

# Chapter 8 Organizational Creativity

## A Systems Approach

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### Introduction

Organizational creativity has been defined as “the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system” (Woodman, Sawyer, & Griffin, 1993, p. 293). The creative act is sufficiently complex when carried out by an individual alone, such as the artist, photographer, writer, and so on; imagine the heightened amount of dynamism reached when individuals attempt to create within organizational systems. This chapter explores some of the fundamental factors that influence the manifestation of creativity in the workplace. We take a systems approach in that we endeavor to understand the complex whole as it is formed and influenced by individual components. We begin by discussing the reasons why there has been a burgeoning interest in organizational creativity. The remainder of the chapter uses a systems model as a framework to review literature relevant to organizational creativity.

### Why Organizational Creativity Is Hot

In his 1975 article “The creative organization,” Hitt observed that “although voluminous research exists in the field of creativity as it relates to the individual, little has been done relative to organizational creativity and its necessity” (p. 283). How things have changed! There are now numerous journal articles on the topic of organizational creativity. Indeed, there is a refereed journal dedicated to this very topic. Established in the early 1990s, the aim of the *Creativity and Innovation Management* journal is to bridge “the gap between the theory and practice of organizing imagination and innovation.” Commensurate with the growth in journal publications, there also has been an increase in books on organizational creativity authored by those in university centers (i.e., Bilton, 2007; Davis & Scase, 2001; DeGraff & Lawrence, 2002; Hargadon, 2003; Thompson & Choi, 2005; Zhou & Shalley, 2008).

Why has there been an increased interest in organizational creativity? There are at least two main trends that appear to have fostered growth in this area of creativity research. One trend responds to the need for organizations to adapt quickly to change; the other trend reflects a concern for innovation. Although interconnected, we briefly discuss each trend in turn.

There is no escaping the fact that we live in an ever-changing world and that large-scale change occurs at an ever-faster pace. This is exemplified by the fact that more than half of the major, life-altering, technological and social innovations introduced to the world came into being in the past 200 years (Albery & Yule, 1989; Henry, 2001; Makridakis, 1989). Before the 1800s it would have been possible, indeed probable, that many generations could live without experiencing the impact of a single significant technological or social invention. In contrast, a person born in the early 1960s would have already experienced the impact of civil rights, space exploration, organ transplants, personal computers, mobile phones, the Internet, cloning, genetic engineering, e-mail, and much more.

Organizations and their members have not escaped the impact of transformative change. According to Hitt (1975), organizations exist to provide solutions to society's needs and problems. As society evolves at a breakneck pace, organizations are forced to respond quickly; those incapable of change will quickly find themselves replaced by organizations that are more responsive. As Hitt (1975) observed, “In order to avoid

extinction, organizations must change and *adapt* to changes in order to remain viable. To do so requires utilization of all available resources, especially the most creative – the human resource” (p. 284). Organizations do not adapt to change; rather it is the people within organizations who are required to change. Therefore, it is not surprising that a number of studies and reports have identified creative thinking and creative problem solving as fundamental workplace skills. One of the earliest studies to do so took place in the 1980s (Carnevale, Gainer, & Meltzer, 1990). This three-year-long national study sought to identify the skills necessary for success in the workplace. Analysis of the data yielded by a cross-industry sample of organizations led to the identification of seven distinct skill sets. One of the skill sets, labeled “adaptability,” included two specific skills related to creativity – creative thinking and problem solving. Similarly, a U.S. Labor Department report focusing on the skills essential for workers to be productive in the new millennium included the following thinking skills: thinking creatively, making decisions, solving problems, knowing how to learn, and reasoning (SCANS Commission, 1991).

The call for creative thinking in the workplace has continued. A group of leaders from public and private organizations, such as American Society for Curriculum Development, Dell, Educational Testing Service, Microsoft, and Verizon, published a report in 2008 entitled *21st Century Skills, Education & Competitiveness* (Partnership for 21st Century Skills, 2008). As with previous studies and reports, this more recent list of work skills once again highlighted the central role creativity plays in today's organizations. The specific creativity-related skills articulated in this report were solving complex, multidisciplinary, open-ended problems; creativity and entrepreneurial thinking; and making innovative use of knowledge, information, and opportunities. Why are creativity skills so highly touted in today's organizations? As noted earlier, in order to survive, organizations must provide solutions to society's changing needs, and the increased pace of change places a premium on employees' creativity skills. No longer do employees spend their entire careers dedicated to the refinement and elaboration of a single product or service. There has been a dramatic decrease in product life cycles. For instance, Hunter and Schmidt (1996) reported that manufactured products are subject to fundamental redesign every 5 to 10 years. In high-tech industries, this time line shrinks to every 6 to 12 months. This observation led Williams and Yang (1999) to conclude that “today, workers must adapt quickly as they switch from performing one specialized task to performing another equally specialized task” (p. 375). It would seem generally accepted that for organizations to adapt, they must have employees who are flexible, adaptive, imaginative, and able to tolerate ambiguity – in short, they must be creative.

Another major trend that has fostered a burgeoning interest in organizational creativity, especially among those in the private sector, has been a desire to become more innovative. It is now widely argued that to remain competitive, organizations must not only adapt to change but also drive change through innovative business practices, processes, products, and services. Apple, Google, Toyota, General Electric, Microsoft, Pfizer, Disney, SONY, and other leading companies understand that their bottom-line success relies on an ability to innovate. Janzen (2000) suggested that “after the age of efficiency in the 1950s and 1960s, quality in the 1970s and 1980s, and flexibility in the 1980s and 1990s, we now live in the age of innovation” (p. 3). As clear evidence for this focus on innovation, a global survey of 2,468 senior executives carried out by the Boston Consulting Group revealed that 66% of the respondents ranked innovation among the top three strategic priorities for their companies (Andrew, Sirkin, Haanæs, & Michael, 2007). Similarly, Vardis and Selden (2008) reported 55% of the 513 executive level officers they surveyed identified innovation as one of their top three current strategic priorities.

Schumpeter (1934) provided one of the first systematic definitions of innovation. In his view, innovation was the successful commercialization of new combinations, such as new materials and components, the introduction of new processes, the development of new markets, and the creation of new organizational forms. A contemporary description of innovation was extracted from IBM's in-depth interviews of 765 chief executive

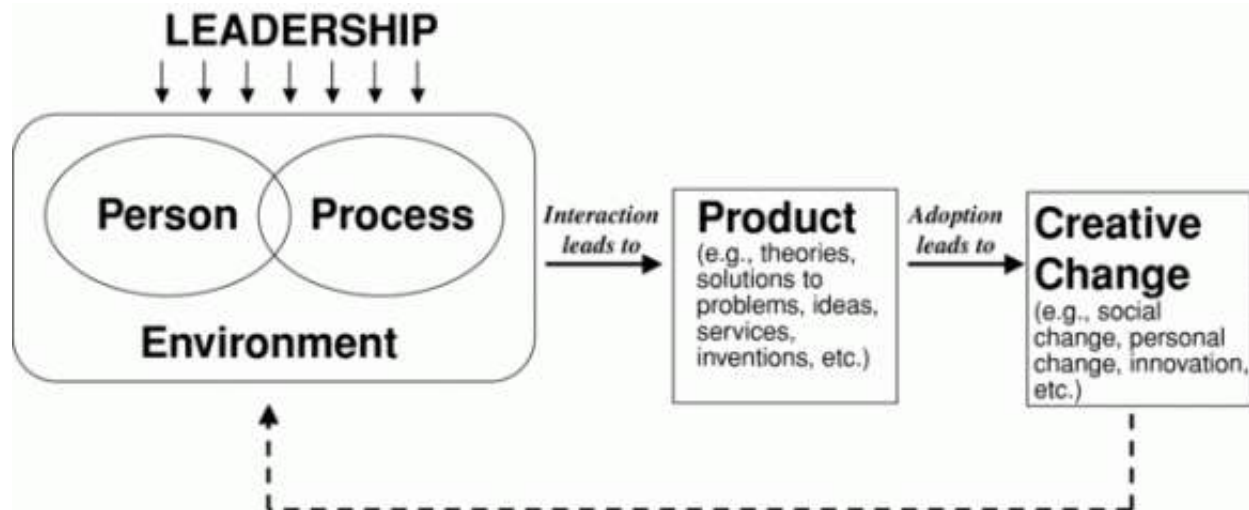
officers (IBM Global CEO Study, 2006). These executives outlined three discrete forms of innovation: business model innovation (i.e., new structures or financial models); operational innovation (i.e., new ideas that improve the effectiveness and efficiency of processes and functions); and product/service/market innovation (i.e., new products, services or “go-to-market” activities). Many now make the case that innovation, in whatever form, does not occur without creativity. For example, Amabile, Burnside, and Gyskiewicz (1999) suggested that “creativity is the crucial ‘front-end’ of the innovation process; before innovation can happen, the creative ideas must be generated by individuals and teams so that they can be successfully implemented” (p. 1). Taking a broader approach, Rickards (1996) suggested that creativity is required throughout the entire innovation process. He specifically noted that

the linear model mind-set always results in the assumption that creativity “exists” at the front end of a two-stage idea generation and implementation innovation process. This article makes the case for a long-needed break with this assumption. In the new paradigm, ideas and actions occur and interact as long as innovation is being pursued. Creativity continues as long as action continues. This is not just desired, it is necessary for as long as the innovation processes continue in a competitive environment in the absence of perfect knowledge about outcomes of actions.

