Creativity and Innovation in Organizations

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We have lots of different attitudes, but in one of our attitudes as human beings, we make up a romantic tale about ourselves. Falling in love is mysterious, thinking is mysterious . . . and so we create great words like "creativity." Creativity is thinking; it just happens to be thinking that leads to results that we think are great.[1]

According to conventional wisdom, creativity is something done by creative people. Even creativity researchers, for several decades, seemed to guide their work by this principle, focusing predominantly on individual differences: What are creative people like, and how are they different from most people in the world? Although this person-centered approach yielded some important findings about the backgrounds, personality traits, and work styles of outstandingly creative people (e.g., Barron,, 1955; 1968; MacKinnon, 1962;1965), it was both limited and limiting. The approach offered little to practitioners concerned with helping people to become more creative in their work, and it virtually ignored the role of the social environment in creativity and innovation.

In contrast to the traditional approach, the contemporary approach to creativity research assumes that all humans with normal capacities are able to produce at least moderately creative work in some domain, some of the time—and that the social environment can influence both the level and the frequency of creative behavior. **Creativity is the production of novel and useful ideas in any domain.** In order to be considered creative, a product or an idea must be different from what has been done before. (Few creativity theorists hold the strong position that a creative idea must be completely unique.) But the product or idea cannot be merely different for difference's sake; it must also be appropriate to the goal at hand, correct, valuable, or expressive of meaning. **Innovation is the successful implementation of creative ideas within an organization.** In this view, creativity by individuals and teams is a starting point for innovation; it is a necessary but not sufficient condition. Successful innovation depends on other factors, as well, and it can stem not only from creative ideas that originate within the organization but also from ideas that originate elsewhere (as in technology transfer). However, this note is concerned exclusively with intra-organizational creativity and

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[1] Simon, H. Interview in the *Carnegie-Mellon University Magazine, Fall 1990, p.11.*

innovation. It addresses the meaning and measurement of creativity, the components of creativity and innovation, and the role of these processes in a business form where creativity is particularly crucial—entrepreneurship.

Because there are many misconceptions about creativity, it is important to consider what creativity is **not:**

- Eccentric personality. Truly creative work is not only novel; it is also appropriate. Moreover, it is much more useful to think of creativity as arising from a particular behavior and resulting in a particular product or idea—rather than thinking of creativity as a quality of a personality (which implies that whatever a "creative person" does must be creative).

- Art (or The Arts). Creativity is novel and appropriate behavior in any domain of human activity—from business management to scientific discovery to fiction-writing to child-rearing to social interaction to painting . . . and so on.

- Intelligence. As it is traditionally conceived, intelligence is the set of capacities that are measured on IQ tests or courses in school. Certainly, intelligence can contribute to creativity. But research shows that there is much more to creativity than just "smarts." In fact, above modestly high IQ's, there is no clear relationship between intelligence and creativity.

- Good. Novel and goal-appropriate behaviors can be applied to evil and destructive ends just as well as they can be applied to good, responsible, and constructive ends.

Entrepreneurial Creativity

If we trace back the origins of nearly every existing business in the United States, we will find an entrepreneur—an individual who pursued an idea, a perceived opportunity for profitably delivering a service or product, regardless of the difficulties that he or she faced. Given the many obstacles that lie in the entrepreneurial pathway, considerable creativity is required.

Entrepreneurship is typically defined in terms of innovation. For example, Schumpeter (1934) said that entrepreneurial activity involves the carrying out of new combinations, the "creative destruction" of an existing equilibrium within a particular industry. This view of entrepreneurship, widely accepted within the academic community (e.g., Bull & Willard, 1993), has been elaborated by others, as ". . . the process whereby invention is put into practice, transforming a disembodied idea into a workable and economically viable operation" (Baumol, 1993, p. 9). Thus, entrepreneurship is a particular form of innovation. It is the successful implementation of creative ideas to produce a new business, or a new initiative within an existing business.

The definitions of creativity, innovation, and entrepreneurship lead directly to a definition of **entrepreneurial creativity:**

> The implementation of novel, useful ideas to establish a new business or new program to deliver products or services. The primary novel, useful ideas may have to do with (a) the products or services themselves, (b) identifying a market for the products or services, (c) ways of producing and delivering the products or services, or (d) ways of obtaining resources to produce or deliver the products or services.

