IDEAS ARE BORN IN FIELDS OF PLAY: TOWARDS A THEORY OF PLAY AND CREATIVITY IN ORGANIZATIONAL SETTINGS

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ABSTRACT

Play is manifested in organizational behavior as a form of engagement with work tasks and as a form of diversion from them. In this paper we examine both manifestations of play as sources of creativity. We argue that when play is a form of engagement with an individual's organizational tasks it facilitates the cognitive, affective, and motivational dimensions of the creative process, while when play is a form of diversion from an individual's organizational tasks it fosters the peripheral social-relational dynamics that encourage creativity in the first place. We explore the personal and contextual conditions that influence the two manifestations of play and the relative balance between them in a work context. Drawing on our analysis and the extant creativity literature, we conceptualize play as the cradle of creativity in organizations. We suggest that by temporarily suspending ordinary conventions, structural obligations, and functional pressures, and by encouraging behaviors whose value may not be immediately evident, play stimulates, facilitates, and even rehearses creativity. We discuss the practical relevance of play for the

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nature of work in creative industries and its larger intellectual importance for the study of human behavior in social systems.

INTRODUCTION

Play is a form of behavior that is readily and easily understood in experiential terms. We all know what play is and we all play, in work or in leisure, alone or with others, with objects, processes, or ideas. We recognize expressions of play in the world around us, and we are aware that play occupies social spaces of cultural and economic significance, such as theaters, cinemas, contests, sports, virtual games, games of chance, amusement parks, toys, hobbies, to name a few. While play as an experience is familiar to us, play as a topic of inquiry is among the least studied and least understood organizational behaviors. Despite its role in the economy, and despite the fact that other social sciences have long associated it with individual and social creative functioning, play usually appears in our literature only as an auxiliary or ill-defined construct. As a result, a number of important questions have not yet attracted systematic research attention. What is play in the context of an organization? What are its elements and manifestations? What are the consequences of play for organizational life? There is little published work on these issues and our field continues to lack conceptual frameworks and research agendas about the nature and roles of play in the world of work.

In this paper we suggest that play is a phenomenon that deserves systematic research attention because it is the cradle of an important organizational process, creativity. Although play could be discussed in relation to other organizational phenomena, its relationship with creativity is particularly important both in intellectual and practical terms. In intellectual terms, the relationship between play and creativity has found theoretical expression and empirical support in most other fields of social science. In their novel writings, Freud (1926), Vygotsky (1978), Huizinga (1955), Piaget (2001), Winnicott (2001), and Turner (1982) described play as a natural path to creativity. More recently, Russ (1999) and Dansky (1999) summarized empirical psychological studies which support that play fosters the creativity of children and adults alike. In two acclaimed biographical studies on exceptional professional creativity, Csikszentmihalyi (1997) and Gardner (1993) found that a common characteristic of their subjects was that they maintained a playful attitude toward their work throughout their careers. Research on play in other social sciences has led to a set of theoretical

principles that appear to generalize in samples ranging from preschool children to Nobel laureates. These theoretical principles provide one useful starting point for thinking about the relationship between play and creativity in the world of work. Because work organizations are idiosyncratically complex social systems, however, it is important to develop theory and research about the manifestations and roles of play specifically in work contexts.

In practical terms, an investigation of the relationship between play and creativity is timely and overdue when considering the evolution of the work culture. Since the dawn of the Industrial Revolution play has been viewed as appropriate for children and poets but not for serious adults (Spariosu, 1989). The traditional administrative emphasis on rationality and consistency in human behavior has suppressed play (March, 1976), but it has not extinguished it (Sandelands, 1988). In 1927, Henri de Man observed that in the Tayloristic industrial system it was "psychologically impossible" to deprive employees from opportunities to satisfy "the instinct for play" (in Roy, 1959, p. 160). In the 1950s, two studies by Roy (1953, 1959) vividly illustrated that play occurs regularly even in inhospitable work environments. But much has changed since that time: work culture has started to slowly, but steadily, transform its assumptions about play.

A few organizations now institutionalize play times, fun times, and ceremonies (Dandridge, 1986; Locke, 1989, 1996). Some companies, like Southwest (Hallowell, 1996) and IDEO (Sutton & Hargadon, 1997), have elevated play to a central aspect of their cultures. The advent of the knowledge economy has also brought play into the core of certain productive activities. Some organizations now support "free times" in which people can play constructively with new ideas (Nemeth, 1997; Pinchot, 1985); others provide autonomy which allows employees to select and turn work tasks into play (Amabile, 1996; Starbuck & Webster, 1991); and those in the vast play industries even hire employees whose passions and hobbies are reflected in the work itself (Kelley & Littman, 2001). Some authors have noted that it is these firms that earn profits, attract market attention, shape their industries, and make it to the top of 'most-admired' company lists (O'Reilly & Rao, 1997). However, to date it is a relatively small number of firms that have recognized the value of play. Many organizations continue to see play as, at best, an occasionally affordable distraction from work that may boost employee morale but has little overall impact on their core business. A theory that guides empirical research to exploring play and its implications for creativity can help a wider group of organizations to understand that when play is woven into the deep fabric of organizational life it can transform the very

nature of their products and work processes. Such a research stream will also strengthen the evolution of a more integrated work culture.

The importance of play for creativity has been recognized in our field, but has not received systematic attention. Thirty years ago, March (1976) suggested that play fosters creativity by legitimately freeing people from the requirement of behavioral consistency, and Weick (1979) argued that play fosters combinatorial flexibility, the novel recombination of the existing elements in one's behavioral repertoire. More recently, Amabile (1996) noted that a generous level of freedom encourages people to play constructively at their work by combining ideas in new ways that might not seem immediately useful in generating products or solutions. Other authors as well have proposed that play is important for creativity in the workplace (e.g., Barrett, 1998; Csikszentmihalyi & LeFevre, 1989; Glynn, 1994; Huy, 1999; Mainemelis, 2001). Although these articles offer a body of important insights, these insights have remained, to date, largely fragmented and dispersed across time and thematic areas. As a result, play has not yet claimed a significant role in organizational creativity research.

The knowledge and observations about play from other sciences, from our field, and from organizational practice are all pieces of the puzzle of play in organizational life. In this paper we arrange these pieces so as to advance the organizational literature in four ways.

First, previous articles have discussed play either without defining it (e.g., Roy, 1959) or by focusing only on one or two of its elements, be it means orientation (e.g., Glynn, 1994; Sandelands, 1988) or flexibility (e.g., Weick, 1979). This somewhat selective treatment has prevented the articulation of an encompassing definition of play as well as the development of a focused research stream to investigate play. In this paper we tackle the difficult but necessary step of defining the construct of play. We suggest that play is not a limited set of activities but a behavioral orientation to performing any type of activity. We define play as a behavioral orientation consisting of five interdependent and circularly interrelated elements: a threshold experience; boundaries in time and space; uncertainty-freedom-constraint; a loose and flexible association between means and ends; and positive affect. We describe in-depth the five elements of play, how they are interrelated, and how they differ, as a patterned behavioral orientation, from other forms of behavior.

Second, previous research has approached the organizational manifestations of play in a selective and perhaps dichotomous way. One part of the literature has focused on play as a diversion from work tasks (e.g., Elsbach & Hargadon, 2002; Jett & George, 2003; Roy, 1959), while the other part of the literature has discussed play as a way of engaging with

work tasks (e.g., Amabile, 1996; Glynn, 1994; Mainemelis, 2001). In this paper we give equal attention to both manifestations of play, how they are interrelated, and under which conditions they interact to foster creativity. This dual focus allows us to create a more complete picture of the polymorphous nature and roles of play in organizational life.

Third, previous articles have explained the relationship between play and creativity mainly through cognitive (e.g., Glynn, 1994) and motivational (e.g., Amabile, 1996) mechanisms. Here we pay attention to the cognitive and motivational dimensions of this relationship, but we also give center stage to the role of affect as a link between play and creativity – a link which has largely been overlooked in the creativity literature, to date.

Finally, we address a question that has rarely been tackled, to date: how important exactly is play for creativity in organizations? We argue that play is very important because it is a context of behavior that can simultaneously encompass all the elements and processes identified by previous research as stimulants of creativity. Our argument is not that all play is creative but that, more often than not, creativity is born out of some form or moment of play. We suggest that play facilitates the full range of factors that enable individual creativity and that by nurturing play organizations can improve their creative output. When play is marginalized by being viewed as detrimental to work its benefits to creativity are also likely to be marginalized. We argue that the full benefits of play to creativity are more likely to be realized when play is accepted and encouraged as an integral part of organizational life.