(p. 24)

### The Connection between Creativity and Innovation: Some Empirical Evidence

It is one thing to suggest that creativity is theoretically linked to innovation, and quite another to demonstrate empirically that creativity indeed spawns innovation. A small number of studies have endeavored to demonstrate the practical link between organizational creativity and innovation. Perhaps the earliest study to undertake this question was carried out by Blau and McKinley (1979). In this study, the researchers examined, among other variables, whether the work motif, that is, the main design ideas, pursued by an architectural firm predicted the extent to which the firm's work was objectively perceived as being innovative (e.g., industry awards for innovation). Results indicated that work motif was a significant predictor of innovation awards; in



**Figure 8.1.** Creativity: A Systems Model

particular, firms whose design ideas challenged the constraints outlined by their clients generated more innovative architectural designs. Moreover, Blau and McKinley discovered that the most innovative firms “rarely standardize design concepts from project to project, and attempt continually to evolve new and creative solutions to particular problems” (pp. 216–217).

Bharadwaj and Menon (2000) carried out a study in which they examined the specific kinds of creativity found in organizations and their impact on innovation. These researchers broke creativity down into two specific

areas, *individual creativity mechanisms*, defined as activities individual employees pursued on their own to develop personal creativity, and *organizational creativity mechanisms*, or the practices and formal procedures adopted by organizations to promote creative behavior. These researchers then compared the amount of innovation reported across organizations. Bharadwaj and Menon's findings showed that the highest levels of innovation, as reported by employees, were found among those organizations that were identified as having high amounts of both individual and organizational creativity mechanisms. Although Bharadwaj and Menon concluded that both types of creativity contribute to innovation, they suggested that “organizational creativity mechanisms seem to have a stronger association with innovation performance” (p. 430).

Where Bharadwaj and Menon (2000) relied on employees' perception of innovative performance, Soo, Devinney, Midgley, and Deering (2002) ranked some 317 firms on innovation and then compared the variables that contributed to innovation, as well as the financial benefits associated with innovation. An analysis across these organizations showed that the most innovative firms were those that were most active in using creativity to generate new knowledge. Specifically, Soo et al. concluded that “creativity in problem solving is the main driver of new knowledge creation and innovation” (p. 145). These researchers also examined the benefits of innovation and found that the most innovative firms enjoyed significantly greater market share and return on assets. These findings support the important role creativity plays in fostering innovation and the tangible benefits organizations derive from innovation.

### Models of Organizational Creativity

At the very beginning of this chapter we offered a passing comment about the complex nature of organizational creativity. Figure 8.1 presents a model useful in understanding the nature of organizational creativity. Originally offered by Puccio, Murdock, and Mance (2007), we believe the *creative change model*, which utilizes a systems approach, provides a useful framework for reviewing the sets of variables related to organizational creativity. Relating this model to organizations, innovation comes about as the result of the interaction among people, the processes they engage in, and the environment in which they work. The *person* facet in this model refers to individual skills, background, experience, personality, knowledge, motivation, and so forth. *Process* relates to the stages of thought people engage in when working alone or with others to creatively address predicaments and opportunities at work. The *environment* relates both to the psychological and physical setting in which a person works. Puccio et al. (2007) suggested that it is the interplay among these variables that leads to the formation of an intangible or tangible product (i.e., solution to a problem, expression of a new idea, development of a new service, an original product concept, an invention, etc.). Not until the product of creative thinking has been adopted is creative effort fully realized – change has been adopted, at least temporarily. When adopted internally, these creative changes can lead to cost reduction, improved policies or procedures, new business models, and so forth. Products with an external focus result in a change in the marketplace, such as the successful introduction of an innovative product or service. This is an iterative model, as the adoption of an internal or external change has a subsequent impact on the organization and thus potentially influences people, processes, and the environment in that organization.

The literature review found in the remainder of this chapter is organized around this model. We selected this model because it subsumes the oft-referred to four fundamental aspects of creativity, namely, person, process, product, and environment (see Brown, 1989; MacKinnon, 1978; Rhodes, 1961; Stein, 1968), which also appear in many organizational creativity models (see Schoenfeldt & Jansen, 1997). To these core elements of creativity we add leadership. Recent literature has especially emphasized the impact leaders have on group and organizational creativity (e.g., Amabile, Schatzel, Moneta, & Kramer, 2004; Gumusluoglu & Ilsev, 2009; Redmond, Mumford, & Teach, 1993; Sosik, 1997; Sternberg, 2003), and in their review of various organizational creativity theories, Schoenfeldt and Jansen (1997) comment on the need to include leadership in



interactionist models of organizational creativity. The remainder of this chapter explores the research literature related to the main elements in this model that interact to yield a creative product or outcome within the workplace, specifically person, process, environment, and leadership.

## Person

Perhaps the area that has received the greatest attention within the field of creativity studies has been the examination of the qualities, skills, traits, and other attributes that distinguish highly creative individuals from their less creative counterparts. Many of the pioneering creativity researchers, such as MacKinnon (1962), Torrance (1974), Barron (1969), and Guilford (1970), dedicated their research to the distillation of those factors that set creative people apart. It is not our intention to summarize the extensive literature available on the creative person; instead, we focus on the specific factors that predispose someone to be successfully creative within the organizational context. Here Amabile's (1983a, 1983b, 1988) research stands out.

Amabile has carried out a series of investigations that have examined the role individual creativity plays with respect to organizational creativity. Amabile (1988) could not have been clearer about the crucial nature of employees' creativity and its relationship to innovation when she summarized some of her early research:

The entire process of individual creativity must be considered as a crucial element in the process of organizational innovation. . . It is individual creativity that provides the raw material for organizational innovation and, therefore, individual creativity must be central to the organizational model.

(p. 150)

This statement reinforces the position that organizational innovation does not happen without the emergence of creativity at an individual level. To that end, Amabile interviewed employees from a variety of work settings to unearth the individual factors that contributed to creative accomplishment in the workplace (Amabile, 1988; Amabile & Gyskiewicz, 1988). The following list summarizes the qualities associated with individual creativity: various personality traits (e.g., persistence, curiosity, and energy); self-motivation; special cognitive abilities; risk-orientation; expertise in the area; qualities of the group; diverse experience; social skill; brilliance; and naiveté. Positive affect can now be added to this list of individual factors that promote creativity. A recent study by Amabile, Barsade, Mueller, and Staw (2005) found a simple-linear relationship between positive mood and peer-rated creativity.

This investigation, in conjunction with other studies carried out by Amabile (1987), led to the formulation of a componential model of individual creativity. The model comprises three core features: domain-relevant skills, creativity-relevant skills, and intrinsic task motivation. To create, an individual must understand his or her discipline, job, or field. Domain-relevant skills refer to knowledge, technical skills, and special talents associated with one's area of work. Domain-relevant skills are necessary but not sufficient for creativity to occur. To produce work that is original, individuals must also possess creativity-relevant skills, such as suspending judgment, self-discipline, perseverance, and nonconformity. Finally, to achieve creative outcomes the employee must be highly motivated. As Amabile (1988) noted, "No amount of skill in the domain or in the methods of creative thinking can compensate for a lack of appropriate motivation to perform an activity" (p. 133). Motivation toward a task can be sorted into three categories: no motivation, an intrinsic orientation (i.e., pursuing a task for its own sake), and an extrinsic orientation (i.e., focusing on reasons external to the task, such as rewards, expected evaluation, and competition). In general, individuals who are engaged in a task for intrinsic reasons are more likely to generate creative outcomes, whereas an extrinsic focus tends to undermine creativity. Dewett's (2007) recent study helped provide insight into the motivation-creativity relationship in the workplace. Dewett's research demonstrated that increased levels of intrinsic motivation among research and development (R&D) personnel enhanced risk taking and experimentation, which in turn positively impacted individual

creativity. It should be noted that over time Amabile has revised her thoughts about the deleterious effects of extrinsic motivation. Under certain conditions extrinsic rewards can serve to accentuate intrinsic motivation (see Amabile, 1993; Hennessey & Amabile, 1998).