Notice that, while the definition of entrepreneurial creativity focuses on novel, useful ideas (the standard definition of creativity), the "entrepreneurial" part of the phrase requires action—the implementation of those ideas, or innovation. Notice also that entrepreneurial creativity can still exist even when the product or service is not particularly novel, or when a novel product or service is borrowed or bought (or perhaps stolen!) from someone else. All that is required is that novel, appropriate solutions be applied at some point in the process of creating and bringing the product or service to market.

As with general creativity, it is important to consider what entrepreneurial creativity is not. It is not limited to the establishment of new businesses, because it can be found when truly new programs or undertakings are established within existing businesses. Moreover, it is not necessarily present in the creation of any new business; some significant degree of novelty must be involved, at some stage of the process. For example, opening a franchise of an existing business, or any other standard operation, with nothing notably different, would not constitute entrepreneurial creativity—unless significantly novel ideas were involved in some aspect, such as raising funds or choosing the location. Entrepreneurial creativity is not present in most of the incremental product or service improvements within established systems or paradigms. Moreover, even when a truly novel product or service idea is present, or when there is a novel insight about a market opportunity, entrepreneurial creativity does not exist unless the ideas are implemented in the creation of a new business or enterprise.

Creativity can enter into entrepreneurial activity in many ways. The entrepreneur may have a novel idea for a particular product or service, something that is different from what has been done before and is likely to be seen as useful or desirable by customers. This is what people typically think of when they hear the term "creativity" in a business context. Because they believe that creativity refers only to a high degree of novelty in the basic idea for the product or service, they may conclude that creativity has virtually no role in many successful entrepreneurial ventures. However, the novelty may be found not in the product itself but in the means for creating or delivering it—the identification of new market opportunities, or the organization and the systems that are established for bringing the product to market (Stevenson, 1984; Timmons, 1977; Timmons, Muzyka, Stevenson, & Bygrave, 1987). Finally, novel and appropriate solutions might be necessary for marshaling resources required for the undertaking; indeed, entrepreneurship is often defined as the pursuit of opportunity without regard to the resources currently controlled (Stevenson, 1983). It is unlikely that a given entrepreneurial venture will be highly creative (extremely novel as well as appropriate) along each of these dimensions; in fact, high degrees of novelty along all dimensions may not be desirable (Hart, 1995). Nonetheless, successful entrepreneurship probably requires at least one of these forms of entrepreneurial creativity.

Where Does Creativity Reside?

Is creativity a quality of persons, processes, or products? Undoubtedly, it is all three. Persons can have, in greater or lesser degrees, the ability and inclination to produce novel and appropriate work and, as such, those persons may be considered more or less creative. Processes of thought and behavior may be more or less likely to produce novel and appropriate work and, as such, those processes may be considered more or less creative. Products (new business plans, scientific theories, artworks, articulated ideas, dramatic performances, and so on) may be more or less novel and appropriate and, as such, those products may be considered more or less creative. The question that concerns us is, which approach is most useful for management science and management practice?

Science is the study of observable phenomena, and management involves the shaping of observable behaviors and outcomes. Ultimately, then, we must base any assessment of creativity on observable products or ideas. Although we may acknowledge that a highly creative person (one capable of highly creative work) can generate a highly creative thought process (one that yields

highly creative ideas), that person and that thought process are not relevant for study or for management unless the ideas are somehow expressed. A product can be an uttered word, a new product prototype, a dramatic stance, a manuscript, a souffle, a collage . . . but it must be observable by others. Hence, it is only by reference to their products (often, their accumulated products) that we can label persons as creative, and it is only by examination of the products of thought processes that we can label those processes as creative.

Recognizing Creativity

Many managers assume that, although they can assess productivity, product revenues, process quality, and a host of other features of the work done in their firms, they cannot assess—or even recognize—creativity. They view creativity as mysterious, vague, slippery, or ephemeral. However, years of research suggest that creativity can be reliably recognized and assessed, as long as the people making the assessments have a good degree of familiarity with work done in the particular domain (Amabile, 1982; in press). For example, poets can reliably assess the degree of creativity in poems, MBA students can reliably assess the degree of creativity in solutions to business problems, artists can reliably assess the degree of creativity in art-works, and business managers can reliably assess the degree of creativity in team projects (Amabile, in press—a). What this means is that experts (or at least people who are familiar with a particular domain), who use their own subjective view of creativity, and who make completely independent judgments of creativity on a set of products, produce judgments that inter-correlate surprisingly well.

