MODERN APPROACHES FOR UNDERSTANDING AND MANAGING ORGANIZATIONS

by Kurt R. Linberg, Walden University

Abstract

This article explores two major themes associated with modern management theory and application. The first theme is associated with ensuring a balance of perspectives in managing organizations. Managers within contemporary organizations must strive for a balance between financial focus and quality focus, between leading and managing, between innovation and adaptation, between efficiency and creativity, and many other opposing forces. The second theme is associated with the importance of managerial understanding and sponsorship of the creative person, the creative process, and the creative work climate.

The first section provides a general overview of modern management theories and practices. The theories associated with Total Quality Management, Total Financial Management, and New Paradigm Management are described and compared. The specific attributes which are compared include: primary focus area of the theory, leading proponent, key leadership responsibility, creativity and innovation focus, motivation, decision method, and business focus. In addition, an integrated management theory is presented which strives for a balancing of quality focus, financial focus, and a humanistic people focus. A list of barriers associated with adopting the integrated management theory is also provided.

The second section extends the discussion of modern management theories to a detailed description of how to better manage creative people. Current research findings associated with individual, team, and organization creativity are presented. Characteristics, theories, and associated practices are compared and contrasted within each of these views. Barriers to organizational creativity are also discussed in greater detail. A framework for better managing the creative individual, team, and organization is developed from a synthesis of information from leading researchers and practitioners.

Introduction: Overview of Modern Management Theory

This section provides a broad overview of modern management theories and concepts. First, an overview of three modern management theories and associated concepts are discussed. Second, a comparison of these theories and concepts are provided. Third, a summary of an integration of these theories is presented. Fourth, an analysis of the major barriers to the adoption and practice of modern management theories is provided.

The following section provides a general description of a number of modern management theories. These theories include: total quality management (TQM), total financial management, and new paradigm management.

Total Quality Management

In summary, TQM management theory states that top management of an organization must place the highest priority on developing quality products or performing quality service or the company will cease to exist. The views of the following authors are presented: Philip Crosby and W. Edwards Deming.

Focus of the Theory

The focus of TQM is continual improvement of product quality and/or quality services. Although there is a consensus on the focus of TQM, there is a lack of a consistent definition of quality. Crosby (1980) simply refers to "quality" as conformance to specification as he states: "The first erroneous assumption is that quality means goodness, or luxury, or shininess, or weight. The word quality is used to signify the relative worth of things in such phrases as good quality, bad quality, and that brave new statement quality of life. Quality of life is a cliché because each listener assumes that the speaker means exactly what he or she, the listener, means by the phrase. It is a situation in which individuals talk dreamily about something without ever bothering to define it. That is precisely the reason we must define quality as conformance to requirements if we are to manage it." (pp. 14-15). It is not surprising that Crosby emphasizes prescriptive processes to define the requirements of a product or service. Crosby emphasizes that quality is free by reframing the lack of quality or non-conformance as the expense.

Both Crosby and Deming identify 14-step programs. Crosby calls his program the Quality Improvement Program and Deming (1980) calls his program the "The 14 points for Management." There are considerable differences in content and scope between these programs. Crosby's program is composed of the following elements: 1) obtain management commitment; 2) implement quality improvement teams; 3) measure quality; 4) determine cost of quality; 5) heighten awareness of quality; 6) implement systematic corrective action; 7) plan for zero defects; 8) train supervisors; 9) establish a zero-defect celebration day; 10) establish improvement goals; 11) remove error-causes; 12) recognize participants; 13) establish quality councils; and 14) repeat each step (pp. 149 - 221).

The Deming program is much broader than Crosby's program. It also includes elements which appear to have origins in the social sciences, such as motivation by self-actualization not by fear (Maslow 1971). Rather than defining a quality improvement program, Deming is proposing a "basis for transforming a business." Deming's program is composed of the following elements: 1) create constancy of purpose toward improvement; 2) adopt a new philosophy; 3) cease dependence on inspection to achieve quality; 4) end the practice of awarding business on the basis of price; 5) continuously improve quality; 6) institute training on the job; 7) institute leadership with the aim of helping people do a better job; 8) drive out fear; 9) break down barriers between departments; 10) eliminate slogans (e.g., zero defects) which alienate workers because they are unable to correct the "common" causes; 11) eliminate work quotas; 12) eliminate management by objectives and numerical goals; 13) institute a program of education and self-improvement; and 14) put everyone to work to accomplish the transformation (Deming, 1986, pp. 23-24).

Unlike Deming, Crosby developed an assessment instrument called the "Quality Management Maturity Grid" that included the following 5 stages: uncertainty, awakening, enlightenment, wisdom, and certainty. Crosby used this grid to pinpoint the quality improvement areas within the organization which needed attention.

It is interesting to compare these stages to other five-point stages or progressions identified by Likert, Humphrey, Kubler-Ross, and Kegan. Prior to Crosby, Likert (1976) provided a five-level organizational profile that included the following levels: permissive, exploitive authoritative, benevolent authoritative, consultative, participative, and futuristic. Within the software development profession, Humphrey (1996) admits that he used Crosby's framework to establish the 5 stages of maturity for software organizations, that included the following progression: chaos, repeatable, defined, managed, and optimized. There are also 5 levels of acceptance or "Grief Cycle" identified by Dr. Elizabeth Kubler-Ross (1985). The Grief Cycle or stages to acceptance include a natural progression from denial, to anger, to bargaining, to depression, and finally

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to acceptance. According to Kubler-Ross, an individual must progress through this cycle in order to accept the change (pp. 34-35). Table 1 provides a comparison of the five-step progressions of growth which appear to be applicable to individuals as well as organizations.

Table 1. Comparison of Growth Stages

Crosby	Likert	Humphrey	Kubler-Ross	Description of Commonality
Uncertainty	Permissive, laissez-faire organizations	Chaos	Denial	Lack of awareness, considerable confusion regarding roles, unsure of future, counter-productive systems (enabling an alcoholic).
Awakening	Authoritative (Exploitive and Benevolent)	Repeatable	Anger	Fearful of change, looking for leadership, frustration
Enlightenment	Consultative	Defined	Bargaining	Improved attitude, communication with experts, looking for a "silver bullet" or "magic pill," coordination
Wisdom	Participative System	Managed	Depression	True awareness of the difference between the "vision" and "reality." Motivated by self-actualization goals. Assist with leadership.
Certainty	Futuristic	Optimized	Acceptance	Motivated by group goals, all levels involved in decision making, excellent performance, organizations operate from an interplay of group and hierarchical forces, satisfaction.

Kegan (1994) also provides 5 stages or "orders of consciousness" in relation to human development. Table 2 summarizes the later stages and provides an interesting comparison of two different management istylesî typically experienced in organizations. The fourth and fifth stages of Kegan's model are comparable to Crosby's "wisdom" and "certainty" stages.

Table 2. Kegan's Management Style and Orders of Consciousness

	Warm, personal, inclusive management style	Formal, hierarchic, traditional management style
Style Characteristics	Inductive, process-oriented, experiential, personalistic, narratizing, "feminine" style	Deductive, product-oriented, objective, decontextualized, abstracting, "masculine" style.
4th Stage (3rd order consciousness showing the following characteristics: Mutual Reciprocity, Interpersonalism, Self-Consciousness)	Inclusive and collaborative but is based on needing direction from others; the manager that can't say no; compassionate, but feels responsible for the other person's feelings	Top-down, in-control, chain-of-command, by-the-book style, but authority and direction from one's supervisor (or the company's code or tradition); may personalize criticism, take responsibility for what is actually the responsibility of others, project responsibility onto others for what is actually one's own.
5th Stage (4th order consciousness showing the following characteristics: Relationships, Self-Regulating, Multiple-Role Consciousness)	Collaborative with and inclusive of others as self-governing persons, seen and respected as such (including seeing oneself as such); collaboration, inclusion, or non-hierarchic leadership is expressive of a personal philosophy or belief system; provides empathic compassion (relates to the pain, but does not identify and feel responsible it).	Leads hierarchically and unilaterally but out of a vision that is internally generated, continuously sustained, independent of and prior to the expectations or directives of the environment; has formal, socially bounded interpersonal manner, but respects others, as well as oneself, as psychologically responsible, self-governing persons; preserves psychological and social boundaries by not assigning others responsibilities which are not theirs or taking responsibilities which are not one's own.

* Adapted from Kegan's, In over our heads: the mental demands of modern life, (p. 218 and p. 227).

Deming, in comparison, does not identify any model of organizational maturity. Deming (1986) chooses a much broader definition of quality. His definition includes attributes associated with the product itself (e.g., reducing variation to specifications), the use of the product (e.g., what does the customer think about the product after using it three years from now), and the product literature (e.g., training manual or advertising claims).

Deming (1986) emphasizes a statistical approach to quality improvement and the importance of understanding common causes and special causes. Examples of "common" causes would include: poor design of product, failure to remove barriers that rob the worker of the right to do a good job and take pride in their work, poor instructions, poor supervision, unsuitable incoming materials, and uncomfortable working conditions (p. 336).

Examples of "special" causes could include human error due to poor eye sight, or lack of skill. Deming (1986) strongly emphasizes that management is responsible for correcting the systems that are responsible for the majority of quality problems, as he states: "Confusion between common causes and special causes leads to frustration of everyone, and leads to greater variability and to higher costs...in my experience most troubles and most possibilities for improvement add up to proportions something like this: 94% belong to the system (responsibility of management) and 6% special" (p. 315).

Deming emphasizes constancy of purpose throughout the organization, and particularly stresses the dysfunction associated with short-term financial focus, as he posits: Pursuit of the quarterly dividend and short-term profit defeat constancy of purpose. Whence cometh the scramble for the quarterly dividend? What is the driving force that leads to the last-minute rush into a good showing on the quarterly dividend? Anyone can boost the dividend at the end of the quarter. Ship everything on hand, regardless of quality: mark it shipped, and show it all as accounts receivable. Defer till next quarter, so far as possible, orders for material and equipment. Cut down on research, education, training (p. 99). The next section provides an overview of the strengths of the TQM theory.

