitness landscape.

Creating and sustaining this kind of environment must incorporate the following premises as strategic imperatives at the organizational level:

• Provide access to continuous upgrading of professional and personal skills and knowledge to all employees
• Develop effective conflict resolutions skills at all levels
• Define the purpose for which the organization exists, who it strives to serve, and how it should go about serving them. Articulate these resolutely throughout the organization
• Imbue core values with the strength to serve as guidelines for action throughout the organization
• Invest members with responsibility, the power, and the resources to make decisions within their realm of accountability
• Recognize that survival depends upon destructive innovation, requiring exploration, play, experimentation, and a tolerance for failure
• Minimize bureaucracy
• Make true partners out of all stakeholders.

Within the organization at the group level, an adaptive atmosphere includes the following practices:

• Proactively increase the depth of the knowledge base inherent in the group
• Include diverse backgrounds, perspectives, and frames of reference among members
• Foster an atmosphere of trust and trustworthiness
• Provide wide access to information relevant to the group’s survival and success
• Nurture linkages to related functions
• Nurture linkages to outside groups and organizations
• Provide support for the simultaneous existence of paradoxical but mutually necessary attributes such as the importance of group objectives and respect for individual interests
• Prepare for the obsolescence of all processes over time
• Foster an environment where play and exploration thrive.

At the individual level, effective management and leadership in a technology environment requires encouragement and provision of means for all employees to pursue and acquire the following assets:
• Continuous learning in their field of knowledge
• Continued development of interpersonal effectiveness
• Development of a tolerance for ambiguity
• Cross-fertilization – linking to related fields
• Involvement in cross-functional processes
• Acquisition of information linkages across systems
• Acquisition of information linkages with individuals with related knowledge
• Collaborative linkages with individuals with related purpose
• Affiliation with competitively positioned individuals
• Affiliation with competitively positioned groups and organizations

Creating and sustaining an environment where learning and knowledge generation is a valued activity maximizes the ability of employees to build their own value, which somewhat counterintuitively results in a likelihood of a substantial return on investment for the organization. Witness the results of GE’s “Eager to stay and ready to go” philosophy toward how they want their employees to approach employment with GE. GE has long been known for the investment it puts into training and developing its employees at all levels in technical, functional, and interpersonal skills. GE consistently competes effectively in every business it chooses to be in. It does an excellent job of preparing its own rising stars, and it has also become known as a training ground for people who are subsequently recruited away to critical positions in other companies. This willingness to provide people with the skills and capability to succeed wherever they are has earned GE the reputation of the most consistently recognized “well-managed” company in the annual Fortune magazine evaluations, as well as one of the highest market valuations of any company in the world.

AN EXAMPLE

Assessment of information flow and communication processes within a large international telecommunications equipment provider has resulted in identification of a number of blockages in numerous work groups to idea generation and organizational learning. Taking this as a learning opportunity, the firm has begun integrating approaches to reducing these blockages based on the above concepts into the fabric of the work of selected sub-organizations with noticeable results within about a year. These results include re-energizing large numbers of employees in work environments that had been previously described by local management teams as "apathetic," "turned-off," or "retired-in-place."

Some of the initiatives employed have been:
• Educating employees in the business to leverage for growth by building synergy between aggressively pursuing diversity (cultural and cognitive), aggressively pursuing knowledge management, leveraging knowledge, and aggressively managing intellectual capital
• Strengthening forums for linking each group with their organization, within processes, and across disciplines to leverage core competencies for future projects, lowering employee anxiety
• Actively seeking out creative conflict/abrasion sessions to build sparring teams based on equity and core organizational values
• Seeking out training in facilitation skills, dialogue/communications skills, knowledge management skills and leveraging diversity skills
• Actively supporting communities of practice including creating physical environments conducive to idea sharing
• Operationalizing values such as respect, empowerment, encouragement and integrity, not leaving them undefined and misunderstood.

In conclusion, a thoughtful, strategic approach to the generation of learning and the formation and dissemination of new knowledge, particularly in areas that differentiate the firm from its competition, is critical for any company competing in the technology arena. These companies must be creative and innovative to stay alive, much less be successful. Creativity and the resulting innovation result in change, but change, especially when rapid or continuous, has a potentially debilitating impact on employees. Creating the environment that contains this anxiety to an extent that provides a space for creativity does not happen by accident. It demands a balancing act between structure and freedom to act. It mandates frequent and candid exchange at all levels of information that is accurate, complete and timely. It must allow for the personal, emotional impact of what is going on to be recognized and considered in the process of generating approaches.
and solutions. It must appreciate that things going other than expected or hoped are opportunities to learn, and not mistakes to be paid for. And it will collapse if the rewards system does not honor and reinforce the interest in every contributor being part of and desiring to provide their best toward the effort.

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