We begin by defining play as a patterned behavioral orientation, which consists of five interrelated elements. We then discuss two manifestations of play in organizations, namely play as a form of engagement with work tasks and play as a form of diversion from them. Play as engagement is the fundamental and most important manifestation of play in relation to creativity. We suggest that play as engagement fosters creativity directly by facilitating the cognitive and affective dimensions of the creative process, as well as the motivational and skill conditions that support the creative process in the first place. In the following section we suggest that play as diversion fosters creativity as well, but in more peripheral, indirect ways. Play as diversion may include office celebrations, surfing the internet, joking with colleagues, and other activities that are not part of an individual's core work tasks. Although such activities are external to task performance, they are integral to the social context in which task performance takes place. Research has shown that the social context affects task performance (e.g., Amabile, Conti, Coon, Lazenby, & Herron, 1996). We argue here that,

under certain conditions, play as diversion shapes the social context in a way that encourages and enhances creative task performance. In the following section, we discuss the conditions that facilitate play and influence the relationship between play as engagement and play as diversion. We suggest that the relative balance between the two manifestations of play depends upon and reflects the nature of work and the nature of creativity in organizational contexts. We also argue that the full benefits of play to creativity are realized when organizations embrace both play as engagement and play as diversion. Finally, in the last section we synthesize our arguments at a higher level of abstraction. We conceptualize play as an organizational space of creative potential and argue that, although on the surface the reality of play seems to contradict the very idea of work, play in fact creates new work for the future. We conclude by addressing limitations of our approach, remaining puzzles endemic to the nature of play, and future directions for organizational research.

ELEMENTS OF PLAY

Play is not a set of activities but a way of organizing behavior in relation to any activity (Miller, 1973). Designing and writing are play sometimes but not at other times; cooking and driving are play for some but not for others. The essence of play is that one does not "do" the activity in the ordinary sense; one, rather, "plays" it (Huizinga, 1955). Theories in anthropology (e.g., Huizinga, 1955; Miller, 1973; Turner, 1982), psychology (e.g., Bruner, 1972; Winnicott, 2001) and sociology (e.g., Caillois, 2001) describe play as a set of qualities that is superimposed upon an activity regardless of its content. Integrating and elaborating upon these insights, we define play as a behavioral orientation consisting of five elements: a threshold experience; boundaries in time and space; uncertainty-freedom-constraint; loose and flexible association between means and ends; and positive affect.

Threshold Experience

Play is accompanied by the awareness that it is distinct from ordinary life. To play is to stand at a threshold between what we normally perceive as two dichotomous states. Play is often a threshold between the true and the false, being itself neither true nor false (Sutton-Smith, 1997). In a playfight, a bite is both not a bite and not *not* a bite; in a game of cops-and-robbers, a robber is not a robber but also not *not* a robber, that is, she is not a real robber but

she does behave as if she were one. Plays offer such thresholds between convention and illusion, the former involving the realization that what takes place is not true, the latter involving the enactment of those happenings as if they were true – the "willful suspension of disbelief" (Coleridge in Bailey & Ford, 1994, p. 385). Play, therefore, transforms the nature of an activity. The behaviors of a playfight are part of 'fighting', but much of the fear, risk, and objectives of a real fight are removed, so that the nature of the activity is not the same as fighting. Play transforms the nature of work tasks in the same way, so that the task involves work activity and may result in work products, but the task is not experienced and is not performed as work in the conventional sense of obligatory, instrumental, and efficiency-orientated activity (Glynn, 1994; Sandelands, 1988).

Play has also been described as a transitional space between inner and outer reality, an intermediate area of experiencing to which inner reality and external life both contribute (Winnicott, 2001). Simulations and role-plays offer such transitional microcosms in which managers can experiment with possible realities and identities (Schrage, 2000). Play may also be a threshold between stability and change, the process of leaving one thing without having fully left it, and of entering something else without yet being fully part of it (Ibarra, 2003; Levinson, 1981). This is known as liminality, a transitional phase which is distinct both from the old and from the new, it shares attributes of both, and encircles experimentation. Play, as a liminality context, temporarily suspends social conventions and rules, giving way to ambiguity, joy, frivolity, and exploration of alternative behaviors (Turner, 1982, 1987).

Between-and-betwixt the inner and the outer, the old and the new, or the true and the false, play has a threshold awareness that sets it apart from life as usual (Huizinga, 1955). For example, when salespeople stage comic acts that exaggeratedly mimic interactions with clients, they superimpose a symbolic reality upon ordinary life (Goffman, 1959), in the same way that toys and simulations serve as points of departure from a normal perceptual situation (Bruner, 1972), that is, as transitional spaces between the real and the imaginary.

Boundaries in Time and Space

Play is circumscribed within limits in time and space, be it material or ideal (Huizinga, 1955). Societies historically mark off a space and time for play. Sports, festivals, and spectacles are institutionalized forms of play that claim their own space, such as stages or playgrounds, and a "time out of time," an autonomous duration perceived not so much by clock time but by what

internally happens within it from its beginning to its end (Falassi, 1987). These boundaries separate play from normal life, suspend normal rules, and legitimize undesirable, repressed, or unexpected social roles and behaviors (Turner, 1982). In an organizational celebration over the weekend, an employee can drink, eat, or joke more than usual, or she can be the leader of the basketball team in which her boss is a player. Falassi (1987, p. 3) notes that within the social boundaries of play,

> People do something they normally don't; they abstain from something they normally do; they carry to the extreme behaviors that are usually regulated by measure; they invert the patterns of daily social life. Reversal, intensification, trespassing, and abstinence are the four cardinal points of festive behavior.

Falassi's account applies not only to festive play, but also to play behaviors that take place within organizations and involve work tasks. Organizations like DuPont, Motorola, and Google permit people to spend up to 20 percent of their work time freely experimenting with new ideas they are intrinsically curious about (Battelle, 2005; Nemeth, 1997; Pinchot, 1985). Such practices institutionalize a legitimate space and time in which individuals feel safe to play with their work away from rigid structural requirements (Amabile, 1996) and social pressures for conformity (Nemeth, 1997) and behavioral consistency (March, 1976).

In a second sense, the boundaries of play are not institutionalized or conspicuously delineated. The same space may be a space for play at some times but not at other times. Locke (1989, 1996) found that informal social play usually takes places in the few moments before works starts, after work ends, or during breaks from work. The same space may also encircle play for some but not for other individuals. The boundaries of play in that case are not a property of the larger social system but are defined, instead, by the norms of a play community within it. This is evident in Roy's (1959) study of the informal social play of a group of machine operators. He notes that each day is marked by interruptions of work that are designated as ritualized "times" – 'banana time,' 'coffee time,' or 'peach time' – that delineate a play space of informal interactions that alleviate the monotony of manual work:

> If the daily series of interruption be likened to a clock, then the comparison might best be made with a special kind of cuckoo clock, one with a cuckoo which can provide variation in its announcements and can create such an interest in them that the intervening minutes become filled with intellectual content. The major significance of the interaction interruptions lay in such a carryover of interest. The physical interplay which momentarily halted work activity would initiate verbal exchanges and thought processes to occupy group members until the next interruption. The group interactions thus not only

> marked off the time; they gave it content and hurried it along. (161–162) The 'beast of boredom' was gentled to the harmlessness of a kitten. (p. 164)

Finally, the limits of play may also be esoteric or reflect idiosyncratic motivations and work rhythms. Pinchot (1985) notes that failing to secure permission to work on a task they are passionate about, employees may stay late at work to play with new ideas or they may create their own 'hidden' space and time for play within the workday. Play may also involve states of flow (Csikszentmihalyi, 1990) and timelessness (Mainemelis, 2001), which command total affective, cognitive, and physical immersion in the task to the point that they collapse the distinction between self and activity and alter the perception of time and space (Mainemelis, Goldenberg, & Ranganathan, 2006). Intense forms of play involve such states of consciousness that separate them from the normal sociotemporal reality of the workplace.

Uncertainty-Freedom-Constraint

Play usually involves surprise, uncertainty, or unresolved possibility (Sandelands & Buckner, 1989). Play activities vary in terms of how much uncertainty they entail; for example, theater ranges from the highly scripted to the purely experimental (Turner, 1982). Most forms of play, however, tend to involve some uncertainty or unresolved possibility. One can internalize the rules of chess and master its strategies, but one can never tell how a game is going to unfold, for no two games of chess are ever alike. The uncertainty, or surprise, of play is linked, in turn, to both freedom and constraint. Play is relatively free from external constraints and allows participants a considerable degree of autonomy to manipulate processes and assume new, even unrealistic identities and roles (Caillois, 2001; Dansky, 1999). At the same time, play imposes its own internal constraints, which are determined or voluntarily accepted by the players themselves.