Strengths of the Theory

TQM has a number of strengths. First, it provides a customer focus to offset short-term, financial focus. Crosby heightened the awareness of executives around the world to the costs of nonconformance. He was the

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chief evangelist for zero defect programs and do it right the first time slogans throughout industry. Second, TQM has produced numerous success stories. Crosby was successful in turning around a number of companies via his consultations. Deming, however, was successful in turning around an entire country! He is recognized as the key contributor to Japan's industrial success from 1960's through today. Third, TQM places responsibility and accountability on the top management. Both Deming and Crosby emphasize that management is key to successfully implementing TQM. Quality engineers or inspectors are not responsible for the quality of the product. Crosby (1980) provides this response to managers: "Workers perform like the attitude of the management. If they don't care about product conformance, it is because they sense that the management doesn't think it is important....Workers are like a mirror. The reflection you see is your own" (p. 233). The next section provides an overview of the limitations of the TQM theory.

Limitations of the Theory

TQM has a few limitations. First, there could be a tendency of becoming rigid and obsessively compliance focused. This could reduce innovations and thus the overall health of the organization. An example is the Wallace Corporation that received the coveted Malcolm Baldridge award for quality and in a few years ended up in Chapter 11 bankruptcy (Gouillart and Kelly, 1995, p. 61).

Secondly, an organization may focus too intently on internal processes and close themselves to the outside world. A closed-organization, like a closed-system, will ultimately get weaker and will die because it will not adapt to the changing environment (Katz and Kahn, 1978).

In addition to a tendency of obsessive introspection, the TQM theory can easily be practiced superficially by management. A major difference between Crosby and Deming concerns slogans. Deming disagrees with the use of slogans, such as Zero Defects. Deming believes that slogans, without the associated managerial attention to actually change common causes, only serve to polarize the workforce. This contributes to lip service and what workers cynically call another quality program "flavor of the month." The superficiality of management can also be seen with Quality Circles, as Deming (1986) states: "These groups predictably disintegrate within a few months from frustration, finding themselves unwilling parties to a cruel hoax, unable to accomplish anything, for the simple reason that no one in management will take action on suggestions for improvement" (p. 85). The next section provides an overview of the modern management theory called total financial management.

Total Financial Management

This section provides an overview of the total financial management theory of organizations. This theory is not on the popular reading lists and certainly is not as popular as TQM, but it is still being practiced. This theory has origins from the early 1900's!

Focus of the Theory

Origins of this theory can be traced to John Locke and his belief that human beings are most deeply motivated by economic concerns. Another contributor to this theoretical focus is John Maynard Keynes, an influential economist from the 1930's. Keynes stressed an investment strategy that placed financial results (ends) over ethical considerations (means) by stating: "For at least another hundred years, we must pretend to ourselves and to everyone that fair is foul and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little longer still" (Schumacher, 1973, p. 100). A more recent author, Harold Geneen (1984), exemplifies the numbers focus from the financial. The focus of the financial theory is financial management, specifically bottom-line results. In summary, this theory states that top management must prioritize and obtain financial goals to support stockholder confidence or the organization will cease to exist. At a micro-level view, this emphasis is on an organization's cost control and revenue generation. At a macro-level view, this emphasis could be extrapolated to national economics, materialism, and consumption all leading to an increase in Gross National Product. The scope of this article is on the micro-level view associated with organizations. Theory, as he states: "Numbers serve as a sort of thermometer which measures the health and well-being of the enterprise. They serve as the first line of communication which informs management what is going on, and the more precise the numbers are, the more they are based upon unshakable facts, the clearer the lines of communication" (pp. 182-183).

Strengths of the Theory

Total financial management theory has a number of strengths. First, without strong financial control an organization could not manage the capital needed for producing products and performing value-added services. Similarly, strong financial control supports budgetary management and optimized allocation of resources. Second, financial accounting methods and standards are mature, for example, the generally accepted accounting principles used by all business. In addition, the mature financial framework supports modern financial techniques, such as activity-based costing and utility theories. The next section provides an overview of the limitations of the total financial management theory.

Limitations of the Theory

Financial theory has a number of limitations. First, the focus on limited budgets may result in activities that are penny-wise and dollar-foolish. Second, a focus on short-term objectives at the expense of long-term growth. Looking at the financial results from the past quarter is a lag indicator and it's like your are driving your car by looking in the rear-view mirror. (Gouillart and Kelly, 1995, p. 79). Third, the possible exploitation of limited resources (Schumacher 1973). Fourth, a strict financial focus could polarize labor and management, and even worse, polarize consumer and manufacturer (Deming 1986). And finally, financial theory could contribute to runaway technology (Glendinning 1994).

The future of the financial management theory is even being questioned by business analysts, as Maynard and Mehrtens state: "At the moment, the more progressive business analysts realize that the rules of finance, while necessary, are no longer sufficient because they are inadequate as a means of determining the well-being of either individuals or society as a whole" (Ray, 1993, p. 38).

Gouillart and Kelly (1995) stress their concern with a strict financial focus, as follows: "But while having the lowest cost or the shortest cycle time is great, it won't help much in the areas of revitalization and renewal, where the real promise for both human and business growth lies" (p. 162). Land and Jarman (1992) provide additional concerns about the financial management theory, as they state: "What never appears on [financial] audit sheets are the absolutely critical elements like: fostering creativity, amount and rate of product and process innovation, knowledge about customers and prospects" needs, employee morale and turnover, developing leadership skills, competitive information, and people's commitment to a common vision" (pp. 61-62).

The next section provides an overview of the modern management theory called New Paradigm Management.

New Paradigm Management

This section provides an overview of a number of new-age models of management, called new paradigm management. New paradigm management includes the following key managerial activities:

- facilitate the development of human beings to their fullest potential
- replace simplistic goals; align corporate and individual vision
- replace rigidity with flexible business cultures

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- remove hierarchies and empower individuals
- support cooperation instead of competition
- support blend of logic-driven analysis and attuned intuition (Ray 1993).

Contributors to this theory include Peter Senge (1990) and his learning organization model, Gouillart and Kelly (1995) and their organizational transformation model, and Katz & Kahn (1978) and their organization as an open-systems model.

Focus of the Theory

The focus of the new paradigm management theory is people management, specifically supporting creative thoughts and facilitating these thoughts into innovative results for the organization. In summary, this theory states that top management must provide the leadership to continually grow the organization or the organization will cease to exist.

The major elements of the new paradigm management theory include: 1) establishing adaptive-learning systems; 2) establishing common vision with enlightened leadership; and 3) transforming and renewing the organization.

Adaptive-learning systems are a key element in the new paradigm management theory. Senge (1990) calls the learning system the learning organization and emphasizes the awareness of mental models and systems thinking. Gouillart and Kelly (1995) emphasize learning loops which are composed of: 1) observation--the ability to collect data from internal and the external environments; 2) orientation--the ability to interpret that data within a specific context; 3) decision--the ability to select a response based on that interpretation; and 4) action--the ability to execute the response (p. 162). Katz and Kahn (1978) simply refer to the learning function as the adaptive subsystem. They define the adaptive subsystem as the system which senses relevant changes in the outside world and translates the meaning of those changes for the organization (p. 55). Gouillart and Kelly (1995) posit that this learning is vital for the survival of the organization, as they state: "For biological corporations, as for humans, the ability to pass on knowledge quickly and efficiently from one end of the body to the other, and in many cases across several bodies, becomes a sine qua non of survival" (p. 170). Gouillart and Kelly (1995) also emphasize that the organization must establish structures that support knowledge management, as they state: "Capturing learning--becoming a learning organization--requires building a knowledge architecture, establishing a knowledge management process, and creating a technical infrastructure" (p. 290).

Another key element of the new paradigm management theory is the emphasis on establishing a common vision. In the humanistic tradition, the new paradigm management theory emphasizes the matching of individual vision (self-improvement, self-actualization) with a sense of common purpose (organizational success). Common vision and enlightened leadership are complementary attributes of the new paradigm management. The key leadership responsibility is to facilitate the common vision throughout the organization. Leadership is responsible for ensuring consistent roles, norms, and behaviors (Katz and Kahn, 1976).

The final key element of the new paradigm management theory is the emphasis on transforming and renewing the organization. Ray (1993) summarizes the element as follows: "In the new paradigm, the key challenge is therefore to apply inner knowledge, intuition, compassion, and spirit to prosper in a period of constant and discontinuous change. But the ways in which this is done can be different for each individual, organization, and time period" (p. 6).

Strengths of the Theory

New paradigm management theory has a number of strengths. First, the theory provides a systems view of the business. More specifically, this systems view provides a holistic-perspective needed to examine the interplay of systems and processes. Second, the theory is conducive for establishing an environment which nurtures creativity and innovation. Third, the theory facilitates transformation and renewal. As emphasized by Gouillart and Kelly (1995): "...revitalization is the single greatest factor that clearly distinguishes transformation from mere downsizing. Renewal deals with the people side of the transformation, and with the spirit of the company. It is about investing individuals with new skills and new purposes, thus allowing the company to regenerate itself. It involves creating a new kind of metabolism, the rapid dissemination of knowledge inside the firm, and it involves the cultivation of a reflex of adaptation to environmental challenges. Renewal is the most subtle and difficult, the least explored, and potentially the most powerful of transformation's dimensions" (pp. 6-7).

The next section provides an overview of the limitations of the new paradigm management theory.

Limitations of the Theory

New paradigm theory has a number of limitations. First, the new paradigm theory requires a high degree of trust throughout the organization. Top down and bottom up trust is necessary. Management must trust the employees and the employees must trust the management. Second, the new paradigm theory may be rejected by organizations that are hierarchical and bureaucratic in nature. The following section provides a comparison of the various modern management theories and their relationship to the major concepts in modern management theory.

Comparison of Management Theories

Table 3 provides a summary of the modern management theories and key associated attributes. Each of the major attributes will be described in greater detail in the following sections.

Table 3. Comparison of Modern Management Theories

Management Theory	Primary Focus	Leading Proponent	Key Leadership Responsibility	Creativity & Innovation	Motivation	Decision Method	Business Focus
Total Quality Management	Quality Require-ments	Crosby	Quality Engineers	Minimal	Fear of non-conformance	Quality Cost Accounting	Mid-term
Total Quality Management	Quality Products	Deming	Statisticians	Minimal	Intrinsic, pride of workmanship	Statistics, Control Charts	Long term
Financial Management	Profit	Keynes Geneen	Accountants	Minimal	Economics	Balance Sheet	Short term
New Paradigm Management	People	Senge, Gouillart, Kelly, Katz & Kahn	Multiple	Major	Self-actualization and alignment of visions	Learning loops and knowledge systems	Short and Long term

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Primary Focus

Each theory has a different focus area. In some cases, there are different sub-focus areas within each theory. The focus of the TQM approach is quality products and quality service. The TQM approach has its origins in the engineering and statistical domain. The Crosby approach to TQM is primarily focused on defining the quality requirements. Deming approach, however, is focused on continual improving (reducing variability) of quality products and quality services. The financial management focus is on profit and has its origins in the economics or business domain. The new paradigm approach is focused on people and has its origins in the sociological or psychological disciplines.