Chuang (2007) tested the applicability of Amabile's model with some of the most innovative companies in Taiwan. Twelve high-level managers involved directly in innovation efforts participated in in-depth interviews. These companies included Toyota, Fubon Bank, and Tong-yi Starbucks. According to Chuang, the analysis revealed, as predicted in Amabile's model, that individual factors, such as employee creativity and mindset, were directly related to organizational innovation. Additionally, Chuang found that the inclusion of organizational (i.e., organizational resources, culture and structure) and environmental factors (i.e., customers, technology, competitors, etc.) strengthened Amabile's model. As Chuang suggested, "Individual, organizational, and environmental factors mutually complement and interact with one another; they affect the organizational innovation process" (p. 886). These findings support the contention, as outlined in this chapter, that models of organizational creativity must take a systems approach and should consider the interaction among the fundamental facets of individuals, the surrounding environment, and the stages of the creative process. Ford (1995) put forward a similar argument, stating that he believes "this love affair with creators has led researcher [*sic*] to focus too narrowly on characteristics of individuals that lead them to commit creative acts" (p. 21). Based on this assertion, Ford proposed that the creative act could be likened to a crime. That is, creativity involves motive, means, and opportunity. To underscore the importance of the latter variable, Ford noted that a positive work environment can even serve to draw out creativity among those who would not ordinarily pursue creative acts. Amabile's own research acknowledges the crucial influence the work environment has on employee creativity (Amabile et al., 1999; Amabile & Gryskiewicz, 1988). The next section reviews some of the literature that has delineated the aspects of environment that are conducive to creativity in the workplace.

## The Creative Work Environment

Over the years, research in the field of creativity has transitioned from a fairly narrow focus on creativity as an individual quality to a concern for the impact of the environment on creative behavior. MacKinnon (1978) referred to this area of inquiry as the "creative situation" and described the purpose of this line of research as the identification of "those characteristics of the life circumstances and of the social, cultural, and work milieu that facilitate or inhibit the appearance of creative thought and action" (p. 52). Since early efforts to explore creativity in organizational contexts, researchers have sought to understand how factors associated with the work environment affect employee creativity (Abbey & Dickson, 1983; Amabile & Gryskiewicz, 1988; Ekvall, 1983; Rickards & Bessant, 1980; Siegel & Kaemmerer, 1978). These efforts have culminated in lists of attributes of the work environment that are believed to have a profound influence on employee creativity. Table 8.1 summarizes some of the dimensions determined to be apposite to a creative work environment. In some cases, these lists correspond directly to variables included in well-established and widely used measures of the work environment, most notably Amabile's KEYS (Amabile et al., 1999), Ekvall's Creative Climate Questionnaire (Ekvall, 1996), and Anderson and West's Team Climate Inventory (1998).

*Work environment* is a broad, all-encompassing term. As scholars have closely examined conditions found in the work environment, more specific constructs have emerged that are subsumed under this general, catchall category. We review some of the constructs that have been related specifically to the work environment; we progress from broad to more concrete constructs. We begin our review with national culture.

### National Culture

National culture is defined as the traditions, values, symbols, heroes, and rituals that shape behavior and cultivate desired perceptions of the world (Adler, 2002). Hofstede (2001) stated that "culture can be defined as the interactive aggregate of common characteristics that influence a human group's response to its environment" (p.

10). Rudowicz (2003) argued that sociocultural systems cannot be separated from creative output. Ng (2001) provided a detailed description of how Western and Eastern cultures have differential effects on individuals' psychological make-up and, as a consequence, determine how easy or difficult it is for individuals to be creative within their native culture. According to Ng, Eastern cultures emphasize control by the environment (i.e., conformity, harmony, etc.), whereas Western cultures focus more on autonomy and individuality. As a result, Ng suggested that Asians are more likely to develop a psychological make-up that includes such qualities as cautiousness, self-criticism, and conservative values, which makes it more challenging to engage in creative behavior.

With increased globalization, more and more organizations are crossing cultural boundaries. Consider German automaker Daimler's purchase of Chrysler, or more recently, the Belgian company InBev's acquisition of Anheuser-Busch. These expansions bring together different cultures, which may give rise to conflict, especially if attempts

**Table 8.1:** Comparison of Dimensions Deemed To Be Important to the Creative Environment

Eksell & Tangeberg-Anderson (1985)	Richards & Bessant (1980)	Siegel & Kaemmerer (1978)	Amabile, Burnside, & Grysblesicz (1990)	VanGundy (1987)	Basadur (1987)	Cabra & Jomah (2006)	Anderson & West (1998)	Seriano de Almeida & Bruno-Faria (1997)
Challenge Support for Ideas Dynamism Playfulness Debate Conflict Trust Freedom Pressure of Work Achievement Risk-taking	Management Style Communication Reward System	Support for Creativity Tolerance of Differences Personal Commitment	STIMULANTS: Organizational Encouragement Supervisory Encouragement Work Group Supports Sufficient Resources Challenging Work Freedom OBSTACLES: Organizational Impediments Workload Pressure CRITERION SCALES: Creativity Productivity	Autonomy Performance Reward Dependency Risk-taking Support for Creativity Personal Commitment Top Management Support High Responsibility for Initiating Ideas Job Security Moderate Degree of Ambiguity	BARRIERS: Limited or Inadequate Funds Upward Communication Inadequate Environment Inadequate Contact with Technical Activities Organizational Structure Lack of Technical Critique Low Risk-taking Lack of Creative Processes and Training	Resources Trust Responsiveness Leadership Style Freedom Synergy Dynamism Idea Time Self Confidence Building Support Organized Creativity Influence Management Norms Belonging Sense of Equity Response to Social Political Cultural Conditions Envy/Jealousy	Vision Participative Safety Task Orientation Support for Innovation	STIMULANTS: Challenges Colleagues' Support Freedom & Autonomy Organizational Structure Organization Support Physical Environment Salaries & Benefits Support from the Boss Technological & Material Resources Training OBSTACLES: Boss Characteristics Lack of Equipments & Other Material Resources Lack of Training Organization Culture Organization Structure Personal Relationships Physical Environment Political & Administrative Influences Salaries & Benefits Task Characteristics Volume of Tasks

are not made to grasp and address the integration of different norms and traditions (Lubart, 1999; Rapaille, 2001; Westwood & Low, 2003). Such differences are likely to relate to dissimilar approaches, perceptions, and values as related to creativity. For example, Mostafa and El-Masry's (2008) study of 125 future marketing managers illustrated how Egyptian and British managers differed in their attitudes about organizational barriers to creativity. A 17-item Barriers to Creativity measure was used to examine differences in perceived obstacles to organizational creativity between the two populations. The barriers measured by these items included such factors as risk aversion, fear of failure, time pressure, and management rejection of suggestions. The overall results revealed significant differences on 16 of the 17 items. Mostafa and El-Masry provided descriptions of how some of the underlying cultural differences, especially the individualistic nature of Western cultures versus the collectivistic orientation found in Egyptian society, might explain their findings. Given these differences, these authors suggested that management practices with respect to creativity must vary according to the culture. Where freedom, self-directed decision making, and an overall focus on the outcome are beneficial in Western cultures, the high power distance of Arab cultures might require managers to provide more direction, particularly in regard to how a team approaches a task and the strategies used to achieve the desired outcome.