These elements are manifested in different ways across different forms of play. In competitive games, the constraints are fixed rules that do not determine the course of action or the outcome, but rather, enhance the uncertainty of the game. For example, sports have two elements that make them intrinsically rewarding: uncertain outcome, which stimulates surprise and excitement; and sanctioned display, which allows the demonstration of physical or intellectual dexterity within a set of rules (McPherson, Curtis, & Loy, 1989). Other play forms do not have fixed rules but are bounded by norms developed by the players. Informal social play is sustained by norms that stimulate novel interactions; evolve in time; and suspend play at once when they are violated (Roy, 1959). In improvisational play, constraints

emerge from the interaction between players and events: constraints drive novel action, which creates new constraints for future action, in a mutually reinforcing process (Barrett, 1998; Nachmanovitch, 1990). Often, the players themselves introduce obstacles to make the activity more uncertain or more complicated than the situation demands (Piaget, 2001). Miller (1973) refers to this process as 'galumphing', the "patterned, voluntary elaboration or complication of process, where the pattern is not under the dominant control of goals" (p. 75).

Play allows the voluntary exercise of control systems in which the players can choose to some degree the arbitrariness of the constraints within which they will act or imagine (Sutton-Smith, 1997). Through the induction of constraints that introduce opportunities for further mastery or further chaos, play maintains its surprise and unpredictability and allows people to exert or to lose control in novel situations. Managerial simulations and role-plays provide such "contexts for experiments within which practitioners can suspend or control some of the everyday impediments to reflection-in-action" (Schon in Schrage, 2000, p. 33).

Loose and Flexible Association between Ends and Means

Play may be triggered spontaneously (e.g., fantasy); it may be undertaken deliberately but unfold arationally (e.g., improvisational play); or it may have goals that evolve over time (e.g., experimental play). Play may involve ends that defy reason (e.g., whirling around a circle) or ends that celebrate reason (e.g., chess). What defines play is not the presence or absence of goals but the fact that play is not motivated by the search for efficient means to satisfy a fixed goal in a reliable way (Glynn, 1994); not the degree of rationality it may or it may not have, but the flexible manner by which means and ends are handled (Dansky, 1999). "Play is not means without the end; it is a crooked line to the end; it circumnavigates obstacles put there by the player, or voluntarily acceded to by him" (Miller, 1973, p. 93). Bruner (1972, p. 689) refers to play as "that special form of violating fixity" where ends are often altered to meet the means at hand.

Positive Affect

Play involves positive affect that varies in its degree of intensity (from relaxation to frantic joy) and complexity (from simple feelings such as fun to complex feelings such as emotional relief). Play can be relaxing when one plays solitaire on the PC during a work break (D'Abate, 2004), or it can

involve high arousal when a medical team celebrates with exuberant affect saving the life of a patient (Locke, 1996). While play is often thought of only as ''fun,'' its affective structure is more complex and it often entails negative emotion.

The content of play may involve negative emotional themes. For example, children often act out angry, violent, or war-related themes (Russ & Kaugars, 2000–2001). Negative feelings are expressed through and even used in play, such as the channeling of aggression through sports. What is often positive in affective terms about play is that it offers a safe space for the expression and transformation of unpleasant or horrifying feelings, such as loss, pain, or death (Winnicott, 2001). Play allows people to cognitively work through and reconcile conflicting emotions, also enabling the relief of negative emotional states. Locke (1989, 1996) has used the term 'magical play' to describe the deliberate effort to draw into a moment of play someone in whom feelings such as doubt, anger, or despair are indicated. In her study in a pediatric clinic of seriously ill children, she observed this pattern in the interactions of medical teams who have just lost a patient and in the way physicians cope with the emotions of the parents of ill children. Play, therefore, involves positive and negative emotions, and cognitive and emotional elements, but it generally results in some form of positive affect, be it fun, relaxation, ecstatic joy, or emotional relief.

We have defined play as a behavioral orientation consisting of five elements: a threshold experience; boundaries in time and space; uncertainty-freedom-constraint; flexible and loose association between means and ends; and positive affect. These elements are not antecedents, consequences, or epiphenomena of something else that is play; rather, they are the very stuff play is made of. While not all five elements need to be present to transform an activity into a play, the more each of these elements is present, the more play-like the activity becomes. In its most intense forms, play involves a circular interaction among those elements. For example, the interaction between the relative freedom from external constraint and the imposition of internal constraints generates and sustains surprise and uncertainty.

While these elements can be manifested independently in other forms of behavior, in play they become coupled and take specific meaning. For example, the positive affect of play is not a general positive mood due to some largely unidentified reasons. Rather, it is positive affect tied to very specific reasons, such as involvement, surprise, uncertainty, and out-of-the-ordinary experience. Similarly, the joy experienced in play is not attached to attaining an effect; if it were, climbers would fly to the top of the mountain and tennis players would be happy to be declared winners without ever playing a

match. But climbers climb and tennis players get thrills by hitting winners because they enjoy producing these effects and care about the activity, its rules, and its integrity (Glynn, 1994; Miller, 1973).

MANIFESTATIONS OF PLAY

As an organizational behavior, play is manifested in two general ways. First, play can be a form of diversion from work tasks. Designing is the core aspect of the work of an industrial designer; playing solitaire on the PC is not. We refer to the latter behavior as "diversionary play" to convey that such play behaviors occur daily when employees are not working on work tasks (Elsbach & Hargadon, 2002; Jett & George, 2003). We cite earlier a passage in which Roy (1959) suggests that diversionary play occurs daily at work and, often, it occurs with ritualistic precision. Play, in these terms, is not internal to work tasks but a part of the larger social context in which individuals perform them.

Second, play may also be internal to work tasks, that is, a way for engaging with one's work. Starbuck and Webster (1991, p. 87) write that, "Advertising agents, creative writers, designers, planners, and social theorists use fantasy and imagination. Athletes compete. Consultants and researchers explore. Mathematicians solve puzzles. Therapists may use therapeutic play. Such people cannot work without playing." In a study with 589 employees, Abramis (1990, p. 364) found that some experience their work as play; for example, an employee comments, "I can not believe that people pay me to do my hobby." Play as engagement refers to those occasions where employees do not halt or escape work to play but, rather, turn their work into play (Amabile, 1996; Beatty & Torbert, 2003). Play, in this sense, is a behavioral orientation to performing work, and as such, it has a direct functional relation to creativity. While play as diversion affects creativity indirectly, by shaping a favorable social-relational (Perry-Smith & Shalley, 2003) and affective (Elsbach & Hargadon, 2002) climate, play as engagement affects creativity directly because it is internal to an individual's work tasks in relation to which creativity is conceptualized and assessed. We analyze these relationships in the next sections.

PLAY AS ENGAGEMENT AND CREATIVITY

Creativity is the generation of ideas that are novel and potentially useful (Amabile, 1988; Woodman, Saywer, & Griffin, 1993). Psychological research

has identified several cognitive (e.g., Guilford, 1968) and affective (e.g., Russ, 1993) processes that facilitate creativity. Organizational research has explored how creativity is influenced by motivation (e.g., Amabile, Hill, Hennessey, & Tighe, 1994); the work climate (e.g., Amabile et al., 1996); social-relational processes (e.g., Perry-Smith, in press); affect (e.g., Amabile, Barsade, Mueller, & Staw, 2005); finite states (e.g., Mainemelis et al., 2006); and the interaction between personal and contextual factors (e.g., Oldham & Cummings, 1996). This body of findings largely supports the componential theory of Amabile (1988), which suggests that the social context, motivation, domain-relevant skills, and creativity skills interact to facilitate creativity. Drawing on this extant knowledge, we propose below that play as engagement fosters the cognitive and affective dimensions of the creative process, as well as intrinsic motivation and the development of domain-relevant skills and creativity-relevant skills.

Play and Cognitive Processes

Play facilitates five creativity-relevant cognitive processes: *problem framing*, *divergent thinking*, *mental transformations*, *practice with alternative solutions*, and *evaluative ability*. Problem framing determines how the problem will be solved. When problems are posed in a unique way, their solutions are more likely to be novel. Problems can be presented or discovered, but in either case, framing the problem in a unique way is essential (Getzels & Csikszentmihalyi, 1976). Play provides ample room for redefinition of the situation. Its betwixt-and-between reality defamiliarizes the elements of even a familiar activity, increasing in that way the likelihood that the task will be framed in a unique way. Tasks are also more likely to be framed in unique ways when their constraints are internal to the task and under the control of the people performing them (Basadur, 1994; Runco & Sakamoto, 1999). The relative freedom of play from external constraint increases the likelihood that even familiar tasks will be reformulated in fresh ways. Furthermore, the loose and flexible association between means and ends in play encourages people to sense problems in the first place, that is, to avoid defining the task in the old and tried way that usually leads to already known rather than to novel solutions.