This method of judging creativity is called **consensual assessment,** and it derives from a simple operational definition of creativity: Products or responses are creative to the extent that appropriate observers agree that they are creative. In this context, appropriate observers are people who are familiar with a domain. For example, if solutions to business problems are going to be assessed on creativity, it would be inappropriate to ask school-teachers or artists to make those assessments. Similarly, if poems are being assessed, a group of business managers would not make the best set of judges. The guiding assumption is that, in recognizing creativity in a particular domain, people who actually work in that domain know best. As long as there is a good degree of agreement in the independent judgments made by experts (and there usually is), then composites of their ratings can be used as the creativity measures.

The consensual assessment technique may not be useful for truly break-through work in many domains, but then, **no** assessment method is useful for work being done at the frontiers of a domain; only the test of time and historical consensus can say whether work was truly creative or merely bizarre. Moreover, the consensual assessment technique allows us to measure something as inherently unpredictable as creativity by allowing us to avoid specifying particular criteria in advance. We cannot say exactly what characteristics the next creative breakthrough in biochemistry will have, but we are confident that, in time, biochemists will reliably recognize it as such.

The Components of Creativity

The componential model of creativity includes all factors that contribute to creativity—person factors as well as work environment variables (Amabile, 1983a, 1983b, 1988a, 1988b). The model includes three major components of creativity, each of which is necessary for creativity in any given domain (see *Figure 1*).

Expertise

Expertise is the foundation for all creative work. This component includes memory for factual knowledge, technical proficiency, and special talents in the target work domain—for example, in gene splicing, or in computer simulation, or in strategic management. A bio-engineer's expertise includes his innate talent for imagining and thinking about complex scientific problems as well as sensing out the important problems in that domain, his factual knowledge of biochemistry and the techniques of genetic engineering, his familiarity with past and current work in the area, and the technical laboratory skill he has acquired. This component can be viewed as the set of cognitive pathways that may be followed for solving a given problem or doing a given task. As Newell and Simon (1972) poetically describe it, this component can be considered the problem solver's "network of possible wanderings" (p. 82).

Creative Thinking

This component provides the "something extra" of creative performance, and creative thinking skills can be applied in any domain. Assuming that an individual has some incentive to perform an activity, performance will be "technically good" or "adequate" or "acceptable" if the requisite expertise is in place. However, even with these skills at an extraordinarily high level, an individual will not produce creative work if creative thinking skills are lacking. These skills include a cognitive style favorable to taking new perspectives on problems, an application of techniques (or "heuristics") for the exploration of new cognitive pathways, and a working style conducive to persistent, energetic pursuit of one's work.

Creative thinking skill depends to some extent on personality characteristics related to independence, self-discipline, orientation toward risk-taking, tolerance for ambiguity, perseverance in the face of frustration, and a relative unconcern for social approval (Barron, 1955; Feldman, 1980; Golaan, 1963; Hogarth, 1980; MacKinnon, 1962; Stein, 1974).

Our bio-engineer's arsenal of creativity skills might include his ability to break out of a preconceived perception or expectation when observing experimental results, his tolerance for ambiguity in the process of deciding on the appropriate interpretation for puzzling data, his ability to suspend judgment as he considers different approaches, and his ability to break out of strict algorithms for attacking a problem. He might also have learned to employ some of the creativity heuristics described by theorists: "When all else fails, try something counterintuitive" (Newell, Shaw, & Simon, 1962); or "Make the familiar strange" (Gordon, 1961). Finally, if he is productively creative, his work style is probably marked by an ability to concentrate effort for long periods of time (Campbell, 1960; Hogarth, 1980) and an ability to abandon unproductive strategies, temporarily putting aside stubborn problems (Simon, 1966).