A majority of the research into the conditions of work environments conducive to creativity has been carried out in organizations in North America and Europe. Cabra, Talbot, and Joniak (2005) undertook a study to

explore the creative work environment in Colombian organizations. These researchers did not presume that previously identified dimensions would be relevant to the Colombian employees' experience and therefore took a qualitative approach, thus allowing the most pertinent factors to emerge. Their results revealed environmental factors in keeping with past research, such as Idea Time, Freedom, and Trust. However, they discovered a number of dimensions that had not been identified in previous research, such as Envy/Jealousy, Financial Support (a subscale under the general heading Support), and Influence Management Norms. With respect to Financial Support, Cabra, Talbot, and Joniak discovered that material incentives in Colombian organizations brought about innovation, suggesting that extrinsic motivation can propel employee creativity when unmet basic needs weigh heavily on an organizational member's mind.

It is generally accepted that work environments that feature autocratic leadership styles will stifle ideas and creativity (Miller, 1988). In contrast, in their qualitative study Cabra, Talbot, and Joniak (2005) found that some interviewees perceived directive leadership behaviors as being helpful to workplace creativity so long as the leader was respectful and benevolent. Hofstede (2001) reported that those in collectivistic societies, such as Colombia, are expected to sacrifice their personal goals for the sake of group goals, and thus a more directive style of leadership is embraced.

In their study of 1,228 individuals in 30 countries, Shane, Venkataraman, and MacMillan (1995) determined that those who preferred avoiding uncertainty were more likely to desire idea champions to aid them in navigating ideas through the organization; idea champions are typically savvy at maneuvering ideas through a firm's political process. Shane et al. found similar results when they examined additional cultural values, namely, high power distance and collectivism. Organizations in countries that valued a greater distance between those who wield power and those who do not favored the use of idea champions, as was the case for those employees in collectivistic societies.

The few studies mentioned here have important implications concerning cross-cultural deployment of creativity research, models, and concepts. Westwood and Low (2003) identified three problems associated with the application of creativity concepts across cultures. One problem concerns the tendency to force universalistic interpretations of creative processes, structures, and functions. Second is the tendency to laud one approach to creativity and innovation in a particular culture, while devaluing a perspective on creativity that already exists in another. The third problem relates to fallaciously bolstering differences through simplified explanatory models. In their review and critique of cross-cultural issues pertinent to creativity, Westwood and Low concluded that "culture can and does impact on creative and innovation processes, but the relationship should not be considered universalistically, simplistically or unreflexively" (p. 235).

### **External Environment**

Isaksen, Lauer, Ekvall, and Britz (2000–2001) defined the external environment as "any condition or situation that is outside the organization itself (e.g., the market, global financial conditions, government, the larger political and social system, technological and scientific developments) but can exert an influence on the organization's performance" (p. 173). Conversely, organizations generally exert little influence in regard to conditions found in the external environment. Unlike cultural values and traditions, which are developed over long periods of time and are not easily changed, the external environment is more temporal. Political and social conditions can emerge and go away, such as in the case of changes in governmental leadership or an economic downturn.

In an extensive study of cities throughout the United States, Florida (2002) examined factors that contributed to a municipality's ability to attract creative talent; suggestive in his findings were social and political dynamics that fall outside the control of organizations yet do much to ensure a ready pool of highly creative workers. According to Florida (2002), creative people "prefer places that are diverse, tolerant and open to new ideas" (p. 223). Additionally, Florida's research into the "creative class" showed, among other variables, that such workers desire



places that afford a socially rich lifestyle, offer structured opportunities for social interaction, provide authentic experiences, and are tolerant of diverse ethnic groups, ages, and sexual orientations.

On a wider scope, other studies have suggested that a country's governmental policies, processes, and decisions can have deleterious effects on organizational creativity. De Soto (2000), for example, reported on the extensive challenges to establishing a legal business in Latin America. He examined the process steps required to register a garment shop in Lima, Peru, which, after following all prerequisites, took 289 days, with an average of 6 hours of effort per day. In Hungary, for example, Inzelt (2003) maintained that policymakers created practices that hampered Hungary's transition process to a postsocialist economy. Hungarian banks, for instance, placed too many conditions on loans taken out for industrial R&D and created funding mechanisms that undermined innovation.

As for the United States, Kao (2007) has argued that there is a need for a national innovation policy to improve our innovation process, a process that currently is trumped by bureaucracy and resources that are siphoned elsewhere to more reactionary types of initiatives. Estrin (2009), former chief technology officer at Cisco Systems, provided a cogent argument for the important role government plays in igniting and sustaining creativity and innovation in organizations:

Our nation's leaders decisively influence the health of the country's Innovation Ecosystem. Politicians influence day-to-day business processes through laws and regulations. They control funding and policy that directly affect our educational system and the research community. . . . Federal and state policies have a significant impact on the Ecosystem. Legislation, SEC regulations, litigation rules, healthcare requirements, and tax incentives all affect the ability of businesses to innovative effectively.

(pp. 49–50)

South Korea provides a good example of a country that has enacted a series of policy measures to integrate relationships among academia, industry, and the public research sector. Its government has further refined legal and institutional conditions to supplement R&D efforts, and South Korea is now one of the largest investors in R&D worldwide (Chung, 2003). For further information on ways in which countries can encourage innovation, see Forbes and Wield (2002), Edquist and Hommen (2008), and Kao (2007).

### **Organizational Culture**

As in national culture, organizations over time create and preserve values, traditions, and beliefs. What delineates organizational from national culture is its reach. That is, organizational cultures within a national culture vary. Google, for instance, may espouse an open and informal organizational culture, whereas General Motors may value a more closed and formal culture. Thus, organizational culture is confined, whereas national culture is far-reaching and may affect many organizations. Lundy and Cowling (1996) provided a straightforward definition of organizational culture when they stated that “it is the way that things are done around here” (p. 168). Organizational traditions and beliefs can be reinforced by organizational structures (e.g., centralized, decentralized, virtual) and by physical space (e.g., mobile furniture, corporate playgrounds, workspace visibility).

In regard to organizational culture and creativity, Martins and Terblanche (2003) identified five major factors related to organizational culture that promote creativity: 1) an innovation strategy that explicitly focuses on the development and implementation of new products and services, which is derived through an organization's vision and mission; 2) the organizational structure, which includes such variables as flexibility, freedom, and cooperative teams; 3) organizational support mechanisms, such as reward and recognition programs, as well as availability of resources (e.g., time, information technology, creative people); 4) behavior that encourages innovation, consisting of response to failure, idea generation, spirit of continuous learning, risk-taking, competitiveness, support for change, and conflict management; and 5) open communication.

[Amazon.com](http://Amazon.com) provides a good example of an organizational culture that is conducive to creativity. [Amazon.com](http://Amazon.com) subscribes to a customer-centric strategy (Burrows, 2008). A centrally held belief at [Amazon.com](http://Amazon.com) is that they should not imitate their competitors, as this approach would produce reactionary creativity. Therefore, employees are encouraged to experiment and find new ways to provide added value to customers. Google is another excellent example of an organizational culture that supports workplace creativity. Its organizational structure is informal; lava lamps and large rubber balls can be found in the workplace. Fun and play are encouraged. Its offices were designed around clusters to promote the flow of information. Additionally, Google provides each of its engineers 20% of their work time to experiment with their ideas (Elgin, 2005).

The importance of organizational culture in regard to organizational creativity was reinforced by the Boston Consulting Group's survey of senior managers (Andrew et al., 2007). When asked about the obstacles to innovation, 38% of the 2,468 senior managers identified a risk-averse corporate culture as the number one barrier to innovation in their organizations.

### Organizational Structures

Organizational structures relate to the hierarchy found within an organization; as such, they outline relationships among organizational components and communicate lines of responsibility and authority. Lafley and Charan (2008) documented several different structures within one company, Procter and Gamble (P&G), designed to promote innovation. Future Works make up a multidisciplinary unit run by a general manager. Its mission is to seek discontinuous ideas that can lead to a new business that is adjacent to an existing category or one that runs across several category businesses. A sponsor is assigned to the innovation, which assures the innovation has a home and a champion. Another structure is the New Business Development (NBD) organization. Whereas Future Works can cross business categories, the NBD targets a specific unit. Innovation project teams are charged with developing and pipelining innovations that improve existing products and are funded by the respective business units. The External Business Unit (EBU) explores ideas outside of the organization. Ideas can come from vendors, other organizations, entrepreneurs, and other outside sources. EBUs serve as brokerage houses. Innovation Hot Zones are simulated homes and supermarkets or any other setting where P&G products are likely to be housed. They are located around the world at P&G locations or in locations owned by partners and other retailers. An ethnographic approach is employed to gain insight from watching consumers. These observations are used to generate new product concepts. Another structure is called Connect and Develop. This is an internet network-based organizational structure that taps into all of P&G's relationships, such as retirees, other companies, retail customers, suppliers, nonretail customers, and its competitors.