The focus of the Crosby approach to TQM and the Total Financial Management focus are similar to the mechanistic, administrative organizational theory. Katz and Kahn (1978) elaborate on the incompatibility of people management and machine theory, as follows: "The central error of the machine theory of organization is the assumption that people are tools for accomplishing a given purpose and that their work can be planned without consideration for human variability and reactivity. Machine theory is highly appropriate for the processing of material objects through the use of tools. Its weakness in applying the same logic to human instruments in factory production is often compensated by its efficiencies in dealing with the processing of materials. Where the materials being processed are human beings, this compensatory factor is lacking" (p. 150). A weakness in Crosby's focus is his mechanistic focus on defining the requirements. An organization may be able to identify certain customer requirements *a priori*, but unless there is flexibility to continually adapt and evolve a new product, customers will be satisfied with the final product, but may not be delighted. Merely satisfying the customer provides an opportunity for competition to get in the door.

The focus of Deming's approach to TQM and the focus of the new paradigm management are in-line with the humanistic approaches to organizational development. The humanistic theories are focused on human beings. Argyris (1960) echoes many of the teachings of Deming, as he states:

> The impact of the [mechanistic] principles ... is to place employees in work situations where: 1) they are provided minimal control over their workaday world; 2) they are expected to be passive, dependent, and subordinate; 3) they are expected to have the frequent use of a few skin-surface shallow abilities, and 4) they are expected to produce under conditions leading to psychological failure. All these characteristics are incongruent to the ones that relatively mature human beings in our culture are postulated to desire. They are much more congruent with the needs of infants in our culture. In effect, therefore, organizations adapt an initial strategy where they are willing to pay wages and provide adequate seniority if mature adults will, for eight hours a day, behave in a less than mature manner (p. 14).

Huczynski (1993) has another, less than flattering statement of the consequence of non-humanistic management practices, as he states: "The American management philosophies up to and including the present have been dominated by a ruthless quest for the monopolization and exploitation of raw materials and renewable resources (cattle, people)" (p. 118).

The new paradigm management theory supports organizational growth, as well as the employee's self-actualization growth. This focus on growth is made possible by a complementary focus on information and knowledge creation. The theory emphasizes understanding the organization and the various interactions within the organization as a first step in implementing improvements.

Leading Proponent

It is interesting to compare the backgrounds of each of theorists discussed in this paper. Within the TQM theory, both theorists have technical backgrounds. For example, Deming was a statistician and Crosby a quality engineer. Within the total financial management theory, the theorists have financial backgrounds. The theorists from the new paradigm management theory include individuals with backgrounds in education and management consultants.

Primary Leadership Responsibility

The allocation of leadership responsibilities is another area of comparison. In Crosby's approach to TQM, leadership is provided by the quality assurance professional. In Deming's approach to TQM, leadership is provided by the corporate statistician. The financial management theory stresses leadership by the top financial officers. The new paradigm management theory emphasizes that leadership must be provided at all levels of the organization.

In *Principle-Centered Leadership*, Covey (1992) differentiates management from leadership, as follows: "Leadership deals with direction--with making sure that the ladder is learning against the right wall. Management deals with speed. To double one's speed in the wrong direction, however, is the very definition of foolishness. Leadership deals with vision--with keeping the mission in sight--and with effectiveness and results. Management deals with establishing structure and systems to get those results. It focuses on efficiency, cost-benefit analysis, logistics, methods, procedures, and policies. Leadership focuses on the top line. Management focuses on the bottom line. Leadership derives its power from values and correct principles. Management organizes resources to serve selected objectives to produce the bottom line." (p. 246).

Using Covey's definition of leadership, it appears that Crosby's approach to TQM and the financial management theory align with the characteristics of managers. Deming's approach to TQM and the new paradigm management theory align with the characteristics of leaders, especially the importance placed on for organizational leaders to support congruency in their words and actions, i.e., walk the talk.

Gouillart and Kelly (1995) posit that a responsibility of leaders is to establish connections and networks, as they state: "While independence is a virtue for these teams, connectedness is the goal. The role of leadership is to forge points of connectivity by redefining roles and responsibilities, driving communications, rewarding achievements, and allowing penalty-free failures. Many teams, especially those exploring new business opportunities, may indeed not succeed. But as more and more teams start succeeding, and as leaders continue building connectors across the teams, networks start to emerge" (p. 298).

Creativity and Innovation

Of these management theories, new paradigm management is the only one that appears to support individual creativity and organizational innovation. Crosby's approach to TQM and a strict financial management approach do not provide optimum environments for creativity in an organization. Deming's approach to TQM, although more humanistic, may create a myopic focus on continual improvements. For example, workers may be content at simply reducing variation in the same-old products they produce, rather than generating new ideas that obsolete these products. The new paradigm management theory, however, provides support for humans to take risks and explore the unknown. Creativity and self-expression are in concert with the self-actualization focus, as Likert and Likert (1976) state: "An essential role of leadership, consequently, is to foster creativity and innovativeness and to encourage imaginative, long-range thinking and planning. By such behavior, leaders can stimulate others to establish the same orientation as a pervasive value and help

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the organization avoid contentment and stagnation. Excellent, creative organizations resolve conflicts better than do those burdened with complacency." (p. 122).

Maslow (1971) provides a link between creativity and leadership, as he states: "I think the problem of the management of creative personnel is both fantastically difficult and important. I don't quite know what we are going to do with this problem because, in essence, what I am talking about is the lone wolf. The kind of creative people that I've worked with are people who are apt to get ground up in an organization, apt to be afraid of it, and apt generally to work off in a corner or an attic by themselves....This is also a little like trying to reconcile the revolutionary with the stable society because the people that I've studied are essentially revolutionary in the sense of turning their backs on what already exists, and in the sense of being dissatisfied with what is now the case" (pp. 81-82).

Creativity and innovation will be discussed in greater detail in the next section.

Motivation

These management theories also differ in how individual's within the organization are motivated. The motivation associated with the financial theory is tied to profits and quarterly results. The motivation is based on fear. Fear of not meeting the numbers. Fear of the effect on lower than expected revenue on Wall Street. Crosby's message also appears to be based on motivating the top management of an organization by fear. Crosby emphasizes the costs of non-conformance and the associated contributions toward poor profitability. Crosby's focus on costs align with the financial focus. Deming, however, with his belief in intrinsic motivation, is closer aligned with the humanistic views of the new paradigm management.

Decision Method

These management theories also differ in how decisions are made and what methods are used to make the decision. Table 4 summarizes the leading decision tools used within each theory. The Crosby approach to TQM and the financial management use decision tools based on economics. Deming's approach to TQM and the new paradigm management use decision tools based on systems. Deming made reference that decisions are best made when they are based on profound knowledge. This profound knowledge appears similar to systems thinking. One attribute of profound knowledge is having a deep understanding of variation and the associated systemic problems associated with tampering with a process in statistical control.

Table 4. Decision Tools

Theorist	Decision Tools	Components	Decision basis
Crosby	Quality Cost Calculations	Prevention, detection, rework, scrap	Economics
Deming	Control charts, Statistical process control	Profound knowledge	Common vs. special cause
Financial	Balance sheet, activity based accounting, return on investment, forecasting, cost allocations	Profit, revenue, costs	Economic
New Paradigm	Multi-attribute decision making, Balanced scorecard	Systems thinking	Holistic, systems thinking

Business Focus

These management theories also differ in the area of business focus. The financial management theory provides greater attention on short term focus. New paradigm management appears to establish a systems view which strives to balance short and long term objectives. The TQM approaches from Crosby and Deming are based on a long term focus of the business. Crosby's focus is strive for certainty in the organization, so that the products and services meet quality requirements. In addition, Crosby stresses that in order for the business to remain competitive, the business must prevent defects, and implement a quality improvement program. Deming's business focus is to continually improve via constancy of purpose and to stay in business and to provide jobs (Deming, 1986, p. 23).

The next section integrates the previous management theories into a single integrated theory.

An Integrated Theory on Modern Management

Figure 1 represents an integration of the three modern management theories. Much like a three-legged stool, an organization must successfully integrate and balance the three major theories and associated focus areas. The TQM, financial, and new paradigm theories, taken individually, each have limitations. Integrating these three theories provides a much stronger foundation.

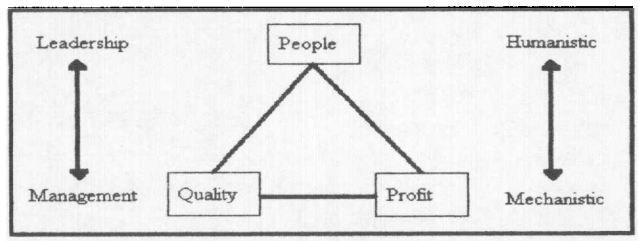

Figure 1. An Integrated Theory

The following example clarifies the importance of integrating the modern management theories. In an effort to differentiate their customer service, an automobile club is changing the way they are going to do business. In most cases, a person joins an automobile club as insurance in case of a car breakdown during their commute to work or during a trip. If the car breaks down, the club member can call and receive a tow within thirty minutes. This is standard procedure. An organization with a quality focus would keep statistics to improve on-time arrival. An organization with a financial focus would emphasize cost controls and might introduce changes to save the organization money. An example could include partnerships with local towing services to reduce total costs. An organization with a people focus would emphasize a customer focus, e.g., keeping the inside of tow truck clean. An integrated approach would result in an improvement in all three. For example, the organization could send a taxi along with the tow truck. The taxi would take the member to work. The tow truck would take the car to the nearest service center. Every effort would be made to have the car repaired and returned to the owner at his or her workplace. This integrated approach is definitely an improvement in quality and people focus. This differentiated service would likely result in higher margins and additional profits.