Figure 1

3 Component Model of Creativity
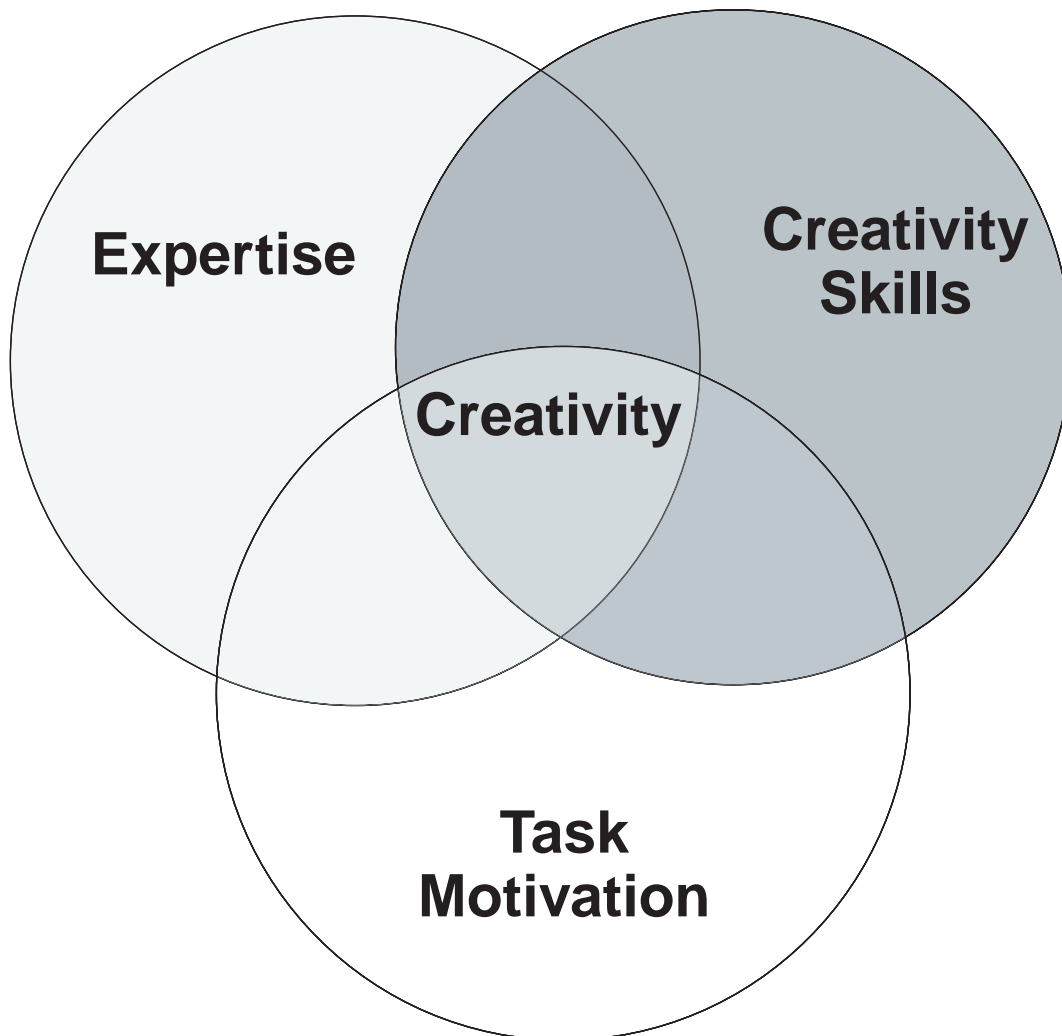
Intrinsic Task Motivation

Although the two skill components determine what an individual is capable of doing in a given domain, it is the task motivation component that determines what that person actually will do. Motivation can take two forms. Intrinsic motivation is driven by deep interest and involvement in the work, by curiosity, enjoyment, or a personal sense of challenge. Extrinsic motivation is driven by the desire to attain some goal that is apart from the work itself—such as achieving a promised reward or meeting a deadline or winning a competition. A person can have no motivation for doing a task, a primarily intrinsic motivation, or a primarily extrinsic motivation; obviously, intrinsic and extrinsic motivation for the same task may coexist. However, one is likely to be primary. A number of studies have shown that a primarily intrinsic motivation will be more conducive to creativity than a primarily extrinsic motivation.