Holt (1987) provided further thoughts about how to structure organizations and teams in a way that increases the likelihood of innovation. In his paper, Holt discusses such structures as matrix organizations, the independent project team, and the venture team. And for empirical studies on the relationships among organizational structure, creativity, and innovation, see, for example, Prakash and Gupta (2008), Freeman and Engel (2007), and Sumanski, Kolenc, and Markic (2007).

### Climate

An examination of [Table 8.1](#) shows that the dimensions of the work environment represent a cross-section of various environmental concepts reviewed here. For example, communication and reward systems, which can be considered part of the organizational culture (Martins & Terblanche, 2003), are highlighted by a number of scholars (Basadur, 1987; Rickards & Bessant, 1980; VanGundy, 1987). Basadur's (1987) dimensions include specific references to organizational structure and physical setting. In their study of Brazilian organizations, Soriano de Alencar and Bruno-Faria (1997) cited organizational structure, salaries and benefits, physical environment, and training among those work environment dimensions most closely related to creativity. A large number of the dimensions found in [Table 8.1](#) seem to align most closely with what has been referred to as

“climate.” “Culture” and “climate” are often used interchangeably, as have been the dimensions associated with these environmental constructs, yet some have argued that these are conceptually distinct aspects of environment (Glick, 1985; Isaksen, 2007). Isaksen and Ekvall (2007) offered a simple point of differentiation when they noted that climate is what organizational members experience, whereas culture is defined as what organizational members value. Climate consists of the behaviors, feelings, and attitudes that distinguish life in an organization (Ekvall, 1983). Ekvall (1983) posited that “each organization member perceives the climate, and can describe it in light of his or her own perception” (p. 2). Some have been critical of the use of the term “climate.” Guion (1973) suggested that climate is a broad concept that has been loosely defined, and Glick (1985) maintained that climate is a generic term that targets many dimensions and consequently makes the concept almost useless. As a remedy, Glick (1985) proposed that the most effective use of the term is to frame it within a targeted area of analysis or concern (e.g., climate for job satisfaction, security, production, safety, or creativity).

One of the leading scholars with respect to the climate for creativity has been Ekvall (1983, 1996, 1997). Ekvall (1983) suggested that climate affects how organizational members communicate, solve problems, make decisions, handle conflicts, learn, and motivate, and thus can be reflected in the efficiency and productivity of the organization. Ekvall identified 10 dimensions related to a creative climate, namely, Dynamism, Challenge, Freedom, Trust and Openness, Idea Support, Conflict, Debate, Idea Time, Playfulness/Humor, and Risk-Taking. Using his measure of the creative climate, the Creative Climate Questionnaire, Ekvall has demonstrated significant differences between organizations and units within organizations with respect to their creative output. In one of his most elaborate studies, Ekvall (1991) had independent researchers from a business school apply their model for assessing innovation to 27 different organizations. The application of the innovation criteria enabled the researchers to place each organization into one of three categories: innovative, average, or stagnant. Employees in these organizations also completed Ekvall's climate measure. The results were clear. The most positive climates for creativity were found among those employees in organizations identified as being innovative. Not surprisingly, the perceptions of the most oppressive work climates were found for those employees in organizations that had been identified as being stagnant. For other studies that have examined the efficacy of Ekvall's dimensions, see Ekvall and Ryhammar (1999), Isaksen et al., (2000–2001), and Sellgren, Ekvall, and Tomson (2008).

Anderson and West (1998) developed the Team Climate Inventory (TCI) to measure work-group climate for innovation. The TCI targets team development initiatives that are meant to foster creativity. This measure assesses four climate factors: Vision (the extent to which clarity exists between team goals and visions); Participative Safety (the extent to which shared decision making exists in teams and the environment is perceived as nonthreatening); Task Orientation (the extent to which team members share similar concerns regarding excellence in quality of task performance); and Support for Innovation (the extent to which practical support is provided to new ways of doing things). The TCI was created using items extracted from other measures, such as the Siegel Scale of Support for Innovation (Siegel & Kaemmerer, 1978), and its psychometric properties have been evaluated by other researchers (see Mathisen & Einarsen, 2004). Additionally, the TCI has been translated and tested in other languages, such as Norwegian and Swedish (Mathisen, Einarsen, Jørstad, & Brønnick, 2004).

### **Physical Space**

As innovation has climbed the strategic priorities list in organizations, there has been greater attention given to the physical features within an organization and how workspaces might be designed to inspire creative thinking. It would seem that some organizations recognize that the physical structures created under the mechanistic models of organizations are not appropriate in the innovation age. IDEO, a California-based design firm, has garnered great attention by showcasing its nontraditional physical spaces. At IDEO, employees are encouraged to create their own workspaces; here, employees' work areas are adorned with prototypes from past projects, artifacts

from their favorite hobbies, and knickknacks. As Kelley (2001), general manager of IDEO, observed, “This may sound a bit extreme, but companies that depend on the creativity of their staff give them free reign when it comes to space” (p. 125). At Oticon, a midsize Danish manufacture of hearing aids, workers are able to concentrate on any project and are free to join any team (Ewing, 2007). Desks and filing cabinets are not fixed. They are pushed to new locations, reconfigured into new spaces for workers to organize themselves. Workers band together around natural leaders as a way to be drawn to the most exciting projects. The United Kingdom's Royal Mail has established an award-winning innovation lab that features white curved walls suitable for capturing ideas, musical instruments, online brainstorming technology, material for prototype construction, movable furniture, digital recording devices, and a team of expert facilitators.

The creation of creative workspaces appears to be outpacing scholars' ability to document and describe the nature and impact of such spaces. That said, a few authors have offered their reflections on the physical setting for creativity (Haner, 2005; Kristensen, 2004; Lewis & Moultrie, 2005; Moultrie et al., 2007). Lewis and Moultrie (2005) maintained that physical structures provide a competitive advantage to organizations that leverage these spaces to improve their performance and innovation efforts. The marketplace has become highly dynamic, and thus organizational spaces that are designed well are apt to be more responsive and flexible than those that are not. Kristensen (2004) emphasized that physical spaces influence an employee's emotional well-being. A positive association with the surrounding physical space, therefore, will enhance creative work. Haner (2005) posited that physical space can serve as a source of inspiration and motivation. An attractive space can spark innovation strategies and signal to employees that creativity is expected.

Lewis and Moultrie (2005), using a case-study approach, examined three U.K.-based innovation laboratories. Preliminary findings indicated that physical structures were conducive to innovation when malleable – space that can be broken down, changed, or reconfigured at a moment's notice in response to an organizational need or marketplace demand. Similarly, Haner (2005) argued that a hybrid space, one that can accommodate both private and group work, as well as divergent and convergent processes, is optimal for innovation. Finally, Moultrie et al. (2007) provide a framework that helps practitioners and researchers better understand the roles, goals, and various design features of physical spaces that promote organizational creativity. Each component in their framework contains a list of variables organizational leaders should consider in designing space that promotes creativity.

## Process

Organizations can hire creative talent and develop a creative work environment, but these actions do not guarantee creative outcomes. To increase the probability of successful creative thinking, many organizations have adopted management practices, outlined creative methods and strategies that are applied in groups, and introduced training programs all designed to help employees more effectively and skillfully engage in the creative process. The aim here is to undertake deliberate approaches that do not leave creativity to chance. At its core, creativity is an applied area of study – many scholars and practitioners seek to understand better how creativity comes to fruition so that ultimately it can be facilitated, directed, and nurtured in a manner that increases the likelihood that individuals and groups in organizations can quickly generate creative breakthroughs to problems.