The novelty that is most important to creativity is primarily associated with two other cognitive processes, divergent thinking and mental transformations. Divergent thinking refers to the generation of information from given information where the emphasis is on variety of output from the same source (Guilford, 1968). It involves ideational fluency (numerous ideas),

ideational flexibility (shifts in approach), and broad scanning (Torrance, 1995; Sternberg & O'Hara, 1999). Mental transformations entail the transformation of existing knowledge into new patterns of configurations (Guilford, 1968). They involve association, combination, or transformation of existing memory structures; metaphoric production; imagery; analogical thinking; and broad and flexible idea categorization (Ward, Finke, & Smith, 1999). Empirical psychological studies have shown that play involves a great deal of both divergent thinking and mental transformations (for reviews see Dansky, 1999; Runco, 1999; and Singer & Singer, 1990).

The boundaries and threshold reality of play stimulate novelty by encouraging experimentation with diverse ideas and possibilities that would not be tried under other circumstances. "Play decreases the risks commonly associated with experimentation and, thus, may produce more variance with its circuitous, organic, and galumphing responses" (Glynn, 1994, p. 43). The fluidity of play and its relative freedom from external constraint decrease the likelihood of functional fixedness and premature closure, and stimulate the generation of numerous and diverse ideas to the task at hand (Amabile, 1996). By liberating concepts, objects, and behaviors from their normal contexts, and by uncoupling means from ends, play also fosters unusual mental associations – the reconfiguration of the components of ideas, objects, or behaviors into new arrangements (Bruner, 1972). For example, in their long hours of play, two bicycle-store owners, the Wright brothers, combined their knowledge of bicycles with their observations of birds to invent the first flying airplane (Jacab, 1999).

Moreover, in play people step outside the familiar into the imagined and even into the contradictory (Bateson, 1955). This is facilitated by the nature of play as existing on the threshold between reality and unreality discussed above. The symbolic realities often enacted in play involve imagery, metaphors, and analogies, all of which facilitate creativity (Dansky & Silverman, 1973, 1975). Fein (1987) has observed that in play children not only enact alternative realities but also craft and manipulate within them elaborate symbol systems. In his seminal analysis of the creativity of Albert Einstein, Gardner (1993, p. 104) notes that Einstein found affective pleasure in creating imaginary worlds in which he developed and manipulated "his symbol systems of choice." Einstein himself wrote,

> The worlds of language, as they are written and spoken, do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be "voluntarily" reproduced and combined … From a psychological viewpoint this combinatory play seems to be the essential feature in productive thought. Conventional words or other signs

> have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced as well … When I examine myself and my methods of thought I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge … Einstein obviously enjoyed creating and exploring words with his own mind. (Gardner, 1993, p. 105)

The problems Einstein puzzled with did not have a known solution precisely because he framed them in that way. In organizational contexts, however, even when a task does not have a known solution, an ends orientation, in which one is focused on the outcomes of the activity rather than its means, usually leads managers to accept the first solution that is satisfactory enough (Simon, 1997). More often than not, this is not the most creative solution. Creativity requires exploring and practicing with alternative responses to the task (Getzels & Csikszentmihalyi, 1976; Torrance, 1995). The fluidity and flexibility of play decrease the likelihood of premature closure and stimulate practicing with many alternative responses. By fostering the generation of alternative responses, play also facilitates a better, more informed evaluation and selection of a solution (Singer & Singer, 1990), as well as the generation of more creative solutions by possibly combining elements of different solutions.

When individuals play, therefore, problem framing, divergent thinking, mental transformations, practice with alternative solutions, and evaluative ability are all facilitated. Put another way, creativity requires taking and switching between different perspectives (Isen, 1999). Play facilitates exploring different perspectives, creating alternative worlds, assuming different roles, enacting different identities, and also taking all these, and the players themselves, out of the cognitive contexts in which they normally operate.

Play and Affective Processes

Affect achieves its impact on creativity by influencing cognitive functioning (Amabile et al., 2005; Isen, 1999; Ward et al., 1999). Integrating several studies, Russ (1993, 1999) has identified four specific affective processes that influence the creative process: *affective pleasure in challenge, openness to affective states, emotional modulation of affect, and access to affect-laden thoughts*. In this section, we briefly discuss these four affective processes and suggest that play is conducive to them.

Affective pleasure in challenge refers to the pleasure of identifying the problem and the joy of seeking and achieving novel insights (Russ, 1993). Affective pleasure in challenge stimulates divergent thinking (Isen, 1999), decreases the likelihood of premature closure, and strengthens

persistence on the task (Csikszentmihalyi, 1990). Because the positive affect of play is not attached to attaining an effect but to producing it, affective pleasure in challenge, excitement attached to surprise or uncertainty, and the joy of "getting lost" in the task are all present in play (Russ, 1993). In fact, taking affective pleasure in challenge, tension, and uncertainty is the hallmark of play.

Openness to affective states refers to experiencing a wide range of emotions. Openness to affective states has been found to facilitate artistic (Getzels & Csikszentmihalyi, 1976), scientific (Feist, 1999a), architectural (Dudek, 1999), medical (Estrada, Young, & Isen, 1994), and managerial creativity (Amabile et al., 2005). The empirical literature suggests that positive affect fosters divergent thinking and mental transformations, while mild negative affect in the form of tension can motivate problem-finding (Feist, 1999b; Isen, 1999; Vosburg & Kaufmann, 1999). Creativity entails a wide range of emotions – joy, passion, excitement, anxiety, frustration, and disappointment (Amabile et al., 2005; Shaw, 1999). The emotional modulation of both positive and negative emotions facilitates divergent thinking and mental associations (Lieberman, 1977; Russ & Grossman-McKee, 1990). This process is affective as much as it is cognitive for it integrates affect within a cognitive context (Russ, 1993). Comfort with experiencing intense affect and tolerance of frustration and anxiety are some manifestations of this process.

Play permits the safe expression and modulation of a wide range of emotions (e.g., joy, passion, sadness, fear) because it allows the players to choose to some degree the limits within which they will act or imagine. Negative emotions are not excluded or suppressed in play; they are safely expressed up to a degree that does not destroy the overall positive affective quality of the experience (Fein, 1987). For example, in play children express as much aggression, fear, and primal "bloody themes" as they can tolerate while having fun (Russ, 2004). Similarly, a tennis player suggests (in Sutton-Smith, 1997) that the joy of play is often related to the release of aggression and the tension of its unpredictable twists:

> I think women's tennis is a ballet type of game. It's got beautiful movements and I think there is nothing else that combines the beauty of movement with the tremendously graceful spirit. But it really is also an assassin's game: if one person has won, the other one is dead. There is no compromise. I become quite aggressive on court. I get a thrill out of hitting a winner. (p. 88)

Research has shown that positive affect induced in a safe context stimulates divergent thinking and mental transformations, while positive affect induced

in a threatening context leads to increased self-protection, risk-aversion, and concern with possible loss (Isen & Geva, 1987; Kahn & Isen, 1993). Play fosters creativity because it allows both the positive *and* safe experience and expression of emotion. Even when play entails negative affect, it results in an overall positive emotional experience, such as the channeling of aggression through sports. Furthermore, although play is not safe per se (things can and some times do go wrong in play), it is much safer than its morphological analogues in real life. Playing with a simulation of a market crash is more fun and safer than experiencing a real market crash (de Geus, 1996); playing with a prototype is safer than producing a product right away (Schrage, 2000). Also considering that jumping off a bridge with an attached cable is more fun and safer than jumping off without it, it seems that what people seek in play is not risk per se but variety; and it is variety, rather than risk per se, that stimulates divergent thinking and mental transformations (Isen, 1999).

Another process conducive to creativity is access to affect-laden thoughts (Russ, 1993). Affect-laden thoughts are concepts and images that contain emotional content. As such, they provide an associative bridge between cognitively remote concepts representing objects, persons, or events in memory (Getz & Lubart, 1999; Ortony, 1993). Concepts are stored in memory according to their cognitive components but an emotional component is also attached to them. When the affective tones of two concepts are shared, the two concepts might be perceived as more related than they would otherwise (Blaney, 1986; Isen, 1999). Concepts can resonate emotionally even when they seem unrelated in cognitive terms. This emotional link fosters associations between concepts stored in memory in distant mental categories. Affect-laden themes are especially conducive to imagery, metaphors, and analogies. They also help explain why accounts of even scientific, "technical" creativity are often associated with emotional recognition at the moment of key insights or discoveries (Feist, 1999b; Shaw, 1999).

Affect-laden themes may also be manifestations of primary-process thought, the process by which instinctual energy surfaces in the form of concrete images or ideas (Dudek, 1980). Unlike secondary-process (the abstract, logical mode of thought), primary-process is not subject to rules of logic or oriented to reality; it is affectively charged and guided by "a free flow of energy not bound by specific ideas or objects … ideas are easily interchangeable and attention is flexibly and widely distributed" (Russ, 1993, p. 20). Access to affect-laden primary process themes has been found to facilitate creativity (Dudek, 1999; Feist, 1999b; Suler, 1980). Dreams are examples of primary process at sleep; fantasy play is the main gateway to primary-process while one is awake (Ederlyi, 1992; LeDoux, 1996; Russ, 1993).