For practical purposes in business organizations, there are two ways in which motivation can be considered the most important of the three creativity components. First, it may be the easiest to affect in a straightforward way because intrinsic/extrinsic motivation is strongly subject to even subtle social influences (see, for example, Lepper & Greene, 1978; Deci & Ryan, 1985). Second, no amount of skill in the domain or in methods of creative thinking can compensate for a lack of intrinsic motivation to perform an activity. Without intrinsic motivation, an individual will either not perform the activity at all, or will do it in a way that simply satisfies the extrinsic goals. But, to some extent, a high degree of intrinsic motivation can make up for a deficiency of domain-relevant skills or creativity-relevant skills. A highly intrinsically motivated individual is likely to draw skills from other domains, or apply great effort to acquiring necessary skills in the target domain (see, for example, the work of Harter (1978) and Dweck (1986).

Task motivation makes the difference between what our bio-engineer can do and what he will do. The former depends on his levels of domain-relevant skills and creativity-relevant skills. But it is his task motivation that determines the extent to which he will fully engage his domain-relevant skills and creativity-relevant skills in the service of creative performance.

Within the componential model, task motivation includes two elements: the person's baseline attitude toward the task, and the person's perceptions of his or her reasons for undertaking the task in a given instance. For example, the bio-engineer approaches each task with a baseline level of interest—probably quite high for most of his research tasks, but perhaps quite low for one particular set of problems. For any given research task, however, his interest will vary from the baseline as a function of any extrinsic constraints imposed on him (such as evaluative pressure or constrained choice) and his own strategies for dealing with those constraints. Our scientist may be highly intrinsically motivated to undertake a new project of his own design, but he may be singularly uninterested in a project handed to him by the director of the lab.

According to this model, then, the work environment can exert a powerful impact on creativity by influencing motivation. Certainly, if people work in a firm that provides ample training opportunities, the expertise component can be influenced significantly. And, if people work in an environment where managers make frequent, explicit use of creative-thinking techniques, that component too may be affected. But task motivation can be strongly influenced in a moment-to-moment fashion by constraints and enablers in the work environment and, as such, this route of impact is probably more frequent and more important in the long run.[2]

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[2] These ideas are developed at greater length in the course note, "The Motivation for Creativity in Organizations."

The componential theory suggests that creativity is most likely to occur when people's skills overlap with their strongest intrinsic interests—their deepest passions—and that creativity will be higher, the higher the level of each of the three components.

Organizational Influences on Creativity and Innovation

Figure 2 presents a simplified schematic diagram depicting the major elements of a theory that integrates the componential model of individual creativity into the organizational work environment. The theory describes the influence of the organizational work environment on the creativity of individuals and teams—and, in turn, the influence of individual and team creativity on overall organizational innovation (Amabile, 1988). The three upper circles in the figure depict the organizational components that are deemed necessary for overall innovation; these are features of the organization, and together they constitute the work environment for individuals working within the organization.[3] The three lower circles in the figure depict the components of individual creativity. As described earlier, these include elements that are necessary within individuals (and within teams) in order for creativity to result.

The central prediction of the theory is that elements of the work environment will impact individuals' creativity (depicted by the solid arrow). The theory also proposes that the creativity produced by individuals and teams of individuals serves as a primary source for innovation within the organization (depicted by the dotted arrow). The most important feature of the theory is the assertion that the social environment (the work environment) influences creativity by influencing the individual components. Although, clearly, the environment can have an impact on any of the components, the impact on task motivation appears to be the most immediate and direct. The three components of the organizational work environment include all factors within organizations that have been identified as important for creativity and innovation:

Organizational Motivation to Innovate

This component is made up of the basic orientation of the organization toward innovation, as well as supports for creativity and innovation throughout the organization. The orientation toward innovation must come, primarily, from the highest levels of management, but lower levels can also be important in communicating and interpreting that vision. On the basis of existing information, it appears that the most important elements of the innovation orientation are: a value placed on creativity and innovation in general, an orientation toward risk (versus an orientation toward maintaining the status quo), a sense of pride in the organization's members and enthusiasm about what they are capable of doing, and an offensive strategy of taking the lead toward the future (versus a defensive strategy of simply wanting to protect the organization's past position) (Amabile & S. Gryskiewicz, 1987; Cummings, 1965; Hage & Dewar, 1973; Havelock, 1970; Kimberley, 1981; Kanter, 1983; Orpen, 1990; Siegel & Kaemmerer, 1978). The primary organization-wide supports for innovation appear to be mechanisms for developing new ideas; open, active communication of information and ideas; reward and recognition for creative work; and fair evaluation of work—including work that might be perceived as a "failure" (Amabile & S. Gryskiewicz, 1987; Ashford & Cummings, 1985; Cummings, 1965; Ettlie, 1983; Kanter, 1983; Monge & Cozzens, 1992; Paolillo & Brown, 1978). Notably, the organizational motivation toward innovation includes the absence of several elements that can undermine creativity: political problems and "turf battles," destructive criticism and competition within the organization, strict control by upper management, and an excess of formal structures and procedures (Amabile & S. Gryskiewicz, 1987).
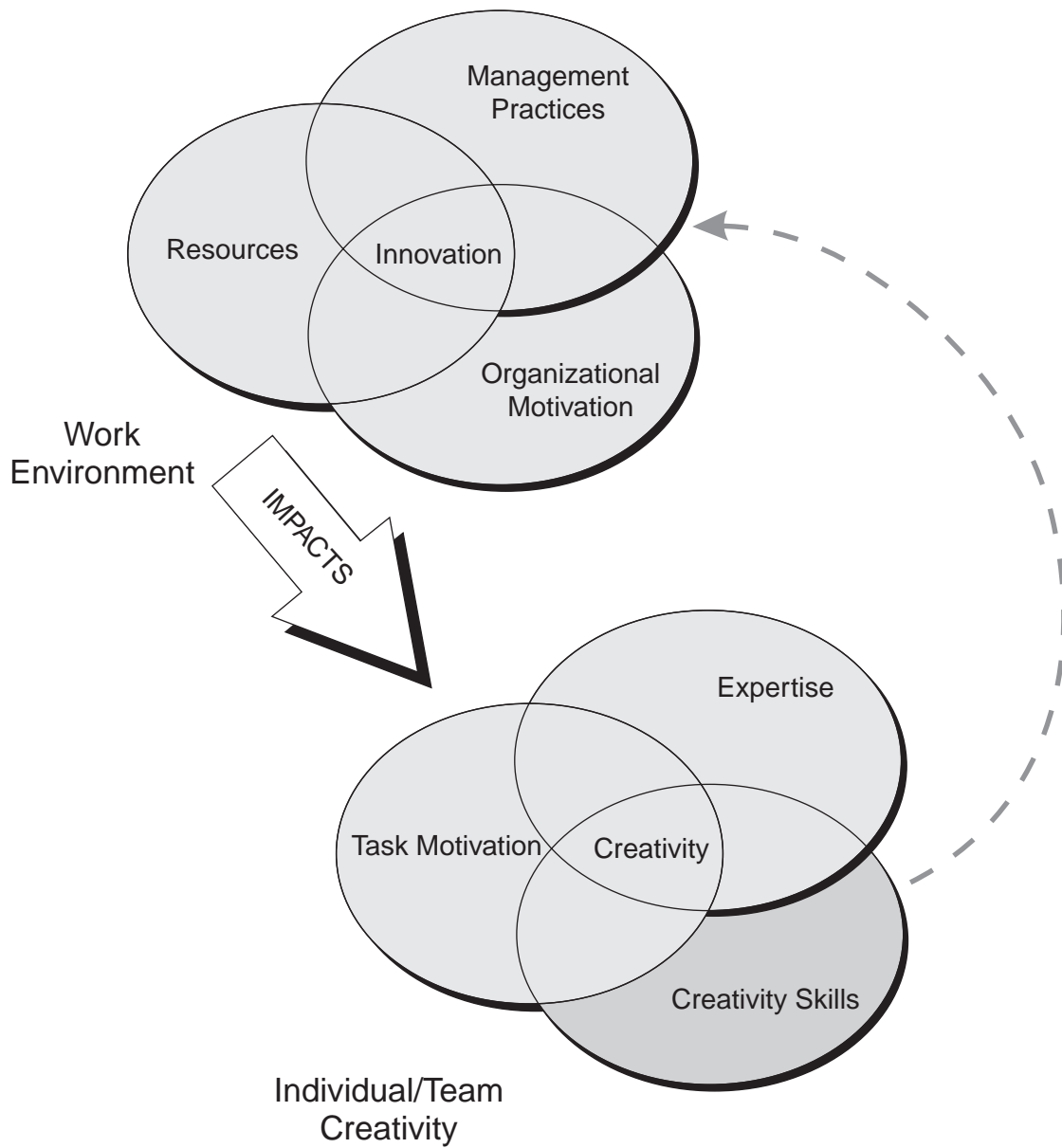
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[3] The organizational work environment elements are described more fully in the course note, "Managing for Creativity."