Can the creative process be directed at will? In surveying engineers, Ekvall (2000) discovered that, indeed, organizations can adopt particular practices that promote creative thinking. Among the engineers in his study, 88% reported that the use of project groups and continuous improvement methods enhanced creativity, and 85% indicated that the application of creative problem-solving methods in meetings had positive effects as well. Where Ekvall conducted a survey across many organizations, Mahmoud-Jouini and Charue-Duboc (2008) conducted a case-study analysis of a new unit created to pursue discontinuous innovation (i.e., radically new ideas that depart from existing products and services) within one automotive company. These researchers were



particularly interested in the design and organizational creativity processes that enabled this unit to achieve its mission. These authors carefully documented the creative process followed by this team, from its inception through to the identification and subsequent funding of five exploratory projects deemed likely to succeed. Based on this research, a detailed description emerged in regard to the activities subsumed in each stage of this team's creative process (i.e., scope definition, knowledge sharing, conceptual design, and embodiment design). Furthermore, Mahmoud-Jouini and Charue-Duboc outlined four broader organizational practices that supported the eventual success of this team: 1) the creation of a broad scope for the innovation unit; 2) the dual role of the members of the unit, dedicating a percentage of their time to the project while carrying out ongoing work responsibilities, which encouraged boundary spanning; 3) the back and forth flow between knowledge and concept development during the creativity process; and 4) the role and cross-divisional nature of the exploratory projects that emerged from the innovation unit.

Further evidence for the value of adopting deliberate creative-process strategies can be found in a study briefly cited earlier in this chapter (Bharadwaj & Menon, 2000). Recall that Bharadwaj and Menon compared individual versus organizational creativity mechanisms and found that the latter had a stronger relationship to innovation performance. The organizational creativity mechanisms included such practices as a widely shared process for creative problem solving, formal creativity and idea-generation programs, a designated innovation center, and facilitators assigned to lead idea-generation efforts. Based on their findings, these researchers called on managers “to formalize creativity approaches and techniques in organizations to improve innovation output” (p. 431). Moreover, they suggested that organizations look at “creativity expenditures as an investment, rather than treat it as an expenditure” (p. 431).

Through the years, numerous creative processes have been developed and subsequently adopted in organizations. These creative processes offer models and techniques that can be followed by individuals and groups to improve creative output. These creativity methodologies are designed to provide employees with structured approaches that endeavor to make the creative process less mysterious and more easily facilitated in a predictable and repeatable manner. We briefly review some of the more widely known creative process models and approaches.

### **Creative Problem Solving**

Originally developed by Osborn (1953), creator of Brainstorming, Creative Problem Solving is one of the earliest, most widely adopted and thoroughly researched creative-process models (Isaksen & Treffinger, 2004; Puccio, Murdock, & Mance, 2005). In the creativity literature, readers will come across lower-case references to the term “creative problem solving.” In such situations, the author is usually making a general reference to efforts undertaken by individuals and teams to resolve open-ended problems through creative thinking, such as the studies carried out by Ekvall (2000) and Bharadwaj and Menon (2000) cited above. In contrast, when capitalized as a proper noun, “Creative Problem Solving” (CPS) refers to the name given to the creative-process model introduced by Osborn (1953) and enhanced by others mainly associated with the International Center for Studies in Creativity at the State University of New York – Buffalo State (Isaksen & Treffinger, 1985; Noller, Parnes, & Biondi, 1976; Puccio et al., 2007). As a creative process model with a more than 50-year history, CPS has been subjected to ongoing development and continuous refinement. For a detailed description of the various versions of CPS, see Puccio et al. (2005), Isaksen and Treffinger (2004), and Puccio and Cabra (2009). The current version of CPS, used at the International Center for Studies in Creativity, is called the Thinking Skills Model (Puccio et al., 2007) and features the following steps: Exploring the Vision, Formulating Challenges, Exploring Ideas, Formulating Solutions, Exploring Acceptance, and Formulating a Plan. Additionally, one metacognitive step, called Assessing the Situation, is used to help individuals and groups determine where to begin in CPS and then how to proceed through this process. This version is referred to as the Thinking Skills Model, as it articulates the kinds of thinking and affective skills developed through and employed by CPS.

Although the names of the steps in the CPS process have changed over the years, several features have remained constant. First, each step of the process begins with a divergent phase, the search for many, novel, and diverse options, which is followed by a convergent phase, the identification and development of the most promising alternatives. Second, the model includes efforts to clarify the problem, generate ideas, develop solutions, and plan for action, which closely parallels descriptions of the stages included in individuals' natural creative-process efforts. In this way, CPS is intended to provide individuals and groups with an explicit creativity model that complements and enhances their innate creative-thinking skills.

Two meta-analytic studies have confirmed the positive value of CPS (Rose & Lin, 1984; Scott, Leritz, & Mumford, 2004). In fact, Scott et al. (2004) found that creativity training based on cognitive models, such as CPS, were the most effective at enhancing attitude, problem solving, creative performance, and divergent thinking. Basadur has carried out a robust research program in which he has tested the efficacy of CPS training within organizational settings. Using his version of CPS, Basadur found that CPS training significantly improved fluency in generating new product concepts (Basadur, Graen, & Green, 1982), attitudes toward divergent thinking (Basadur, Graen, & Scandura, 1986), and union-management negotiations (Basadur, Pringle, Speranzini, & Bacot, 2000). Furthermore, Basadur has reported similar positive effects of CPS training in other cultures, specifically Japan (Basadur, Wakabayashi, & Takai, 1992) and South America (Basadur, Pringle, & Kirkland, 2002).

Beyond Basadur's work, a number of other creativity researchers have explored the value of CPS training in organizational settings. For a review of the empirical research focused on CPS training in the workplace, see Puccio, Firestien, Coyle, and Masucci (2006).

#### **de Bono Techniques**

One of the most ardent proponents for the trainability of creativity is de Bono (1992). For more than four decades, de Bono has authored books designed to teach readers how to be more creative. Two of his most well-known concepts are lateral thinking (de Bono, 1977) and the six thinking hats (de Bono, 1999). Lateral thinking refers to a shift in thinking or perception; it is a complete break from previous thoughts or paradigms. The sudden breakthrough associated with lateral thinking cannot be produced through logical thinking; therefore, de Bono has devised strategies designed to assist individuals and groups to generate radically new ideas that depart from entrenched ways of viewing a situation.

Where there are specific lateral-thinking tools that are applied to particular challenges, the six thinking hats operate more akin to a creative process. Each hat represents a different kind of thinking a person is to adopt. For instance, the white hat relates to information and facts. When wearing the red hat, metaphorically speaking, the person is to focus his or her thinking on the emotional aspects of a situation. The green hat is associated with creative thinking and idea generation. And so on. The hats are designed to foster "parallel thinking" during group problem-solving efforts. The same hat, or way of thinking, is adopted by all group members, thus creating a shared focus. De Bono (1999) considered the hats as "direction labels for thinking" (p. 4). The group applies the thinking associated with the hats as necessary to deliberately manage their process.

A recent study by Birdi (2004) examined the impact of a creativity-training program on employees in a civil-service organization in the United Kingdom. The training program consisted of three 2-day workshops. One workshop, called Business Beyond the Box, focused on helping participants set radical goals and develop strategies for achieving these goals. Two workshops were dedicated to de Bono's methods, one workshop focused on lateral thinking and the other on the six thinking hats. Analysis of a post-program survey revealed that whereas the Business Beyond the Box workshop had the greatest impact on attitude toward innovation, those workshops based on de Bono's methods did more to improve participants' knowledge of creativity techniques. The de Bono workshops also showed greater impact on work-related idea generation.

Birdi's (2004) study withstanding, it would appear that empirical research into the efficacy of de Bono's methods lags behind their wide diffusion and popularity. In her recent review of de Bono's methods, Dingli (2009) indicated that de Bono places much greater emphasis on the "practical and effective application of his methods" (p. 345).

### **Appreciative Inquiry**

Cooperrider and Srivastva (1987) were the first to describe an organizational-development process that begins by looking at what is working well, as opposed to what needs to be fixed. This process is called Appreciative Inquiry (AI) and is an affirmative approach used to explore opportunities for organizational development and to sustain high levels of performance. AI assumes that it is simpler to expand the "positive" than it is to get rid of the "negative." The AI process is comprised of the following stages: Discovery (i.e., identifying organizational processes and practices that are currently working well); Dream (i.e., identifying ways to expand or further deploy the processes and practices that are working well); Design (i.e., co-constructing the ideal future processes and practices); and Destiny (i.e., identifying ways to execute the proposed ideal processes and practices). Given the fact that the AI process begins by focusing on positive organizational attributes, it has been shown to be particularly useful in groups and organizations that are experiencing an adversarial work climate (Cooperrider & Srivastva, 1987).