Play offers access to affect-laden themes whether they are related to primary process or not. Getz and Lubart (1999) note that just because a link in memory resonates emotionally does not mean that it will be noticed and accessed consciously; in order to be detected, the emotional resonance has to pass a detection threshold beyond which the affective connection between two otherwise unrelated concepts is triggered. Positive affect appears to lower this threshold, allowing more affect-laden links to emerge in awareness, while negative affect appears to have the inverse effect (Isen, 1999). Like other positive affect states, play increases the likelihood that an affect-laden link will be consciously recognized. But unlike most other positive affect states, play lowers even further the point at which an emotional resonance is noticed, because it also lowers the threshold of rationality (LeDoux, 1996). Both experientially and structurally, play is fluid and not governed by strict rules of logic.

Moreover, like positive affect-laden themes, negative affect-laden themes can trigger mental associations that are useful to creativity (Russ, 1999). Because individuals can safely express emotion in play, they are more likely to access more and more diverse affect-laden material, including that with negative content. From theater (Turner, 1982) to simulations of air combat (Torrance, 1995), play fosters the symbolic enactment of even horrific situations because it allows people to experience to a mild degree the actual negative emotions attached to those situations in real life (e.g., fear, panic, death). This facilitates access to otherwise undesirable affect-laden material, fostering in that way associations between concepts or images stored in memory in very distant categories (Russ, 1993). By blending affect and cognition, the positive and the negative, and the true and the false, play provides individuals with access to more and more diverse material to work with in idea generation.

Therefore, play fosters affective pleasure in challenge, openness to affect states, and access to affect-laden thoughts. Play also aids the emotional modulation of affect states. Clearly, reciprocal effects between play, affect, and cognition occur in the creative process. Play stimulates affective pleasure in challenge, which stimulates divergent thinking, which may lead to surprising discoveries that reinforce affective pleasure in the task and play itself.

Play and Task Motivation

Besides its direct influences on the cognitive and affective dimensions of the creative process, play as engagement also achieves its impact on the creative

process by facilitating three other factors: intrinsic motivation, domain-relevant skills, and creativity skills. Intrinsic motivation refers to engaging in the task for the inherent satisfaction one finds in it (e.g., interest, involvement, curiosity, positive challenge), while extrinsic motivation refers to engaging in the task in order to attain some outcome that is external to it (e.g., extrinsic rewards, expected evaluation, compliance with external directives; Amabile, 1996). Although extrinsic motivation is not necessarily detrimental to creativity, most studies have found that with little or no intrinsic motivation it is unlikely that individuals will be creative (for reviews see Amabile, 1996; Collins & Amabile, 1999; Shalley, Zhou, & Oldham, 2004).

Intrinsic motivation is not a necessary or sufficient condition for play. In other words, not all intrinsically motivated activities are play. Clearly, however, intrinsic motivation increases the likelihood of play for people are more likely to play with the activities they find intrinsically rewarding. The positive affect associated with playing these activities reinforces, in turn, one's intrinsic orientation toward them. Most importantly, however, play (with the specific task) facilitates intrinsic task motivation in those cases where the initial degree of intrinsic task motivation is low or tentative. Play is not a necessary condition of intrinsic task motivation but it is a sufficient one. We write earlier that play structures an activity in a way that stimulates and sustains surprise and affective pleasure. Controlling for the initial degree of intrinsic task motivation, empirical studies have found that play increases interest in, involvement with, and curiosity about the content of the task (Webster & Martocchio, 1992, 1993). This empirical finding resonates with our own experience in the classroom: play stimulates a great deal of interest regardless of the topic and students' initial attitudes toward it. Be it in a negotiation game or in a managerial role-play, the uncertainty, fluidity, and threshold reality of play itself usually stimulate excitement, tension, and fun.

Furthermore, play stimulates intrinsic task motivation even when it entails multiple personal and social goals (Starbuck & Webster, 1991). For example, athletes historically compete not only for the love of the sport, but also for glory, social status, and sponsorships; in the vast majority of cases, however, the structure of the game itself – its surprise and competition within a fixed set of rules – stimulates interest and the love of the sport (McPerson et al., 1989; Sutton-Smith, 1997). These intrinsic rewards increase, in turn, the likelihood that one will continue playing with the task in the long run. For example, Amabile (1996) notes that Michael Jordan played basketball for many external rewards but he also included in his contract a "love for the game clause" that he be free to play pick-up games

any time he wished. Therefore, we suggest that there is a positive, two-way, reciprocal interaction between play and intrinsic task motivation, and we also clarify that play is a sufficient condition of intrinsic motivation while the inverse is not true.

Play and Domain-Relevant Skills

An individual's skill in a given task domain is another factor that underlies his or her ability to be creative in that domain (Amabile, 1988). Domain-relevant skills comprise the individual's knowledge and expertise in a domain, and provide a set of cognitive pathways for the individual to follow in approaching his or her work. For a chef, domain-relevant skills constitute his knowledge of flavors and ingredients, cuts and cooking techniques; for a lawyer, task skills include her understanding of laws and regulations, and her ability to be persuasive in the courtroom. Domain-relevant skills provide the initial set of elements (e.g., knowledge, talent, experience) that enter the "combinatorial game" of the creative process. Domain-relevant skills are determined by innate skills, formal education, and continuous practice (Amabile, 1996).

Play as engagement with work tasks allows individuals to improve their domain-relevant skills on the job. Play minimizes the potential for negative consequences of learning by providing a less risky situation (Bruner, 1972). This safety stimulates risk taking and learning from errors. In play, one is less afraid to make mistakes and less inclined to discard them as disturbing anomalies (Glynn, 1994). Errors are used in play as triggers of exploration and practice, allowing one to perfect his or her skill and to discover unnoticed variables or opportunities in some of the most troublesome or baffling parts of his or her work (Nachmanovitch, 1990; Schrage, 2000). In doing so, it provides the player with valuable information that enables her to refine her skill at the task and also broaden the repertoire of skills she has available to apply to the task.

Furthermore, skill development is facilitated when individuals are excited about the task, engage in it primarily in order to master it, and when the task involves an optimal level of challenge (not too difficult which leads to anxiety, not too easy which leads to boredom; Csikszentmihalyi & LeFevre, 1989; Deci & Ryan, 1985; Massimini & Delle Fave, 2000). By uncoupling means from ends, play fosters the exploration of task-related behaviors and variables which would be less likely to be tried in other situations, such as when one performs the task to attain an external outcome. Moreover, the voluntary exercise of control systems in play allows

one not only to select an initial optimal balance between challenges and skills, but also to gradually adjust the level of optimal balance so as to continue practicing his or her skills at continuously higher levels of mastery (Csikszentmihalyi, 1990).

Play has, of course, drawbacks and is not a panacea to all forms of learning. Previous studies have shown that play is not the best way to learn when efficiency, reliability, and control of the learner are primary concerns (Glynn, 1994; Sandelands, 1988; Webster & Martocchio, 1992, 1993; see also Starbuck & Webster, 1991). However, the same studies have shown that play fosters involvement, exploration, experimentation, flexibility, and quality in learning, which, as the extant creativity and learning literature suggests, are particularly conducive to developing and refining domain-relevant skills (Csikszentmihalyi, 1990; Kolb, 1984; Nickerson, 1999).