Figure 2

Impact of the Organizational Environment on Creativity

Resources

This component includes everything that the organization has available to aid work in the domain targeted for innovation. These resources include a wide array of elements: sufficient time for producing novel work in the domain, people with necessary expertise, funds allocated to this work domain, material resources, systems and processes for work in the domain, relevant information, and the availability of training (Amabile & S. Gryskiewicz, 1987).

Management Practices

This component includes management at both the level of the organization as a whole and the level of individual departments and projects. Several researchers and theorists have suggested that creativity and innovation are fostered by allowing a considerable degree of freedom or autonomy in the conduct of one's work (Amabile & S. Gryskiewicz, 1987; Andrews & Farris, 1967; Ekvall, 1983; King & West, 1985; Pelz & Andrews, 1966; Paolillo & Brown, 1978; Siegel & Kaemmerer, 1978; West, 1986). Some research has suggested the importance of appropriately matching individuals to work assignments, on the basis of both skills and interests, to maximize a sense of positive challenge in the work (Amabile & S. Gryskiewicz, 1987). Several aspects of project supervision appear to be important, starting with an ability to clearly set overall project goals while allowing procedural autonomy (Amabile & S. Gryskiewicz, 1987; Bailyn, 1985). In addition, project supervision is likely to foster creativity when it is marked by clear planning and feedback, good communication between the supervisor and the work group, and enthusiastic support for the work of individuals as well as the entire group (Amabile & S. Gryskiewicz, 1987). Finally, management practices for creativity include the ability to constitute effective work groups that represent a diversity of skills and are made up of individuals who trust and communicate well with each other, challenge each other's ideas in constructive ways, are mutually supportive, and are committed to the work they are doing (Albrecht & Hall, 1991; Amabile & S. Gryskiewicz, 1987; Ekvall, 1983; Monge & Cozzens, 1992).

Enhancing Creativity

Since the 1950s, a growing number of creativity-enhancement training programs have been offered to organizations (see Stein, 1974). The oldest and most widely-used program, and the source from which most such programs have been developed, is the Creative Problem Solving (CPS) process (Parnes, 1967; 1972). This process, developed during the 1950s and 1960s from the brainstorming technique (Osborn, 1963), involves the use of checklists and forced relationships in addition to the brainstorming principles of deferred judgment and quantity of idea generation.

Synectics, a somewhat similar process, relies more heavily on the use of metaphor and analogy in the generation of novel ideas (Gordon, 1961). The guiding principle of Synectics is to "make the familiar strange and the strange familiar"—to use cognitive techniques for distancing oneself from habitual thought patterns, and to also attempt to see connections between something new and something that is already understood. The prescribed cognitive techniques include personal analogy, direct analogy, symbolic analogy, and fantasy analogy.

Currently, there are a great many techniques for creativity enhancement in use by consultants and trainers—techniques as diverse as exploring nature, cutting off people's ties, using computers for electronic brainstorming, trying on different thinking hats (or modes of thinking), and painting rooms particular colors to stimulate creative thought. Although research on the long-term effectiveness of creativity-training programs is limited, many managers and human resource management professionals utilize such programs for employee development.

Recently, many creativity practitioners and consulting firms have expanded their repertoires far beyond single—or even multiple—creative-thinking enhancement techniques. Rather, they have begun to work toward large-scale organizational development efforts aimed at embedding creative-thinking approaches within an organizational environment that encourages skill development, rewards innovative results, and supports employees' deep-level intrinsic involvement with their work (e.g., Basadur, in press). Given that creativity depends on intrinsic motivation coupled with skill, these approaches are promising.

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