In a meta-case study of AI interventions, Bushe and Kassam (2005) found that the AI process led to transformational change in 7 of 20 cases. Based on the review of these case applications, Bushe and Kassam (2005) concluded that "the forms of engagement that have evolved in AI practice may not, in the end, turn out to be the best way to engage collective ideation, but these cases demonstrate that doing so appears to be central to transformational change" (p. 176). To address this shortcoming, Cabra-Vidales (2004) described the integration of CPS and AI in a manner that would be useful in organizational development efforts. Elsewhere, Peelle (2006) conducted a quasi-experiment with six work teams to compare the effects of CPS and AI on group identification and group potency. Working on real business tasks, three cross-functional teams, comprising six members, followed the AI process, while three teams of similar composition employed CPS. Results showed that both CPS and AI improved posttask group potency and group identification. However, direct comparisons between the two methodologies indicated that the AI process demonstrated greater effects on the affective disposition of these teams. For instance, Peelle (2006) observed that members of the AI teams had a "shared sense of liberation and empowerment not fully shared by teams employing CPS" (p. 460).

AI has been used with many organizations and on a wide range of organizational challenges. Cooperrider, Whitney, and Stavros (2005) provide examples of the use of AI with such companies as British Airways, McDonalds, and GTE. In the case of GTE, these authors report on the creation of more than 10,000 innovations through the application of AI. See Cooperrider et al. (2005) and Cooperrider and Sekerka (2003) for additional information on AI.

### **Design Thinking**

Design thinking capitalizes mostly on a user-centric approach to problem solving. Innovation is achieved mainly through careful observations of unmet consumer needs. Consumers' experiences with products and services often provides clues to implicit gaps, unarticulated sources of frustration, and opportunities for new approaches. Design can be inspired also by what Fulton-Suri (2005) described as the "thoughtless" acts of everyday life (e.g., throwing a jacket over a chair, positioning a laptop for more comfortable use while lying in bed, resting a coffee cup on the floor while seated in a classroom desk). Design thinking begins with the step Understand, which comprises learning as much as possible about the use of a particular product or service (Ko & Kasaks, 2007). During this step a complete list of the product or service's features is created. The next step is called Observe. Here the individual or team is encouraged to engage in "ethnographic" observation of users. This step also

involves finding and interviewing people willing to share their experiences with the product or service under question. This is followed by the step called Point of View. In this step, meaning is drawn from the observations made in the prior step. Next comes the step Visualize, which involves brainstorming sketches of solutions to the challenges and insights associated with the product or service. After the best solutions are identified, then physical solutions are created in the Prototype step. In the final step, Test and Reiterate, individuals and teams solicit feedback on the prototype and make changes accordingly.

Design thinking has generated much interest. Take, for instance, an ABC News *Dateline* story, “Deep Dive,” which reported on the design firm IDEO. So popular was the news report – as measured by the record number of transcript requests – that it compelled ABC to rebroadcast this show 5 months later (Koppel, 1999). Additionally, the increased interest in design thinking has led to the recent creation of many design schools at universities around the world. *BusinessWeek* now ranks annually the top design schools globally; it has been argued that companies are now turning to these schools to recruit creative and talented managers (Woyke & Atal, 2007). For a description of the integration of design thinking into business school programs and courses, see Bisoux (2007).

### Synectics

Gordon (1960) introduced a creative process model, called Synectics, based primarily on the use of analogies. This process encourages participants to dialogue through metaphor by using tools such as the direct analogy (i.e., the individual thinks of ways similar to how problems in technology or biology, e.g., have been solved); personal analogy (i.e., the individual imagines him/herself as the problem); symbolic analogy (i.e., the problem solver uses images that symbolically represent the essence of the problem under consideration); and fantasy analogy (i.e., the individual identifies the perfect and most outrageous solution and then works backward to reach the ideal goal). Gordon (1960) argued that creative people engage in a thinking process based on nonrational, free-association models that occur in the preconscious levels of thought. Synectics, therefore, was developed to make this process explicit and to overcome mental blocks to creative thinking through the use of analogical thinking.

Since its introduction in the 1960s, publications on Synectics have been sparse. A recent study by Gassmann and Zeschky (2008) carefully analyzed situations in which analogical thinking successfully led to new product innovation. Their findings highlighted the specific organizational conditions that are necessary to promote effective use of analogies; for instance, the firm must begin by having a deep understanding of the problem at hand and top management must be open to external solutions. For recent descriptions of this creative process methodology and its use, see Prince (2002), Nolan (2003), and Rickards (2003).

### TRIZ

Where Synectics taps into the subjective free-associative processes of the mind, TRIZ, also known as the Theory of Inventive Problem Solving, is based on objective and repeatable engineering principles and practices. TRIZ was designed to take an algorithmic approach to invention, innovation, and creativity. The origin of TRIZ dates back to the 1940s, when an official of the Soviet Navy patent department, Genrich Altshuller (2001), reviewed thousands of patents and identified patterns among these inventions. This analysis led to the formation of 40 principles of invention that are at the core of the TRIZ process (Mann, 2001; Moehrle, 2005). These principles are intended to enable individuals to resolve engineering contradictions that are at the essence of the problem. The problem solver reviews the list of 40 principles and then selects a principle that best fits the problem or uses a matrix to help in selecting the most appropriate invention principle (Moehrle, 2005). An example of a TRIZ principle is Dynamicity. Here, the problem solver identifies a product's attributes, then selects one that is deemed immovable, and thinks of ways to make it moveable.

TRIZ has evolved as it has integrated other creative practices to tackle a wide range of nontechnical problems, including those in the area of customer service (Zhang, Chair, & Tan, 2005) and the field of biology



(Vincent, Bogatyreva, Pahl, Bogatyrev, & Bowyer, 2005). TRIZ has been widely adopted in organizations, and as such there are numerous papers that describe the use of this method. For examples of TRIZ applications to various business challenges in 2008 alone, see Akay, Demiray, and Kurt (2008); Chang, Tseng, and Wu (2008); and Su and Lin (2008). Additionally, León-Rovira, Heredia-Escorza, and Lozano-Del Río (2008) conducted an empirical study that tested the impact of TRIZ training on engineering students.

### **Deliberate Creativity: Some Future Directions**

Since the early introduction of structured methods for promoting creative thinking in the 1950s and 1960s, it would seem that at no time has there been a greater demand for and application of these methods. The literature abounds with case examples of applications of such methods as TRIZ, design thinking, CPS, and AI. The preponderance of documented cases of the successful application of these methods in organizations provides a compelling story for their usefulness. However, as application has greatly outpaced scholarship, there is a clear need to close the gap between practice and research. Why would this be a concern? First, these methods are not all identical. It is likely that they have different strengths and, as a result, some may work better under certain conditions and on particular kinds of challenges. Empirical studies would be instrumental in illuminating the respective value of these creative methodologies. Second, there seem to be great disparities in the number of empirical investigations of the training effects of these methodologies. Whereas CPS has been examined in approximately 20 empirical studies in organizational contexts, there appears to be a paucity of research into de Bono's methods, design thinking, AI, and TRIZ. Research is needed to expand the investigations into CPS and to take up the issue of training effects in regard to the other methodologies. Finally, research needs to be carried out that examines the degree to which such creativity methodologies can move beyond their limited use as tools – that is, as strategies employed only when a difficult task presents itself – and can be woven into the very fabric of an organization. That is to make the cognitive and affective principles that operate underneath these methods part of the organizational culture. It is likely that when such attitudes and thought processes become part of the culture, an organization will become a truly creative system, thus encouraging creativity to arise in all units and at any time.

### **Leadership**

A major trend within the area of organizational creativity has been the increased attention given to the role leadership plays in fostering creativity in the workplace. Many writers now argue that one of the most prominent variables within the organizational context that either promotes or undermines creativity is leadership behavior. Recent surveys of top-level managers carried out by McKinsey (Barsh, Capozzi, & Davidson, 2008) and the Boston Consulting Group (Andrew et al., 2007) pointed to the crucial role top management plays in bringing about innovation in organizations. For instance, in the conclusion of their Boston Consulting Group report, Andrew et al. summed up their findings by stating that

most critically, it will mean demonstrating to the rest of the organization – through the leader's words and actions – that innovation is a personal priority. This is truly a case of walking the walk and talking the talk, because employees are unlikely to believe a leader who says one thing and does another.