Play and Creativity Skills

Research has shown that relatively stable individual characteristics influence creativity. Cognitive style, intelligence, and personality traits all play a role in determining creative potential (for reviews see Amabile, 1996; Feist, 1999a; Stenberg & O'Hara, 1999). At the same time, individuals can develop the main cognitive muscles of creativity – divergent thinking and transformation abilities (Feldman, 1999; Nickerson, 1999). Scratchley and Hakstian (2000–2001) controlled for the shared variance between divergent thinking and general intelligence (9%), and found that divergent thinking predicts managerial creativity but general intelligence does not. Divergent thinking can be developed (Basadur, Wakabayashi, & Graen, 1990), and play is a natural way for practicing it (Dansky, 1999; Kolb, 2000; Russ, Robins, & Christiano, 1999). Play calibrates a disposition for creativity by sharpening divergent thinking and combinatorial flexibility. When people play,

> They first of all may be mastering incidental skills. But, more important, they are using their capacity to combine pieces of behavior that would have no basis for juxtaposition in a utilitarian framework. They are creating novelty, however unimposing it might be, as is the dreamer whom Freud says "builds castles in the sky." It is the habit of occasionally creating novelty, rather than specific preparation, that makes us seem intelligent when, confronted with a new problem, or a new contingency in "reality," we have more than a random chance of marshalling the means at our disposal in a hitherto useless but now adaptive way. (Miller, 1973, p. 96)

There is no guarantee that what occurs in play is predictably isomorphic to future environmental demands. The transfer of specific responses from play to future situations occurs only occasionally. But what matters is the

discipline of maintaining flexibility in behavior and plasticity in mental models, and play facilitates these processes. Play allows people to temporarily suspend their mental models and disbelief in favor of an immediate exploration of various possibilities (Kolb, 1996). This allows managers to modify their perceptual limits of the world by imagining and enacting them in different ways (Barrett, 1998). Of course, individuals can respond creatively to a novel problem without playing. However, the ability to respond creatively to novel problems does not seem to exist in a vacuum; rather, it requires some practice which play provides. Weick (1979) writes,

> Deliberate complication, if it gives the person experience in combining elements in novel ways, can be potentially adaptive for dealing with novel problems … Play is important not because it teaches some new skill, but because it takes activities that are already in one's repertoire and gives one practice in recombining those into novel sets. What seems to be implied is a kind of second-order learning. It is not that one learns to recombine a single set of means into a clumsy but passable golf swing; what one may be learning, instead, is that it is possible to recombine the available repertoire of means in novel ways. A person gets repeated practice in doing this whenever he or she intentionally complicates a process. (p. 248)

Creativity is a generative adaptive process, and as such, it requires practicing the skills of creating novelty. Play contributes to an enduring disposition toward creativity by practicing the main cognitive skills of creativity. In play people practice framing problems in new ways, exploring alternative solutions, and evaluating different possibilities. In particular, play helps people to develop divergent thinking skills and transformation abilities (Dansky, 1999). These abilities turn out to be useful even in those situations that are not playful themselves. When people play, therefore, not only do they facilitate their creative process in the task at hand, but they also develop a more enduring disposition toward creativity. Although this is fostered to some extent by any type or form of play, play as engagement gives individuals the opportunity to practice and rehearse the creation of novelty specifically in the context of their work.

We have suggested so far that play as engagement facilitates the cognitive, affective, motivational, and skill dimensions of creativity. In the next section we argue that play as diversion influences creativity more indirectly by shaping a favorable social climate.

PLAY AS DIVERSION AND CREATIVITY

Much of our time at work is spent not engaging in work activities, and sometimes specifically disengaging from work activities. People perform a

variety of personal tasks and leisure activities during the workday, such as playing computer games or participating in office betting pools (D'Abate, 2004). Traditionally, organizational scholars are tempted to view these play activities as an inefficiency that diverts attention and effort away from the core work of the organization. However, these activities form the context in which people work, and as such, they can influence creativity in an indirect, peripheral way. Specifically, diversionary play can facilitate creativity by influencing people's psychological processes and also by creating a social-relational and cultural context that is conducive to creativity.

Play and Psychological Adjustment

Diversionary play helps people to adjust psychologically to their work by facilitating *restoratory* and *compensatory* functions. In jobs that involve physical effort diversionary play can facilitate physical relaxation, and in jobs that involve cognitive effort diversionary play can facilitate cognitive restoration. Roy (1959) has found that the diversionary play of manual workers offers physical relaxation for "tired legs and sore feet" (p. 160), while Jett and George (2003) and Elsbach and Hargadon (2002) suggest that diversionary play alleviates the cognitive exhaustion associated with the otherwise relentlessly mindful jobs of knowledge workers. In knowledge-intensive jobs, diversionary play provides periods of mental breaks, which are important for incubation (Elsbach & Hargadon, 2002), the stage of the creative process that involves much unconscious processing and free re-combination of ideas.

Play has many forms that offer many possibilities for restoration, which can help people to return refreshed to the same task or to make a transition to a new task. In the fast-paced and multi-task modern corporate environments, employees have to make frequent transitions between different work tasks. To make transitions effectively, people need to shift cognitive gear and to prevent the transfer of anxiety, worries, and frustration from one task to another (Asforth, Kreiner, & Fugate, 2000). Peripheral play offers a between-and-betwixt context which can facilitate the transition between tasks by inducing positive affect and by absorbing one's attention from the existing task to the play task which makes easier, in turn, the redirection of attention to the next core work task (Mainemelis, 2001).

Isen (1999) has summarized several empirical studies which show that the positive affect induced in play on an unrelated task generalizes on subsequent core tasks with positive effects on cognitive flexibility, associative fluency, and idea categorization, all of which facilitate creativity. When play

is a diversion from work, it may be a welcome relief or a spontaneous surprise, and may therefore promote an even greater sense of positive affect. Social psychological studies usually induce positive affect through play; this testifies to the fact that play may be the most direct and perhaps the most natural way for people to find a moment of fun or positive surprise in their workplace and elsewhere.

Of course, whether or not the positive affect induced in diversionary play increases the likelihood of creativity on the subsequent core work task depends on whether the subsequent work task provides some opportunity for creativity in the first place. Returning to a less-than-interesting task after a fun moment of play not only fails to make people more creative (cf. Roy, 1959) but it may also lead to feelings of resentment that 'playtime' is over and therefore create negative affect (Filipowicz, 2003). An important implication of this is that attempting to externally manipulate positive affect in the workplace through play, for example through parties or other "fun times," may actually backfire when people return to a core task that is less than playful, less than autonomous, and less than creative (Filipowicz, 2003). In contrast, when people return to a core task that provides opportunities for play as engagement, the risk of this is much less. We suggest later that it is therefore important to consider the organizational context in which play as diversion occurs.

Diversionary play also serves compensatory functions. It is a context which, bounded-off from the execution of core work tasks, allows the fulfilment of psychological needs that work cannot satisfy or that work itself creates. Roy's (1959) study shows that while work in his group was routine and required little cognitive effort, diversionary play satisfied needs for fun and excitement and filled their days with intellectual content and imagination. On the other hand, the diversionary play of Locke's (1996, 1989) sample of highly educated physicians in a clinic of seriously ill children was not primarily focused on intellectual themes. It revolved more around themes of bonding, intimacy, and optimism, which helped the medical practitioners and their patients to adjust psychologically to their daily contact with fear, pain, and death. While in Roy's study diversionary play compensated for needs related to an environment of low-task significance, low-task variety, and low-task complexity, in Locke's studies diversionary play compensated for needs associated with highly challenging, highly meaningful, and highly complex work. As we suggest later on, job complexity is a critical factor in understanding the relationship between play as engagement and play as a diversion in organizations.

Play and the Social Context

The social context in which an individual works influences creativity (Amabile, 1988; Madjar, Oldham, & Pratt, 2002; Perry-Smith & Shalley, 2003). Diversionary play forms part of this larger work context and influences the nature of social relations within the organization. By creating social bonds between members of the organization, diversionary play makes individuals more willing to engage in the creative process, and more able to gain useful inputs into the creative process from others. Diversionary play achieves these effects by strengthening psychological safety, by countering cultural resistance to creativity, and by increasing the flow of diverse information through social networks.

Play and Psychological Safety

Diversionary play often blurs the lines of hierarchical relationships by freeing people from the normal roles and expected behaviors of the workplace (Falassi, 1987; Locke, 1989; Tuner, 1982), and giving them an opportunity to relate personally to one another in a time and space that is free from the pressure of work. For example, when organizational members play together on the corporate softball team, a secretary may be the team manager, while the boss is a player, allowing them to transcend their working relationship and develop an informal social bond. By altering the nature of relationships and enabling people to relate personally to one another, play helps organizational members to feel comfortable with and trust one another. Informal social play helps people connect to a broader entity – such as their work group, their department, or the organization at large – that provides them with a sense of belonging (Dandridge, 1986; Dutton, Dukerich, & Harquail, 1994; Marotto, Statler, Victor, & Roos, 2003). Inclusion in informal social play lets group members know that they are part of the group (Duncan, Smeltzer, & Leap, 1990; Roy, 1959), preventing them in that way from feeling alienated (Boland & Hoffman, 1983).

The result is that play superimposes organic personal relationships upon mechanistic work relationships (Locke, 1989). The benefit for creativity is increased psychological safety for experimenting with diverse ideas and processes. Psychological safety is the belief that one is free from evaluation, and that one will be accepted unconditionally, regardless of how he behaves in a given situation (Rogers, 1954). Psychological safety reduces the anxiety and fear of negative evaluation for risky interpersonal behaviors, such as experimenting, asking questions, and suggesting new ideas (Edmondson,

1999; Rogers, 1954), which are necessarily involved in the creative process. Diversionary play makes people more willing to engage in creative behavior by helping them to build trusting relationships with colleagues. Although diversionary play is not the only way to create such bonds in the workplace, it is one of the most common and perhaps most important ways for people to create informal personal bonds in organizations and in other contexts of social life (Sandelands, 2003).