Huczynski (1993) best summarizes the objectives of the integrated management theory when he states: ". .. reorganization and automation has its limits, and that productivity leaps are achieved only through winning the hearts and minds of employees.... The new elements come by adding creativity and intuition to numerical analysis in order to aid decision-making; recognizing love and caring as a workplace motivator; and placing the mental and spiritual enrichment of employees alongside the

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pursuit of profit as a valid enterprise goal" (p. 56).

In the next section, a summary of the major issues associated with organizational theory are provided.

Major Barriers to an Integrated Management Theory

The following section identifies and provides a summary of the major barriers to an integrated management theory.

I. Issues associated with organizational culture. Cultures are very difficult to change. Employees will not change their behavior unless they perceive the culture supports those behaviors. According to Likert and Likert (1976): "People act on the basis of what they perceive the situation to be, whether the perceptions are accurate or grossly inaccurate. Since behavior is based on perceptions, the existence of each of them is a fact to be considered. Similarly, the frustrations, attitudes, loyalties, and hostilities felt by each member and the information and misinformation possessed by each are facts as is their evaluation of the merits and desirability of each particular course of action under consideration" (p. 165).

II. Issues associated with inconsistent goals. Inconsistent goals can reduce the energy level of the organization and lead to organizational entropy. Inconsistent goals and conflicting visions will prevent adoption of an integrated management theory. For example, if an organization wants to focus on creativity and innovation, there must be tolerance for uncertainty. If an organization wants to reduce change (temporarily) and stick to the knitting, there must be some organizational resistance to innovative ideas. It is important to understand the phase of the organization. Is the organization a new start-up or a mature business? As Miner (1982) states: "Hierarchical systems hypothetically function best when creativity is not required, environments are obvious, rapid decisions are needed, and closed system conditions apply." (p.183).

III. Issues associated with trust. There may be a lack of trust within the organization that will present a barrier to adopting the integrated management theory.

IV. Issues associated with complexity. Integrating the management theories and balancing each based on the value-added activities required for organizational growth requires additional managerial expertise. A strict focus on finance or a strict focus on quality does not require this level of expertise or profound wisdom.

V. Issues associated with organizational structure. Besides organizational culture, organizational structure may present a barrier to adopting an integrated theory. Gouillart and Kelly (1995) emphasize the problems associated with Strategic Business Units (SBU), as they state: "SBU dogma fractures, not builds, empires in industry...What was needed, said the logic of SBU thinking, was to make each business a stand-alone enterprise, to give them the strategic and entrepreneurial flexibility to operate on their own. This would give each business focus and more needed autonomy from the slow-moving central management structure. In many ways, the thinking worked. But the remedy was found to have some severe side effects....SBU thinking locks in a mindset focused on a single business within a single industry. But most opportunities for new business growth occur at points of intersection between industries and, therefore, between divisions of multi-business corporations. It is core competence that provide the connectors across businesses and industries....The historical approach to managing businesses is tantamount to injecting water into the fruits instead of watering the roots and letting the businesses draw the sap...By contrast, the company that focuses on core competencies nurtures a healthy trunk and limbs, making it a prime candidate for the experimental grafting of new branches to grow altogether new and exotic fruits, rich in nutritional content." (p. 196).

VI. Issues associated with information systems. In order for the integrated management theory to succeed, people must have access to the information they need to perform their job. Currently, organizations are in catch-up mode to create these systems. An expert in information technology, Dr. Venkatraman (1998), asked an audience of executives, managers, and information systems professionals about the importance of information technology to their business. As shown in Table 5, only one participant believed that his organization had a high ability to leverage information technology. All the other participants admitted that information technology was of high strategic importance, but their organization had low ability to leverage the technology.

Table 5. Perceived Importance of Information Technology

High strategic importance of IT	199/200	1/200
Low strategic importance of IT	0/200	0/200
	Low Organizational Ability to Leverage IT	High Organizational Ability to Leverage IT

First Section Conclusion

This articlehas provided an overview of a number of organizational theories. Major organizational theories were described and compared with other organizational theories. A number of organizational attributes were discussed and contrasted between the theories. An integrated management theory was described and a list of barriers associated with adopting this theory were provided.

The following story provides a fitting conclusion to the concepts in this paper: "According to an ancient Sufi story, a blind man wandering lost in a forest tripped and fell. As the blind man rummaged about the forest floor he discovered that he had fallen over a cripple. The blind man and the cripple struck up a conversation, commiserating on their fate. The blind man said, "I have been wandering in this forest for as long as I can remember, and I cannot see to find my way out." The cripple said, "I have been lying on the forest floor for as long as I can remember, and I cannot get up to walk out." As they sat there talking, suddenly the cripple cried out. "I've got it. he said, "You hoist me up onto your shoulders and I will tell you where to walk. Together we can find our way out of the forest." According to the ancient storyteller, the blind man symbolized rationality. The cripple symbolized intuition. We will not find our way out of the forest until we learn to integrate the two (adapted from Senge, 1990, pp. 167-168).

Although known by many terms, such as profound wisdom or certainty or fourth order consciousness it appears that an individual and an organization are wise when there is an acceptance and an integration of differing views, differing beliefs, and differing disciplines. Examples of this integration include integrating the yin and the yang, masculine and the feminine, left and the right brain, quantitative and the qualitative, inductive and the deductive, soft issues and the hard issues, analytical and the emotional, and in the case of this article, integrating the financial focus with the quality focus and the mechanistic process focus with the humanistic people focus.

Additional management theories and suggested practices for facilitating creativity and innovations within organizations will be discussed in greater depth in the next (second) section.

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Second Section: Introduction

One of the most pressing issues within modern organizations is the ability to better manage creative people. Without a renewed commitment to creativity within organizations and the associated innovations resulting from this commitment, researchers predict that modern organizations will stagnate and no longer be competitive. This article provides an in depth review of creativity from three viewpoints. First, an analysis of the concepts associated with creativity of the individual is presented. Second, an analysis of the concepts associated with creativity of teams is presented. Third, an analysis of the concepts associated with creativity of the organization is presented. This article also identifies the effects of managerial practices on creativity and innovation; proposes a framework for better managing the creative individual, team, and organization.

The first section of this KAM included an analogy of a three-legged stool for the necessary components of people, quality focus, and financial focus. This paper provides an analysis of the people component with respect to people's creativity.

Overview of Creativity and Innovation

The following section provides definition and clarification of the terms creativity and innovation.

Creativity

There are numerous definitions for creativity in the literature. Couger (1996), after performing an in depth analysis of the various definitions, stated that there were over 100 different definitions for creativity. The Concise American Heritage Dictionary (1980) defines creativity simply as "characterized by originality." This definition is of limited value to the researcher. A much more robust definition can be found by reviewing the results of research in the area of creativity. According to Couger (1996): "The most comprehensive definition is provided in the landmark paper on 'The Process of Creative Thinking,' by Newell, Simon, and Shaw. They believe, to be creative, a solution must satisfy one or more of the following conditions:

1) The product of the thinking has novelty or value (either for the thinker or the culture);
2) The thinking is unconventional in the sense that it requires modification or rejection of previously accepted ideas;
3) The thinking requires high motivation and persistence, taking place either over a considerable span of time (continuously or intermittently) or a high intensity;
4) The problem as initially posed was vague and ill-defined, so that part of the task was to formulate the problem itself.

Although Newell-Simon-Shaw state that only one 'or more' of the conditions must be met, they indicate that all four conditions are important" (p. 4).

Scott (1995) includes the components of imagination and skills as he defines creativity as: "the process of using imagination and skill to invent a unique product or thought" (p. 66). Oldham and Cummings (1996) avoid defining creativity and instead define creative performance as "... products, ideas, or procedures that satisfy two conditions: (1) they are novel or original and (2) they are potentially relevant for, or useful to, an organization" (p. 608). Yong (1994) provides a slightly different definition, as he states: "Creativity entails the act of providing an inventive or original response to a problem that cannot be solved in a simple and straightforward procedure" (p. 16).

In an attempt at defining creativity, a few researchers differentiate types of creativity. Scott (1995) defines creativity as either pure or applied as he states: "Pure creativity is process-oriented in which the product is not the final objective. Individual artists who create for self-expression engage in pure creativity. Applied creativity occurs in broadcast stations, production houses, and advertising agencies where the activities are aimed toward a specific goal. This product-oriented creativity is determined by and directly related to the success of the product" (p. 66). The pure creativity appears to be equivalent to De Bono's artistic creativity as he states: "I am not setting out to improve the skills of artistic creativity as such. I am very specifically concerned with the creative skills needed to change concepts and perceptions" (De Bono, 1992, p. 4).

One of the leading researchers on creativity, Teresa Amabile (1983), also provides two types of definitions for creativity, an operational definition and a conceptual definition. As she states: "a product or response is creative to the extent that appropriate observers [those familiar with the domain] independently agree it is creative" (p. 359). Although she uses this definition in her theoretical framework, she defines creativity conceptually as: "a product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct, or valuable response to the task at hand and (b) the task is heuristic rather than algorithmic" (p. 360).

Although there are significant differences in these definitions, it ap-

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pears that most authors converge on a definition of creativity that includes: the uniqueness and potential utility of a product, a process, or an idea. This definition will be used in this paper.