(p. 27)

Numerous other writers have pointed out the impact of leadership at the broad organizational level (Blau & McKinley, 1979; Hitt, 1975; VanGundy, 1987), and more specifically on group creativity (Mumford, 2000; Oldham & Cummings, 1996; Rickards & Moger, 2000). Indeed, the link between leadership behavior and organizational and group creativity has led to a burgeoning body of research (see, e.g., Amabile et al., 2004; Basadur, 2004; Boehlke, 2008; Chen, 2007; Gumusluoglu & Ilsev, in press; Jaussi & Dionne, 2003; Jung, 2000–2001; Mumford, Scott, Gaddis, & Strange, 2002; Shalley & Gilson, 2004; Shin & Zhou, 2007;

Sternberg, 2003; Sternberg, Kaufman, & Pretz, 2003; Wu, McMullen, Neubert, & Yi, 2008). Additionally, many of the dimensions featured in Table 8.1 highlight the important role leadership plays in establishing a work environment conducive to creativity (e.g., Amabile et al., 1999; Rickards & Bessant, 1980; VanGundy, 1987).

The intensified focus on the influence of leaders has led to the articulation of leadership behaviors, abilities, and qualities thought to be conducive to creativity and, ultimately, innovation. Based on the work carried out at the Boston Consulting Group, Andrew and Sirkin (2006) argued that leaders who wish to turn creative ideas into innovation tend to possess a particular set of qualities that would be less prevalent in other leadership activities and responsibilities. They identified these qualities and skills as follows: tolerance for ambiguity; ability to assess and be comfortable with risk; ability to quickly and effectively assess an individual; ability to balance passion and objectivity; and ability to change.

A qualitative study of employees' daily diaries by Amabile et al. (2004) yielded a detailed description of leader behaviors that supported or undermined employees' creativity. Some of the positive leader behaviors included showing support for a team member's actions, addressing subordinates' negative feelings, providing constructive positive feedback on work done, maintaining regular contact with and providing general guidance to subordinates, and asking for team members' ideas and opinions. Examples of the leader behaviors identified by Amabile et al. that inhibited employee creativity included checking on the status of assigned work too often, not providing enough clarity about an assignment, changing assignments or objectives too frequently, and displaying lack of interest in subordinates' work or ideas.

With the increased concern for managing creativity, leadership theories and models have been empirically tested for their relevance to this group and organizational outcome. The model of charismatic leadership, originally introduced by House (1977) and extended by Conger and others (see Conger, 1999; Conger & Kanungo, 1988; Hunt & Conger, 1999), offers a set of personal qualities that seem germane to creativity and innovation management. Murphy and Ensher (2008) examined the degree to which the characteristics ascribed to charismatic leaders were prevalent among successful television directors and their efforts to promote creative productions. The qualitative analysis of interviews conducted with 21 directors of well-known national television shows revealed that many of the qualities ascribed to charismatic leadership were prevalent in the creative work led by these individuals. Visioning, for example, assisted in setting a work climate conducive to creative thinking. The directors demonstrated a sensitivity to group member's needs and used a higher than average amount of praise in discussions with others. The leaders in this study also described the use of unconventional behaviors as a means to inspire group loyalty.

Perhaps the leadership theory that has received the greatest attention with respect to organization creativity is the transformational-leadership model (Burns, 1978). Transformational leaders assist followers in developing their fullest potential. Transformational leaders motivate others to do more than what is expected or to transcend their own self-interests. In summarizing the qualities of a transformational leader, Northouse (2004) provided some clear connections between this leadership approach and creativity:

It includes leadership that stimulates followers to be creative and innovative, and to challenge their own beliefs and values as well as those of the leader and the organization. This type of leadership supports followers as they try new approaches and develop innovative ways of dealing with organizational issues.

(p. 177)

Numerous research studies have examined the positive effects of transformational leadership on group creativity. Jung (2000–2001) found that small groups led by transformational leaders were significantly more fluent and flexible in generating ideas to a problem than groups subjected to a transactional leader (i.e., a leader-follower exchange based on a quid pro quo relationship). Sosik (1997) tested and found that groups working under the

high transformational leadership condition generated more original solutions to an open-ended task than did groups working under a low-transformational leadership condition. Similarly, Sosik, Kahai, and Avolio (1998) showed that the high transformational leadership approach led to higher levels of idea elaborations and original solutions in small groups.

The studies cited above involved undergraduate students working on open-ended problems for which they had little ownership, but does transformational leadership make a difference in real organizations? A growing body of literature has examined this precise issue. Shin and Zhou (2003) found that Korean employees exhibited higher levels of creativity under transformational leaders. In a more recent study of R&D teams, the same authors (Shin & Zhou, 2007) demonstrated that employees' observations of the amount of transformational leadership behavior exhibited by their immediate supervisor predicted team creativity (i.e., newness of ideas, significance of ideas, and usefulness of ideas). Specifically, these authors found that transformational leadership had a particular interaction effect with educational specialization heterogeneity such that team creativity went up when there were high levels of transformational leadership and high levels of educational diversity. Jung, Chow, and Wu (2003) reported that transformational leadership had a significant positive effect on organizational innovation as measured by R&D expenditures and patents obtained over a 3-year period. Gumusluoglu and Ilsev (2009) studied 43 different Turkish firms and found that transformational leadership behaviors, controlling for job tenure and education, had a significant positive relationship with employee creativity. The same researchers also found that higher levels of transformational leadership predicted organizational innovation. Gumusluoglu and Ilsev demonstrated that the ratio of sales generated by product innovation to total sales, and the ratio of sales generated by product innovation to expenditures for innovative efforts, were linked to transformational leadership behavior.

Puccio et al. (2007) have argued that the fields of leadership and creativity have become inextricably linked, and that the shared bond between these two concepts is change. Creativity, the introduction of original and useful ideas, is a process that leads to change. And leadership often acts as the catalyst for change (Puccio et al., 2007). Those who lead teams and organizations in the ever-changing social, technical, business, and global environments must generate original responses themselves and facilitate the creative thinking of others, both greatly enhanced through creative thinking and problem solving. This has led some researchers, such as Mumford, Zaccaro, Harding, Jacobs, and Fleishman (2000), to conclude that the main task for today's leaders is to resolve complex social problems. To do so, leaders must be creative problem solvers. Mumford and colleagues (e.g., Mumford, Baughman, Maher, Costanza, & Supinski, 1997; Mumford, Baughman, Supinski, & Maher, 1996; Mumford, Baughman, Threlfall, Supinski, & Costanza, 1996; Mumford, Supinski, Threlfall, & Baughman, 1996; Reiter-Palmon & Illies, 2004) have carried out research that has unpacked the cognitive abilities associated with creative problem solving, and Puccio et al. have outlined the thinking skills and strategies leaders can use to become more effective at resolving open-ended problems and, ultimately, to bring about change. Given the important relationship between leadership and creativity, especially with respect to organizational creativity, it is highly likely that leadership will continue to receive great attention by those interested in how creativity manifests itself in teams and organizations. Simply put, leadership behavior has emerged as the one of the most potent variables in predicting creativity in teams and organizations.

## Conclusion

In 1975, Hitt lamented the paucity of research in the area of organizational creativity. And now, a little more than three decades later, it is impossible to summarize the voluminous breadth of literature in a single chapter. This research has enabled a great deal of knowledge to be amassed about the individual qualities of employees that contributes to creativity in the workplace. There is a better understanding of the types of creativity methodologies that can be used to facilitate creative thinking and problem solving in teams and organizations. There is much

greater recognition of the impact of the work environment on organizational creativity and the specific dimensions that either facilitate or undermine creativity in organizational settings. Finally, recent work has illuminated the central role leadership behavior plays in promoting workplace creativity.

These research efforts have spawned a vast body of knowledge, knowledge that when applied can do much to uplift a very important organizational resource – employee creativity. Organizations are designed to solve society's problems. Those organizations that are richer in ideas and more imaginative are likely to be more effective at meeting society's demands and more adept at adapting to changing circumstances. The field of creativity, in large measure, is an applied science. As such, the insights gained through more than 30 years of research into organizational creativity can do much to bolster organizations' efforts to promote creativity. Leaders who employ strategies and knowledge associated with individual creativity, creativity processes, and creative environments stand a greater chance in bringing about organizational creativity that will ultimately lead to higher levels of both internal and external innovation.

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