Play and Organizational Culture

Diversionary play is a central aspect of organizational culture. The values and beliefs of an organization are exhibited through organizational myths or legends that are passed on to new members about the organization's leader (Deal & Kennedy, 1982) or through ceremonies celebrating specific values like excellence or speed (Dandridge, 1986; Pfeffer, 1981). Play demonstrates values in a way that is more vivid and concrete, and therefore more persuasive and memorable, than the direct communication of mission statements or corporate releases (Meyer, 1982; Wilkins, 1983). Socially relating these myths or stories to one another may become a form of diversionary social play, particularly as stories become embellished or even mocked. Highly formalized, sequential socialization processes (Van Maanen, 1978) that aim to communicate corporate information in a sober and prescribed way may become the subject of ridicule or teasing in informal interactions, which may undermine their message. This creates an alternative that resists the existing order of the social system and provides an opportunity for creative action.

Social play allows organizational members to safely express conflicts and tensions that may otherwise disrupt their relationships (Anand & Watson, 2004; Dandridge, 1986; Deal & Kennedy, 1982). Because it is inherently ambiguous and subjective, play also enables the experimentation with multiple frames of interpretation, thereby allowing the culture to simultaneously value the conflicting ideals that are pervasive in organizational life (Boland & Hoffman, 1983; Pondy, 1983). These contradictory attributes of play allow organizational members to develop a sense of the organizational culture that is personally meaningful, because it is both clear and subjective. A great deal of creative action in organizations can spark from such play contexts that question the dominant organizational mindsets.

Diversionary play facilitates the formation of sub-cultures that may offer an impetus for cultural change. In work contexts with excessive social pressures for conformity (Nemeth, 1997), social play is often the only channel available to employees for voicing disagreement, doubt, and even

frustration. Locke (1989) writes that employees find in informal social play an illicit voice for criticism, dissent, and autonomy, and an impudent voice that crosses hierarchical lines, "breaks the social restraints on expressive content" and verbalizes "those sentiments inappropriate to their role identities" (pp. 116–117). Although the expression of such feelings through play does not guarantee creativity, it provides an impetus for creativity. Creativity is next to unthinkable unless one is willing to entertain alternative perspectives to the dominant interpretations of organizational realities and to express these views to others (Nemeth, 1997; Staw, 1995). In highly cohesive organizations, where social pressures for conformity and behavioral consistency rule, diversionary play can foster creativity by nurturing an informal social space that supports the creation and expression of alternative interpretations to the dominant organizational realities, mindsets, and processes.

At the other end of spectrum, firms with a commitment to creativity often embrace and legitimize diversionary play in explicit ways. Isaksen, Lauer, Ekvall, and Britz (2000–2001) found that organizations that embrace diversionary play tend to be more creative than those that do not. By encouraging diversionary play, such organizations encourage in fact the free expression and exchange of diverse ideas and varied perspectives to the dynamics of the workplace. A useful reminder here is that creativity has historically reached its peak in eras and cultures that embraced play and perceived it as anything but frivolous or useless (Barron, Montuori, & Barron, 1997; Csikszentmihalyi, 1997; Gardner, 1993; Mainemelis, 2002). For example, the social, intellectual, and scientific breakthroughs of classical Athens or of Italy in the Renaissance took place in social contexts where theater, sports, and other forms of social play flourished and were perceived not as trivial pastimes but as key cultural institutions that gave expression to the ideals, norms, and conflicts of the social system. From this point of view, playful organizational cultures do not appear to be idiosyncratic historical exceptions. Rather, across cultures and eras, there appears to be a link between a social system's willingness to nurture play and its ability to be creative. An organizational culture that supports diversionary play appears to be serving this function in modern organizations.

Play and Social Networks

Diversionary play facilitates the creation and maintenance of weak social network ties to other members of the organization as well as to colleagues outside the organization. Playful interactions, social gatherings, and hobbies among colleagues are the rule rather than the exception of professional life.

Furthermore, play can help one to initiate informal social contact with strangers he or she encounters in the daily course of work, especially when the situation would otherwise be stressful or uncomfortable. For example, doctors use playful, humorous interactions to introduce themselves to critically ill children, who are likely to be filled with anxiety (Locke, 1989).

Play can also help organizational members who rarely interact to create and maintain a social bond by increasing the number of interactions between them. These weak network ties enhance creativity by giving people access to more remote information and more diverse perspectives, without promoting the type of conformity that may occur in closer groups (Burt, 2004; Granovetter, 1973; Perry-Smith & Shalley, 2003). Diversionary play also breaks down the barriers between isolated functional areas (Kelley & Litman, 2001), providing a forum for individuals who normally would have no reason to come into contact with each other to meet, and in doing so, provides an opportunity to initiate learning from those outside one's main functional area. Once people have made these contacts, they may incorporate them into work routines, particularly on ambiguous creative tasks that can benefit from diverse information and resources (Starbuck & Webster, 1991). Thus, diversionary play loosely connects organizational members to one another in a way that gives them access to diverse perspectives, diverse information, and other important creative inputs.

One boundary condition on the relationships we have examined so far is that the nature of diversionary play must be social. Solitary diversionary play, such as playing a computer game on one's work PC, may have other benefits for individuals in an organization – for example, providing them with a break from cognitively demanding work (Elsbach & Hargadon, 2002) – but will have limited effect on the social processes of the work environment. However, social interactions provide broad scope for diversionary social play and occur frequently in organizations (Sandelands, 2003).

CONDITIONS OF PLAY

Given that play is not a set of activities but a behavioral orientation to any activity, what conditions influence the likelihood that individuals will employ the play orientation to perform an activity in the workplace? In this section we suggest that job complexity, environmental threat, a legitimate organizational time and space for play, and individual differences are four important factors that influence the likelihood of play in a work setting.

Job Complexity

The nature of the job itself is an important factor that influences the likelihood of play as engagement in organizations. Jobs with higher levels of autonomy, greater complexity, and skill variety (Hackman & Oldham, 1980) will encourage play as engagement. Individuals with a high degree of autonomy have the discretion to choose strategies for accomplishing tasks and to schedule work without supervisory restriction, and therefore a greater opportunity to engage in play. These elements should allow them to experience higher levels of affective pleasure while performing tasks. Task complexity and skill variety enhance these effects. Because complex tasks have high informational requirements and lack clear means-end relationships (Campbell, 1988), they are inherently ambiguous and require flexibility, experimentation, and cognitive processing. These sorts of tasks leave open the possibility for creative engagement and play, as one searches for the best approach to the task (Amabile, 1988; Shalley et al., 2004).

Recall that uncertainty, fluidity, and relative freedom from external constraint are key elements of play. When a job is rigidly structured, efficiently standardized, and clearly streamlined in advance, play as engagement is much less likely. Roy (1959) found that people tried to play even with routine tasks but that did not make them more creative. We view job complexity as an antecedent rather than a moderator of play because, as Roy's (1959) study has also shown, routine and monotonous tasks cannot sustain play beyond a few hours or a few days. In his study, people quickly took their play elsewhere – to their interactions during work breaks (diversionary play). Therefore, we view job complexity both as an antecedent of play as engagement and as an important factor in explaining the relative balance between play as engagement and play as diversion in an organizational setting. In work environments characterized by routine and monotonous work, we expect people to engage primarily in diversionary play. In low job complexity work environments diversionary play compensates for what work cannot provide (e.g., fun, challenge, intellectual stimulation). In such environments, however, we expect diversionary play to have little or no direct effect on people's creativity on their work tasks, because the work tasks themselves do not require or allow creative thinking.[1] On the other hand, high job complexity environments increase the likelihood of play as engagement, which increases, in turn, the likelihood of people's creativity on their work tasks through the cognitive, affective, motivational, and skill conditions we have discussed in an earlier section.

For highly autonomous professionals in cognitively complex jobs the boundaries between play as diversion and play as engagement may become blurred. A social scientist who on a Saturday evening visits the opera, a theater, or a sports game, may obtain a wealth of information and inspiration for his or her research on the role of emotions in work group interactions; a dinner party at a restaurant may provide an interior designer with ideas and insights about designing restaurants. These examples illustrate that the creative mind does not stop working at the end of the workday but, rather, transcends and blurs the boundaries between "work" and "nonwork." As a result, it may also blur the distinctions between play as engagement and play as diversion. In a series of interviews with creative individuals, Csikszentmihalyi (1997) found that the most rewarding aspect of their jobs was that their work was also their passion and hobby, and vice versa. Similarly, in a study with 589 employees, Abramis (1990) found that many reported that their work provides them with a salary for exercising their hobbies. Kelley and Littman (2001) also discuss the tendency of some sport retailers to hire sales employees who have a personal passion for playing sports.