Misperceptions of Creativity

As a means to better understand creativity, it is interesting to use the current research to identify misperceptions of creativity. This section identifies the following misperceptions:

1. Creativity is a natural talent and cannot be taught. This perception has been proven inaccurate by at least five research studies according to Couger (1996). Amabile (1983) also lends support to learning creativity as she states: "In contrast to popular views of creativity as an all-or-nothing entity, this perspective proposes that it is at least theoretically possible for anyone with normal cognitive abilities to be creative to some degree in some domain of endeavor" (p. 361).
2. Creativity comes from the rebels. After 25 years of consulting experience on creativity, De Bono (1992) states: "Japan has produced many highly creative people but on the whole the Japanese culture is oriented toward group behavior rather than individual eccentricity....Things are changing. The Japanese now know that creativity is central to their continued economic success. They have decided that the game of creativity is important. So they have now decided to learn to play the game. In my experience in teaching creativity in Japan I would have to say that they are going to be very good at this 'new' game. Just as they learned to play the 'quality' game very well, so they will also learn the creativity game and play it well" (pp. 32-33).
3. Creativity only takes place in the right brain. According to De Bono (1992): "While the right/brain notation has some value in indicating that not all thinking is linear and symbolic the matter has been exaggerated to the point that it is dangerous and limiting and doing great harm to the cause of creativity. In a right-handed person the left brain is the educated part of the brain and picks up on language, symbols, and seeing things as we know they should be...we have no choice but to use the left brain as well because that is where concepts and perceptions are formed and lodged" (p. 33).
4. All artists are creative. De Bono (1992) states that many artists follow a particular style of work. He does not describe this type of artistry as creative. The artistic style appears equivalent to Amabileís view of an algorithmic task (and not heuristic).
5. Need to release people. According to De Bono (1992): "...much of the so-called 'training' in North America is directed towards 'freeing' people up and 'releasing' the innate potential for creativity that is believed to be there. Let me say at once that I fully agree with removing inhibitions, the fear of being wrong, or the fear of seeming ridiculous does have a limited value. You are certainly in a better position to be creative if you are free to play around with strange ideas and to express new thoughts. I would hardly be in favor of inhibition" (p. 35).
6. Need to be crazy. Again, according to De Bono (1992): "...teachers of creativity fasten on this point of 'craziness' and set forth to teach it as the essence of the process. This gives quite the wrong impression and puts off people who want to use creativity in a serious manner" (p. 39).
7. Scatter-gun success like brainstorming is a good technique for creativity. De Bono (1992) view on the brainstorming technique: "It is just possible that in the advertising world, for which brainstorming was designed, scatter-gun ideas might produce something useful because novelty is what is being sought. But in almost every other field a scatter-gun approach to creativity makes no more sense than having a thousand monkeys banging away on typewriters in the hope that one of them might produce a Shakespeare play" (p. 39).
8. Must occur in a group. De Bono (1992) stresses individual creativity, as he states: "I believe that individuals are much better at generating ideas and fresh directions. Once the idea has been born then a group may be better able to develop the idea and take it in more directions than can the originator. At this moment the point I want to make is that deliberate creativity does not have to be a group process as is so often believed" (p. 41).
9. Must have high intelligence. According to Helson, Roberts et al. (1995), "General intelligence is certainly a resource, although it has no more than a moderate relation to creativity within the restricted range of samples usually studied" (p. 1174).
10. All you need to do is analyze the data. De Bono (1992): "Most executives, many scientists, and almost all business school graduates believe that if you analyze data, this will give you new ideas. Unfortunately, this belief is totally wrong. The mind can only see what it is prepared to see. Analyzing data will enable the analyst to select from his or her repertoire of old ideas to find which one may fit. But analyzing data will not produce new ideas. If you want a really new idea you have to be able to start it off in your head, with creativity, and then check it out against the data" (p. 24).

Innovation

There are also numerous definitions for innovation. The following definition is provided by The Concise American Heritage Dictionary (1980): innovation is "to begin or introduce something new." Woodman, Sawyer et al. (1993) define organizational creativity as a subset of the broader domain of innovation. They characterize innovation as a subset of an even broader construct of organizational change. (p. 293). Quinn, Baruch et al. (1996) posit that: "Innovation consists of the technological, managerial, and social processes through which a new idea or concept is first reduced to practice in a culture. Discovery is the initial observation of a new phenomenon. Invention provides the first verification that a real problem can be solved in a particular way. Diffusion spreads proven innovations broadly within an enterprise or society. All are necessary to create new value" (p. 11).

If innovation is a new idea or concept, then what is adaptation? Within the Kirton Adaption-Innovation Inventory , M. Kirton defines the cognitive style of adapter as a person who prefers to solve problems within existing and /or mutually agreed upon structures. The cognitive style of innovators is associated with a person who prefers working in few structures. If we apply the definition of creativity to these cognitive style inventories, a person with innovative style may be more comfortable with heuristic tasks. Whereas a person with an adaptive style may not be as creative because they prefer tasks that are algorithmic. Helson, Roberts et al. (1995) argue, however, that both adaptive and innovative styles can be equally creative (p.1180).

Amabile (1983) explains how creative performance is different from ordinary performance, as follows: "Instead of a dichotomy, there is a continuum ranging from performances marked by reliance on entirely familiar algorithms applied by rote, at the one end, to performances marked by the application of set-breaking heuristics and the exploration of completely new cognitive pathways, at the other end" (p. 372). It appears, from this description, that creative performance is a prerequisite of innovation, and that ordinary performance is closer to adaptive performance.

Although a detailed analysis of the similarities between quality and creativity is not within the scope of this paper, a brief comparison will clarify the definitions of creativity and innovation. Table 1 describes several attribute differences between creativity and innovation; and the associated differences of people, product, or process focus. For example, a

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quality attribute of an individual could include trustworthiness and a quality attribute of the product could include maintainability. Figure 1 depicts the relationship between product attributes typically associated with quality, as well as, the attributes associated with innovative products. The intersection of the graph identifies the common attribute utility, which is sometimes called usability in the research.

Table 1. Creativity and Quality Comparison

	People Attribute (individuals, teams, and organizations)	Product or Process Attribute
Creativity	Creative	Innovative
Quality	Reliable, Hard working Honest-Trustworthy	Reliable, Maintainable, Usable

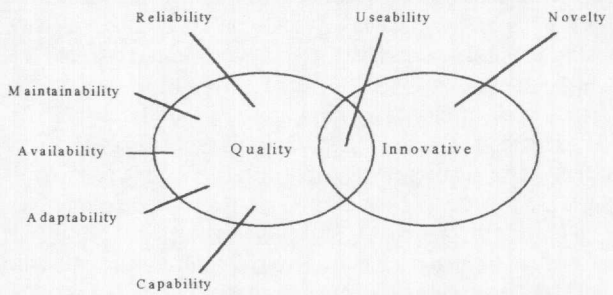

Figure 1. Quality and Innovative Product Attributes

In summary, if creativity is defined as an attribute of an individual, a team, and an organization, then innovation defines an attribute of the resulting product and process. It appears that most authors converge on a definition of innovation that includes: the end results (a new product or new process) of a creative initiative. This definition will be used within this paper.

De Bono (1992) emphasizes an important minor clarification, as he states: "The important thing is to encourage and to reward creative effort. If you wait to reward creative results you will get less effort. If you get lots of effort then you will, in time, get results" (p. 73). With this in mind, this paper will focus on organizational creativity and associated components; and exclude any additional discussions on innovations.

The next section presents an analysis of modern theories and practices associated with creativity.

Creativity Characteristics, Theories and Practices

This section uses the framework proposed by Woodman, Sawyer et al. (1993) that concentrates on organizational creativity as a function of individual creativity, team creativity, and organizational creativity. Table 2 provides a summary of the creativity theories and practices; and the associated characteristics. Each of the major creativity characteristics will be described in greater detail in the following sections.

Table 2. Comparison of Creativity Sources

Creativity source	Theorist	Characteristics	Primary People
Individual	De Bono Ray & Myers Yong	Positive historical factors, Appropriate cognitive style and ability, Compatible personality factors, Knowledge, Motivation, Positive social influences, Positive contextual influences	Individuals
Team	Constantine Couger De Bono Weinberg	Small group size, Encouragement, Communication, Diversity, and Positive organization contextual influences	Members of a team, Direct supervisors
Organization	Amabile Couger Oldham Stacey Woodman	Top Management Commitment, Leadership, Congruence, Freedom and structure balance, Communication, Process and Product balance	Top executives

Individual Creativity Characteristics

Within the study of creativity, the majority of research relates to understanding an individual's creativity. This section synthesizes the work of De Bono, Yong, Couger and others on the characteristics of creative individuals. The following are characteristics of individual creativity:

Positive historical factors - These factors involve past reinforcement history and biographical variables. Woodman, Sawyer et al. (1993) call these antecedent conditions. A positive historical factor, for example, could include past reward and recognition for thinking outside the box.

Appropriate cognitive style and ability - Examples would include divergent thinking and fluency in idea generation. Flexibility would also be associated with cognitive style, as Yong (1994) explains, "Flexibility is the ability to consider a wide variety of rather dissimilar approaches to a solution. To be flexible, one needs to be aware of mental blocks that can lock a person into a fixed way of doing a particular thing in a specific manner" (p. 18). The creativity training techniques concentrate on improving these cognitive skills and enabling paradigm-shift thinking. Amabile (1983) identifies the following creativity relevant skills: 1) breaking perceptual set; 2) breaking cognitive set, or exploring new cognitive pathways; 3) keeping response options open as long as possible; 4) suspending judgment; 5) using "wide" categories; 6) remembering accurately; and 7) breaking out of performance "scripts" (pp. 364-365).

Compatible personality factors - Examples would include self-esteem and locus of control. Rasch and Tosi (1992) describes "locus of control" as "whether people believe that their fate is controlled by external factors or by the people themselves" (p. 399). Oldham and Cummings (1996) emphasize what they call core personal characteristics for creative individuals, as they state: "In general, these studies have demonstrated that a stable set of core personal characteristics, including broad interests, attraction to complexity, intuition, aesthetic sensitivity, toleration of ambiguity, and self-confidence, relate positively and consistently to measures of creative performance across a variety of domains" (p. 608). Yong (1994) emphasizes the importance of self-confidence, independence, and risk-taking, as he states: "After four decades of research, behavioral scientists have concluded that despite their unconventionality and individualism, creative people share a lot of common traits. They tend to be self-confident, independent and are risk-takers. This is not surprising since the creative person must dare to be unconventional in order to break free from the customary ideational constraints that make innovations impossible. In doing so, the creative individual risks putting himself open to criticism, failure and embarrassment" (p. 18). Helson, Roberts et al. (1995) posit: "We have conceptualized a creative person as one who participates in the ongoing construction and revisioning of socially recognized symbol systems, primarily in the arts, sciences, and religion. The personality of such an individual, as we see it, has three components; the resources to engage in symbolic constructions, the motivation to do this, and an identity that integrates the individual within a sustaining environment" (p. 1174).

Relevant knowledge - Obtaining the necessary knowledge is paramount to creative ideas. Amabile (1983) describes irrelevant knowledge

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as domain relevant skills as she states: "This component can be seen as the set of cognitive pathways for solving a given problem or doing a given task...the larger the set, the more numerous the alternatives available for producing something new, for developing a new combination of steps" (p. 363). In addition, Amabile describes the type of knowledge necessary for creativity, as follows: "...knowledge organized according to general principles is of greater utility than specific, narrowly applicable collections of facts. Likewise, performance information organized according to general approaches to problems rather than blind response algorithms should be more likely to contribute to high levels of creativity" (p. 364). This includes experiential learning. With the advent of improved information systems, many new knowledge management systems are being developed to support individual, as well as team, creativity.

Motivation: According to Woodman, Sawyer et al. (1993): "An intrinsic motivational orientation has been postulated by many researchers as a key element in creativity" (p. 300). Oldham and Cummings (1996) also emphasize intrinsic motivation, as they state: "Under these conditions, individuals are free of extraneous concerns and are likely to take risks, to explore new cognitive pathways, and to be playful with ideas and materials. They are likely to stay focused on the internal nature of the task and to work longer on an idea or a problem. Situations that encourage this exploration and persistence should increase the likelihood of creative performance" (pp. 609-610). Yong (1994) emphasizes the intensity and energy level of the creative individuals, as he states: "...creative people can be extremely intense in their endeavors...They exhibit a high level of energy. They are also noted to be adventurous, playful and full of curiosity. They have a strong urge to understand the world about them" (p. 18). Amabile (1983) further explores motivation, as she states: "A person is said to be intrinsically motivated to engage in an activity if such engagement is viewed as an end in itself and not as a means to some extrinsic goal...primarily intrinsic motivation to engage in an activity will enhance creativity, and a primarily extrinsic motivation will undermine it...there is support for the proposition that extrinsic constraints, by decreasing intrinsic task motivation, undermine creativity" (pp. 365-370).

Positive social influences - Examples would include social facilitation and social rewards. According to Woodman, Sawyer et al. (1993): "...social pressures toward conformity may reduce allowable variation, or rigidly adhered-to algorithms for evaluation of possible associations may bias selection" (p. 299).

Positive contextual influences - Examples would include physical environment, task and time constraints, or as De Bono (1992) states: release from "traditional cautions and inhibitions" but also "change of culture in an organization can lead to a valuable output of creativity" (p. 48). The contextual influences most positive to creative cultures appear to be associated with the humanistic theories of management. Argyris (1960) explains the characteristics of a non-humanistic, and non-creative environment, as he states:

> The impact of the [mechanistic] principles ... is to place employees in work situations where: 1) they are provided minimal control over their workaday world; 2) they are expected to be passive, dependent, and subordinate; 3) they are expected to have the frequent use of a few skin-surface shallow abilities, and 4) they are expected to produce under conditions leading to psychological failure. All these characteristics are incongruent to the ones that relatively mature human beings in our culture are postulated to desire. They are much more congruent with the needs of infants in our culture. In effect, therefore, organizations adapt an initial strategy where they are willing to pay wages and provide adequate seniority if mature adults will, for eight hours a day, behave in a less than mature manner (p. 14).

Team Creativity Characteristics

Woodman, Sawyer et al. (1993) define team or group creativity, as follows: "Group creativity is not the simple aggregate of all group members' creativity, although group creativity is clearly a function of the creativity of individuals in the group. In addition, group creativity is influenced by group composition (e.g., diversity), group characteristics (e.g., cohesiveness, group size), and group processes (e.g., problem-solving strategies, social information processes), and contextual influences stemming from the organization" (p. 304). The following are characteristics of team creativity:

Small group size - This not only includes group size, but also group cohesiveness. Couger (1996): "... there are optimal group sizes. Some 33 studies of group size have resulted in a data set that shows that the optimal group size is two persons....Dyads were found to be superior because two individuals can achieve rapport more easily, reaching the level of trust necessary for optimal sharing....Two people can bounce ideas off each other in less threatening, more supportive climate" (p. 175). Also according to Couger (1996): "A group size of five was found to be the next most productive" (p. 175). De Bono (1992), however, supports the belief that six is the ideal number for a creative thinking group (p. 293). This may be slightly related to one of his techniques, the six-hat method, where everyone on the team has a different hat (a different role to play in the creative thought process).

Intergroup encouragement - Amabile, Conti et al. (1996) describe work group encouragement, as follows: "As a few studies have revealed, encouragement of creativity can occur within a work group itself, through diversity in team members' backgrounds, mutual openness to ideas, constructive challenging of ideas, and shared commitment to the project" (p. 1160). Couger (1996) identifies a responsibility of the team in supplying internal encouragement, as he states: "The team also has responsibility for providing an environment that nurtures creativity. If the team is not supportive of creativity, an individual can nevertheless improve his/her creative output, but not to the level that occurs with proper team support" (p. 224).

Effective communication - Watts Humphrey (1997), an expert on managing technical people, emphasizes the importance of communication, as he states: "The essence of good communication is two-way interaction. If managers merely share information with their people, they are just talking, and there is no guarantee that they are understood....Misses in communication, however, can both confuse and mislead. Once a manager miscommunicates, the resulting confusion is often hard to correct" (p. 175). Effective communication is also associated with constructive challenging of ideas, as emphasized by Amabile, Conti et al. (1996): "Constructive challenging of ideas and shared commitment to a project are likely to yield increases in intrinsic motivation, because two of the primary features of intrinsic motivation are a positive sense of challenge in the work and a focus on the work itself" (pp. 1160-1161).

Diversity - Amabile, Conti et al. (1996) stress the importance of diversity, as she states: "Team member diversity and mutual openness to ideas may operate on creativity by exposing individuals to a greater variety of unusual ideas; such exposure has been demonstrated to positively impact creative thinking" (p. 1160). Constantine (1995) supports this view, as he states: "Several decades of research on group dynamics has demonstrated that heterogeneity beats homogeneity almost all the time....Diversity wins, whether it is diversity in personality, in interpersonal style, or in culture or ethnic background" (p. 54).

Group problem solving skills - Effective problem solving is key to a creative group. Woodman, Sawyer et al. (1993) state: "Problem-solving

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groups can be made more effective by training individuals in problem-solving skills....Interacting groups composed of persons with above-average problem-solving ability were better able to identify and, thus, to give more weight to higher quality solutions than groups composed of persons with below average ability" (p. 303). These problem-solving skills include a balance of divergent and convergent thinking. Couger (1996) states: "Divergent thinking is synonymous with the terms creative thinking and generative thinking...Convergent thinking is synonymous with the terms critical thinking and evaluative thinking" (p. 101).

Organizational Contextual Influences - Examples would include leadership styles and resource availability. Amabile, Conti et al. (1996) identify the importance of the perception of freedom, as she states: "Several researchers have concluded that creativity is fostered when individuals and teams have relatively high autonomy in the day-to-day conduct of their work and a sense of ownership and control over their own work and their own ideas. Studies of creativity have revealed that individuals produce more creative work when they perceive themselves to have choice in how to go about accomplishing the tasks that they are given" (p. 1161). Amabile, Conti et al. (1996) also identify the importance of supervisory encouragement, as they state: "It is likely that open supervisory interactions and perceived supervisory support operate on creativity largely through the same mechanisms that are associated with fair, supportive evaluation; under these circumstances, people are less likely to experience the fear of negative criticism that can undermine the intrinsic motivation necessary for creativity" (p. 1160).

Organizational Creativity

According to Amabile (1983): "Despite the apparent importance of social and environmental influences on creativity, however, there is virtually no research on the social psychology of creativity; the interaction of social/environmental factors with personality characteristics and cognitive abilities and the effects of such factors on observable creativity" (p. 358). Since 1983, however, there have been a number of research initiatives concerning organizational creativity. One of these studies, Woodman, Sawyer et al. (1993), provides a framework for understanding organizational creativity, that includes the following components: "(a) the creative process, (b) the creative product, (c) the creative person, (d) the creative situation, and (e) the way in which each of these components interacts with the others" (p. 294). The following are characteristics of organizational creativity:

Top Management Commitment - Yong (1994) warns that: "Organizations that neglect to nurture and cultivate creativity in their work place do so to their detriment" (p. 20). De Bono (1992) states: "If it is seen that creativity is a game that is permitted and even valued by top management, then people do start to become more creative. In my experience, when the chief executive in an organization has shown a strong and concrete commitment (not just lip service) to creativity, the culture of the organization can change quite rapidly. Perhaps it is not so much a release from inhibitions but a quick appreciation of new values and a new 'game'" (p. 50). Yong (1994) posits: "Proper management of creativity is crucial for the development of an organization that can rejuvenate itself and implement continuous improvement in its business" (p. 16). Amabile, Conti et al. (1996) provide the following activities associated with organizational encouragement: 1) encouraging risk taking and idea generation; 2) valuing innovation from the highest to the lowest levels of management; 3) fair and supportive evaluation of new ideas; 4) reward and recognition of creativity; and 5) collaborative idea flow across the organization and participative management and decision making (pp. 1159-1160).

Couger (1996) posits: "...to improve the climate for creativity, most organizations must make changes. Although persons can be made aware of their innate creative ability and can learn techniques to more easily use that ability, optimal results do not occur unless their company provides a positive climate for creativity...It is management's responsibility to make sure these factors are in place. If management is not meeting that need, a team can nevertheless improve its creative output but not to the level that occurs with good management support." (p. 224).

Effective Leadership - Effective leadership that fosters and rewards creativity is a key characteristic. Plsek (1998) identifies the leadership challenge, as he states: "Establishing a climate where taking a risk is rewarded is, therefore, one of the main challenges for leaders who desire higher levels of creativity in their organizations" (p.27). Likert and Likert (1976) state: "An essential role of leadership, consequently, is to foster creativity and innovativeness and to encourage imaginative, long-range thinking and planning. By such behavior, leaders can stimulate others to establish the same orientation as a pervasive value and help the organization avoid contentment and stagnation. Excellent, creative organizations resolve conflicts better than do those burdened with complacency." (p. 122). Maslow (1971) also provides a link between creativity and leadership, as he states: "I think the problem of the management of creative personnel is both fantastically difficult and important. I don't quite know what we are going to do with this problem because, in essence, what I am talking about is the lone wolf. The kind of creative people that I've worked with are people who are apt to get ground up in an organization, apt to be afraid of it, and apt generally to work off in a corner or an attic by themselves....This is also a little like trying to reconcile the revolutionary with the stable society because the people that I've studied are essentially revolutionary in the sense of turning their backs on what already exists, and in the sense of being dissatisfied with what is now the case" (pp. 81-82).

Organizational Congruence - An organization must be congruent as it strives to become a creative organization. Woodman, Sawyer et al. (1993) posit: "Organizational culture, as well as other aspects of the organization, may be difficult to change because people who are attracted by the old organization may be resistant to accepting new cognitive styles. When a change is forced, those persons attracted by the old organization may leave because they no longer match the newly accepted cognitive style" (p. 305). Helson, Roberts et al. (1995) emphasize that this congruency must foster a creative focus, as they state: "To appraise the enduringness of creative personality, one needs to keep in mind the support that is being given for the person's creative work by the social environment" (p. 1175). In regards to organizational culture, Weinberg (1997) states: "The entire culture is created--or destroyed--one action, or inaction, or interaction, at a time" (p. 239).

Balance of Freedom and Structure - Yong (1994) emphasizes the importance of a balance of freedom and structure, as he states: "A combination of freedom and structure is necessary for the proper cultivation of creativity in the workplace. While freedom is important for innovation, structure is crucial for productive business" (p. 20).

Open Communication - Open communication and free flow of information throughout the organization is paramount to creativity in an organization. (Yong, 1994, p. 19).

Balance Between Process and Product - Scott (1995) posits that: "Many management problems occur as a result of the clash between employees who operate in the process-oriented mode and managers who must be product-oriented to meet their profit margins" (p. 66).

Major Barriers to Organizational Creativity

What are the barriers to creativity? Table 3 presents a synthesis from the research on blocks or barriers to creativity. Also presented, is a pos-

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sible technique or improvement action to reduce the block or barrier.

Table 3. Blocks to Creativity

Level	Primary Block	Improvement action
Individual	Inaccurate mental models	Personal awareness
	Lack of creativity skills	Creativity training
	Habitual pattern use	Personal awareness
	Narrow objectives	Organizational change
	Excessive workload pressure	Management training
Team members	Lack of creativity skills	Creativity training
	Forced standardization	Improved balance
	Lack of encouragement	Improved leadership
	Lack of diversity	Organizational improvement
	Narrow objectives	Organizational change
Team supervision	Fear of losing control	Organizational change
	Lack of trust	Organizational change
	Narrow objectives	Organizational change
	Lack of people skills	Management training
Organization	Poor climate	Organizational change
	Erroneous assumptions	Organizational learning
	Aversion to risk	Risk Management training
	Complacency	Organizational change
	Management by Objectives	Organizational change

Blocks to Individual Creativity

There are blocks or barriers to individual creativity which have been identified in the research literature. The following are characteristics of these blocks to individual creativity.

Inaccurate mental models. Senge (1990) refers to mental models as deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action" (p. 8). These mental models appear similar to the physiological filters, as Couger (1996) posits: "Our paradigms act as physiological filters--we see the world through our paradigms. This means that any data that exist in the real world that do not fit our paradigm will have a difficult time getting through our filters. The data that do fit our paradigm not only make it through the filter, but are concentrated by the filtering process. Therefore, what we actually perceive is dramatically determined by our paradigms. What may be perfectly visible, perfectly obvious, to persons with one paradigm, may be quite literally invisible to persons with a different paradigm" (pp. 63-64).

Insufficient implementation of tools. De Bono (1992) emphasizes the importance of systematic processes and helpful tools, as he states: "Many of the practitioners in the field deal with creativity from an inspirational point of view. If you get rid of your inhibitions you will be creative. If you learn to use your right brain you will be creative. If you trust your intuition you will be creative. If 'high' you will be creative. The emphasis is placed on altered mental states. From time to time these altered mental states may have a creative effect, but the same effect can be produced in a more reliable and systematic manner using deliberate tools" (p. 7).

Hardening of the brain. De Bono (1992) argues that the brain is not designed to be creative, as he states: "The excellence of the human brain is that it is designed to form patterns from the world around us and then to stick to these patterns. That is how perception works and life would be totally impossible if the brain were to work differently. The purpose of the brain is to enable us to survive and to cope. The purpose of the brain is not to be creative. Cutting across established patterns to produce new ideas is not what the brain is designed to do" (p. 36).

Extrinsic Motivation. Amabile (1983) describes the barrier established with extrinsic motivation, as follows: "Extrinsically motivated behavior can be seen as behavior that is narrowly directed toward achieving the extrinsic goal that has been imposed, whether that goal be attaining a reward or meeting a deadline or achieving the approval of an observer or obtaining a positive evaluation from an expert. For a creative response to be produced, however, it is often necessary to 'step away' temporarily from the perceived goal to direct attention toward seemingly 'incidental' aspects of the task and the environment....The more single-mindedly a goal is pursued, the less likely it may be that alternative solution paths will be explored. In a sense, then, the difference between extrinsic and intrinsic motivation--for the purposes of a conceptualization of creativity--can be seen as the difference between divided and undivided attention to the task itself and task-relevant information. An extrinsic motivation will decrease the probability that the creativity heuristics of exploration, set breaking, and risk taking will be applied. There will be a heavy reliance on response algorithms that already exist within the store or domain-relevant skills" (pp. 371-372). Closely aligned with intrinsic motivation is an individual's sense of purpose. Ray and Myers (1986) emphasize the importance of sense of purpose as they state: "...it seems apparent that solving the problem of purpose is the cornerstone of personal and business creativity" (p. 114).

Lack of problem-solving skills. An individual must be skilled in problem solving. Researchers conclude that these problem-solving skills can be learned (Amabile, 1983). One such technique is the lateral thinking method of De Bono.

Narrowly defined objectives. Narrowly defined objectives are associated with extrinsic motivation rather than intrinsic motivation.

Haste makes waste. According to Couger (1996) a common problem in new system development is that anxiety to get to the solution frequently leads to lack of problem definition and results in "costly rework due to inadequate solutions" (p. 117). In addition to premature solutions, there is also the emphasis on efficiency in task performance. Stacey (1996) stresses the negative effects of efficiency on creativity as the states: "Creativity and efficiency are enemies: the first requires slack resources and the second requires that there be none" (p. 280).

Excessive workload pressure. Amabile, Conti et al. (1996) clarify the issue of workload pressure, they state: "Few studies have produced findings relevant to the question of the effects of pressure on creativity in organizations. The evidence that does exist suggests seemingly paradoxical influences. Some research has found that, although workload pressures that were considered extreme could undermine creativity, some degree of pressure could have a positive influence if it was perceived as arising from the urgent, intellectually challenging nature of the problem itself...excessive workload pressure would be expected to undermine creativity, especially if that time pressure were perceived as imposed externally as a means of control" (p. 1161).

Blocks to Team Creativity

There are also blocks or barriers to team creativity. The following are characteristics of the blocks to team creativity.

Lack of problem-solving skills. Bennis and Biederman (1997), in describing attributes of highly creative groups, state: "People in Great Groups would do what they do even if they didn't get paid for it. And what they inevitably do is sustained problem solving" (p. 128). These creative, problem-solving skills are paramount for group effectiveness. Groups can also be taught a variety of problem solving techniques, for example, the six-hats method of De Bono or the 22-techniques proposed by Couger.

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Forced standardization. Marcinelli (1997) presents a case for balancing standardization, as she states: "Herein lies the challenge of managing individuals who must interpret the needs of the client, envision the end result and find a way to accomplish the task in their own way. Managers must cope with uncertainty at each stage, yet try to implement whatever standardization they can to facilitate current and future project management" (p.100). Bennis and Biederman (1997) stress, however, that "In a truly creative collaboration, work is pleasure, and the only rules and procedures are those that advance the common cause" (p. 8).

Lack of encouragement. According to Marcinelli (1997): "When the overall perceptions of a nurturing work environment are enhanced, the employee is free to concentrate on creative tasks" (p. 101). Also related to encouragement is the importance placed on the project, as Amabile, Conti et al. (1996) posit: "...perceptions of the adequacy of resources may affect people psychologically by leading to beliefs about the intrinsic value of the projects that they have undertaken" (p. 1161). Related to lack of encouragement is the failure of the group to manage anxiety, as Stacey (1996) posits: "The space for creativity in a group is one in which members of the group can hold the paradoxes and ambiguities of their interaction and can jointly reflect on these paradoxes and on their own group processes in order to engage in double-loop learning. The key requirement for dwelling in this space is the ability of a group to bear the accompanying anxiety" (p. 188).

Distractions. In her dissertation research, Marcinelli (1997) found evidence that high-technology employees generally expect leaders to handle or eliminate distractions, problems and external demands on the group (pp. 106-107). These distractions also include poor work environments, as Humphrey (1997) states: "One way managers can improve their organizations" performance is to look for and remove the inhibitors to innovation. Physical facilities, while not of paramount importance, can be a problem. When professionals have inadequate or inconvenient working conditions, they can easily be distracted by annoying details" (p. 185).

Narrowly defined objectives. Narrowly defined team objectives could result in extrinsic motivation rather than intrinsic motivation. In a study to assess the relationship between individual creativity and productivity goals, Shalley (1991) found that creativity was lower when: 1) a difficult productivity goal was established without an associated creativity goal; 2) a do-your-best productivity goals was established without an associated creativity goal, and; 3) no creativity goal was established with associated low personal discretion.

Blocks to Supervisory Facilitation of Creativity

Supervisors can also block creativity. The following are characteristics of the blocks to supervisory facilitation of creativity:

Fear of losing control. The team must have sufficient freedom to be creative. This may be uncomfortable for the supervisor, but as Bennis and Biederman (1997) emphasize: "Members of Great Groups also need autonomy, a sine qua non of creativity. No Great Group was ever micromanage" (p. 214).

Lack of trust. If the supervisor does not trust his or her team, team and individual creativity will be seriously jeopardized, as Humphrey (1997) states: "If managers do not demonstrably respect their people, these people will not trust their managers. Without respect and trust even the most challenging work becomes a chore. To strive to meet the organization's goals, the employees must feel their interests parallel those of their managers. When this mutually trusting relationship is coupled with challenging work, then jobs are truly exciting. Motivational studies show that both the employees' work and trusting relationship with their managers are paramount. If either is lacking, nothing else can compensate" (p. 34).

Narrowly defined objectives. Objectives that are based only on product delivery schedules and costs, but not innovativeness, will decrease creativity (Marcinelli, 1997).

Lack of people skills. Higgins, Qualls et al. (1992) emphasize that management must be aware of emotional obstacles to creativity and especially attempt to manage the proximal causes.

Blocks to Organizational Creativity

There are also blocks or barriers to organizational creativity. The following are characteristics of the blocks to organizational creativity:

Poor organizational climate. Amabile, Conti et al. (1996) describe the following organizational impediments to creativity: "...some research suggests that internal strife, conservatism, and rigid, formal management structures within organizations will impede creativity. Because individuals are likely to perceive each of these factors as controlling, they may lead to increases in individuals' extrinsic motivation, and corresponding decreases in the intrinsic motivation that is necessary for creativity" (p. 1162). Modern approaches for managing organizations (e.g., emphasis on predictability and control) are often diametrically opposed to the successful management of creative and innovative individuals.

Erroneous assumptions. Plsek (1998) states that one of the dilemmas facing leaders who want more creativity is the erroneous assumption that creative thinking requires an atmosphere of frivolity (p. 22).

Aversion to risk. Also according to Plsek (1998), leaders who want more creativity are faced with the dilemma caused by the tension between the need for creative thinking and an organization's affinity or aversion to risk (p. 22). Campbell (1985) stresses the negative consequences of demanding predictability as he states: "If you can't confidently predict success, many organizations will ask you to seek employment elsewhere. Because most management control systems focus on predictable outcomes--Management by Objectives, Planned Results--most innovative people don't feel comfortable working within them so they do move on. The demand for predictable outcomes deprives many companies of unusual outcomes. Innovation is seldom predictable" (p. 90).

Benchmarking with similar industries. There are risks associated with benchmarking with similar industries. According to Provost and Langley (1998): "To search for creative ideas that will excite customers, it is much more fruitful to study practices in other industries and adapt them. An organization seeking to find ways to make better decisions in a short time under pressure might study the processes used by race car teams, basketball coaches, and military field officers" (p. 33).

Management by Objectives - Managing by Objectives tends to stress team convergence and extrinsic motivation. One of Deming's management principles was get rid of Management by Objectives because it reduced quality of products. It also has the potential of reducing the amount of creativity in the team.

Organizational Readiness. Klein and Sorra (1996) identify many challenges associated with an organization not ready to adopt innovations. Constantine (1995) adds: "The real breakthroughs that push technology beyond the edge into unexplored regions, project teams are more likely to succeed by turning to the flexibility of independent action and the full force of individual creativity, unhampered by command-and-control" (p. 65). Quinn (1988) points out the importance of an organization being ready to accept the state of managed chaos. He states: "Innovative companies seem to evolve a sophisticated approach to managed chaos which recognizes the realities of how major technological innovations evolve and harness this process to corporate needs" (p. 136).

Organizational Congruence. McClendon and Weinberg (1996) em-

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phasize the importance of organizational congruence, as they state: "Congruent organizations hold to an ideology that doing well in the marketplace is connected to doing well with employees as well as with customers....Workers in congruent organizations tend to have a long-range view and can usually maneuver as needed to meet the changing needs of clients and customers....When W. Edwards Deming said, 'Drive fear out of the workplace,' we think he was talking about changing the blaming organization to the congruent organization." (pp. 39-40).

Narrow focus on training. Woodman, Sawyer et al. (1993) clarify their concern over creativity training as follows: "Even though we have no quarrel with creativity training per se...we are concerned that much writing about creativity in organizations has a relatively narrow training focus. The field must broaden its focus considerably to understand conditions that encourage and inhibit creative behavior by individuals and groups in the work setting" (p. 306).

Mismanagement of creativity. Yong (1994) emphasizes the responsibilities of management, as he states: "The manager can facilitate the development of originality in himself and his subordinates by encouraging an atmosphere of curiosity....The supervisor must know how to give his subordinates a wide margin for error in order for them to experiment, create and innovate. Without this, their fear of failure will destroy true initiative and stifle creativity. The fear of failure is more intense in larger bureaucratic organizations than smaller entrepreneurial settings" (pp. 17-19). Oldham and Cummings (1996) support Yong's views, as they state: "When supervisors are supportive, they show concern for employees' feelings and needs, encourage them to voice their own concerns, provide positive, chiefly informational feedback, and facilitate employee skill development....In contrast, when supervisors are controlling, they closely monitor employee behavior, make decisions with out employee involvement, provide feedback in a controlling manner, and generally pressure employees to think, feel, or behave in certain ways. Supervision that is experienced as controlling undermines intrinsic motivation and shifts an employee's focus of attention away from work activities and toward external concerns" (p. 611).

McClendon and Weinberg (1996) explain the problems associated with blaming by management, as they state: "Regardless of style, blaming from the top always generates fear, malaise, errors, accidents, and passive-aggressive responses from the bottom....Those on the bottom of any large organization can easily come to feel a sense of dependency on those above them in the hierarchy. When blaming is the primary mode of dealing with people, this dependency is exacerbated. Then, out of a feeling of dependency, people easily generate feelings of hostility. As this hostility grows so does the debilitating experience of shame--that overly critical judge that lies latent in all humans." (p. 38).

Framework for Organizational Creativity

This section presents a framework for facilitating the creativity of an organization, with special emphasis on software development organizations. Why software development? Quinn, Baruch et al. (1996) posit that: "Software is and will be at the core of most innovation during the next several decades. The World Wide Web has already stirred up imaginative possibilities for a plethora of new markets, products, services, arts, and information potentials--all software-based. These will grow exponentially as more and more minds interconnect to utilize them. But startling as these prospects are, they provide only glimpses of the many opportunities that software innovation presents...effective software management has now become the key to effective innovation for any company or institution. Innovators who recognize this fact will have a genuine competitive advantage. Managers who ignore this caveat do so at their companies' peril" (p. 24). From the perspective of a project manager, the following is a 10-point framework for better managing creativity within a software development project.

1. During project planning, assign small teams (2-6 people) to work on challenging portions of the project. Emphasize the importance of a creative solution. Emphasize the importance of building a product that they can feel proud delivering. First, small teams have theoretical support for increasing creative output. Second, pride of workmanship is another intrinsic motivator.
2. Facilitate a congruent environment. Manage risk areas and encourage exploration of optimum solutions. Adjust schedule, effort, and scope accordingly. In addition to building trust within the team and building trust with the team supervision, the search for optimum solutions will incorporate divergent, as well as, convergent thinking. Trust that your team will strive for the best solutions. As a manager, strive for congruency. McClendon and Weinberg (1996) summarize this important point, as they state: "Congruent executives know that their principal job is developing their organization's capability, not just pushing the same old shoddy products and services out the door. They involve themselves seriously in organizational improvement efforts while simultaneously involving others in the organization to ground these efforts in real-life, practical operational input and decision making. They know that synergy is needed for organizational development, and that synergy comes from high-quality connections among people--regardless of level" (p. 38). Weinberg (1997) posits: "In the end, though, it is the character and personality failures--the incongruence--of management that are the biggest cause of software failures, and these must be worked on through ongoing personal development" (p. 211). A manager must also keep in touch with developers' perceptions and act accordingly. Goldstein and Rockart (1984) found that individual leadership characteristics are correlated with software developers' perceptions of job satisfaction. (Rasch and Tosi, 1992, p. 395).
3. Tolerate ambiguity and don't force convergence. The research emphasizes not to force convergence too early. The project manager must manage the associated anxiety within the group (and not create more anxiety by forcing convergence).
4. Show incremental progress by conducting demonstrations for internal partners and external stakeholders. This has theoretical support in that the demonstrations will increase intrinsic motivation. The demonstrations will also support early user feedback and support ongoing improvements in product features.
5. Explore new technologies before incorporating in a real project. Don't be a victim of the silver bullet syndrome. The research of Marcinelli (1997) revealed that team members are looking for supervisors to manage obstacles. New, unproven technologies may burden of the team.
6. Don't change too many big things at once. For example, if the team is already dealing with a new development environment, don't change all the development processes. Too many changes at one time adds to the burden of the team and will have a similar effect as obstacles (Marcinelli, 1997).
7. Get the best people on your team, and encourage their creativity! Boehm (1981) in his classical work, *Software Engineering Economics*, sites a study by Grant and Sackman which revealed a 26:1 ratio of productivity between the best software developers and the worst developers on a team (p. 668). Humphrey (1997) emphasizes that once you form the team, let the team define goals, as he states: "Although managers should set overall direction, people should define their own goals with measurable steps and detailed plans" (p. 268).

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8. Don't re-invent the wheel. Emphasize communication with other team members and other teams within the organization (and outside the organization). Communication has been identified as a key contributor to creativity. (Amabile, Conti et al., 1996, p. 1160).
9. Invest in learning, not just creativity techniques, but domain-relevant skills and productive work styles (Amabile, 1983, p. 373). Also invest in knowledge management technologies. Acquiring knowledge and distributing knowledge throughout the organization is key to organizational creativity.
10. Emphasize having fun! Incorporating a sense of work and play has been identified in the research as a source of creative energy (Amabile, 1983. p. 362). As Campbell (1985) posits: "An organization that cannot tolerate playfulness will encourage apathy, inertness, a feeling of dullness" (p. 97).

In summary, the project manager is a key contributor to the team's creativity. According to Boehm (1981): "Poor management can increase software costs more rapidly than any other factor" (p. 486). These additional costs are often associated with delays in development. These delays may be the result of poorly managing the creative software professionals. Weinberg (1997) provides one simple rule for project managers: "Be an example of what you want others to be" (p. 81). Humphrey (1997), after nearly 50 years of managing technical people, summarizes the importance of being more of a leader than a manager as he states: "The principal obligation of leadership is to both lead your people and learn from them. Observe them and think about their needs. Constantly strive to improve the way you lead and concentrate on being more of a coach and leader than a manager....When people are motivated and properly lead, they will generally manage themselves. Your job is to manage yourself so you will be a truly superior leader" (p. 317).

Conclusion

This paper provided an in depth review of creativity from the viewpoint of the individual, the team, and the organization. Characteristics, theories, and associated practices were compared and contrasted within each of these views. In addition, barriers to organizational creativity were discussed. This article also proposed a framework for better managing the creative individual, team, and organization.

Continuing with the theme from the first section, a balance may need to be strived for. In the words of Scott (1995): "It is clear that creative freedom for employees is an integral part of successful companies. [Companies] must adapt, within reason, to the creative employee. Such compromise is not 'giving in' to artistic whim but is, rather, a rational business decision. Creative employees, however, cannot ignore the business concerns of management. The creative process cannot be totally free-form and non-structured. In an organizational setting, one person does not generally struggle alone to develop a concept. A team must work within constraints of time and money" (p. 68).

It is important for modern organizations to understand the creative process and appreciate the creative person. This knowledge will then encourage a creative work climate and ideally result in innovative breakthroughs for the organization.

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