While in these cases play as diversion and play as engagement may actually become blurred, our formal distinction between the two is anything but arbitrary. For many people in organizations what is work, what is not work, and where they can find play is a clear rather than an ambiguous question. Furthermore, the distinction between play as diversion and play as engagement is important in theoretical terms because play as engagement and play as diversion affect creativity in different ways, as discussed earlier.

Environmental Threat

Play rarely occurs under conditions of external threat (Bruner, 1972). Humans and animals alike rarely play when their survival is at stake. In organizations, changes in the environment lead to changes in strategies and procedures as managers interpret environmental events and translate them into action (Dutton & Jackson, 1987). Environmental threats are negative situations that cannot be easily controlled and that contain the potential for loss, such as threat in the competitive environment, decreases in market size, or scarcity of resources (Staw, Sandelands, & Dutton, 1981). Organizations respond to macro-environmental threat with rigid cognitive and behavioral responses (Staw et. al., 1981). They tend to rely on previously learned knowledge and have a reduced ability to process new and ambiguous

information. Under threat, organizations also tend to increase their degree of control by formalizing procedures, by centralizing authority, and by trying to conserve their resources.

These changes limit the opportunities individuals have to play with their work. Under threat, organizations will eliminate slack both in terms of time and other resources, so that work must be accomplished more efficiently and on budget. There will be no time available for experimentation, and no budgetary slack to support "wanderings" or uncertain tests. These changes will also decrease the likelihood of play as engagement by making it less safe in psychological terms. Changes such as reducing individual autonomy as authority becomes centralized, reining in individual budgets, and reducing expenditures through, for example, downsizing, will create an environment of anxiety and even fear with employees (Amabile & Conti, 1999). When individuals experience high levels of stress and anxiety, they tend to stick to previously learned behaviors and become less flexible in their responses to problems (Luchins, 1942; Staw et al., 1981). Thus, individuals in organizations under threat will likely feel that it is not safe to play with their work tasks. Although some diversionary play may be entertained during periods of crisis and threat, play as engagement is highly likely to suffer.

Time and Space for Play

Societies historically institutionalize play by providing a space and time that legitimizes the expression of behaviors that society normally discourages or forbids. For example, while hypocrisy is normally seen as an immoral and deviant behavior in society, it is encouraged and colorfully celebrated within the space and time of the theater (Turner, 1982). Organizations can nurture play in the same way. Companies like Google and DuPont permit their employees to use up to 20% of their work time to freely explore ideas they are curious about. Such practices legitimize play as engagement and make it safe and sustainable over relatively long periods of time. A work behavior that is normally discouraged, for example working on an idea that is not a part of one's job description or not linked to any obvious organizational strategy, is now encouraged and supported within the protected and clearly delineated space and time of play. Although practices like the 20% "free-time" rule are not synonymous with play (for individuals must be willing to play as well), they certainly encourage and protect it.

Other practices can provide a space and time for play. Schrage (2000) describes simulations as "transitional theaters" where the suspension of

disbelief turns ends into means, and Abramis (1990) writes about the president of a company who used to convert strategic planning sessions into a game in which top managers played their own roles, as well as the roles of their competitors and regulatory agencies. While such practices may take different forms (e.g., free-time, simulations, scenarios, role-plays), they can all stimulate play as engagement, as long as they temporarily suspend normal organizational rules (March, 1976) and other pressures for consistency and efficiency (Nemeth, 1997).

Several of the benefits of play emanate from the fact that play is not efficient, predictable, or streamlined but, rather, flexible, uncertain, and often erratic. Because these qualities of play have organizational costs, an important function of a legitimate space and time is that it contains to some extent these risks and costs associated with play behavior. Organizational members are less likely to play when they perceive that their managers will punish them for potential accidents or errors associated with play behavior. Organizational members are more likely to engage in play within a clear delineated time and space that temporarily suspends normal rules and encourages them to play without worrying about consequences. Managers, on their part, are less likely to encourage play when they are concerned about the inefficiency and potential errors associated with play behavior. Managers are more likely to encourage play when they feel confident that the potential costs of play behavior are bounded within a legitimate time and space that does not interfere with the ability of the organization to pursue fixed goals in an efficient and streamlined way. A legitimate time and space therefore makes play safe, or safer, both for the organization and its members. March (1976) writes,

> Playfulness is the deliberate, temporary relaxation of rules in order to explore the possibilities of alternative rules. When we are playful, we challenge the necessity of consistency. In effect, we announce – in advance – our rejection of the usual objections to behavior that does not fit the standard model of intelligence. Playfulness allows experimentation. At the same time, it acknowledges reason. It accepts an obligation that at some point either the playful behavior will be stopped or it will be integrated into the structure of intelligence in some way that it makes sense. The suspension of the rules is temporary (p. 77). We encourage organizational play by permitting (and insisting on) some temporary relief from control, coordination, and communication (p. 81).

Organizations can also provide a time and space for diversionary play. Providing a time and space for play to be a diversion from work will promote a culture in which play and creativity can flourish, as long as the job itself requires and invites creativity. This time and space can be both physical and psychological. Many companies provide physical space and

time for diversionary play by having corporate off-sites, office birthday parties, or in-house gyms or relaxation rooms. More importantly, however, people must psychologically feel safe to take advantage of these, or to make their own time and space for playful diversions. This safety is created when the organization develops a culture that recognizes and values play. For example, by decorating its workspace with foam cubes and other artifacts (Kelley & Littman, 2001), IDEO stimulates and encourages play by sending a clear message to employees that taking a break to play is allowed. Thus, by providing a physical space for play, IDEO also enables employees to create their own psychological space for play.

Individual Differences

Individual differences is another factor that influences play behavior in organizations. The term *playfulness* refers to the predisposition to engage in an activity as play. Jackson (1984) measured playfulness with the Personality Research Form (RPF) as a stable individual-difference *motivational trait*. Costa and McRae (1988) found small positive correlations between the playfulness scale of the RPF and the scales of the NEO inventory that assess the *personality traits* of fantasy, positive emotions, experimental actions, liberal values, gregariousness, and warmth. They also found that playfulness has a small negative correlation with age, is not associated with education, and that females are more playful than males. Glynn and Webster (1992) developed the Adult Playfulness Scale (APS) and found that it is positively related to cognitive spontaneity, creativity, positive task evaluations, involvement, and quality of performance, and negatively related to a quantitative functional orientation. Clerical employees scored higher on playfulness than staff employees, and no consistent differences were found in terms of age and gender.

While these instruments are useful toward exploring individual differences in the degree to which people are predisposed to play, they entail some narrow or conflicting assumptions. The RPF views playfulness as 'logical' and 'rational,' but play can be irrational or arational. The APS views playfulness as the opposite of reason, but playing chess does not seem to be the opposite of reason. While in the APS playfulness involves a preference for social interaction rather than for solitary activity, acclaimed studies have shown that individuals often engage in solitary play (e.g., Csikszentmihalyi, 1997). Our view is that play is polymorphous, which implies that individuals may vary also in terms of how they like to play and at what level of social interaction. While there is little research in this area, this hypothesis is

reasonable. Is the chemist who shuts herself in the lab to play alone with ideas also predisposed to play socially in 'fun times'? Is a propensity for fantasy higher in those who frequent casinos? Are the people who play games that stress individual differences (e.g., sports, chess) more likely to play games that stress chance (e.g., lottery)? Perhaps *how* people are predisposed to play is equally, if not more, important than *how much.* Individual differences, therefore, influence not only the overall degree to which people play, but also the form of play and the level of social interaction at which people prefer to play.

DISCUSSION

In the previous sections we employed a highly analytical approach. We have first disentangled the basic elements of play and the basic elements of creativity, and then we compared the two classes of elements so as to articulate the cognitive, affective, motivational, and social-relational mechanisms through which play affects creativity. In this section we synthesize our arguments at a higher level of abstraction, and in relation to two additional discussion anchors. First, given that play is a behavioral orientation to any activity, what are some other behavioral orientations and how do they compare with play in terms of creativity? Second, given that our model operates primarily at the micro level, what would the nexus of our arguments look like at the larger organizational level?

With regard to the first question, play is antithetical to four other behavioral orientations: apathy; consummatory behavior; instrumental action leading detectably to consummatory behavior, or to a detectable goal that is extrinsic to the behavior itself; and socially prescribed behavior when the behavior occurs in a context in which the prescription is socially sanctioned and enforced (Klinger, 1971). It would hardly be controversial to state that 60 years after the inauguration of creativity research (Guilford, 1950) there is no evidence that apathy, consummatory, or socially prescribed forms of behavior facilitate creativity. On the contrary, the extant literature suggests that creativity requires affective pleasure and involvement, resisting immediate gratification and premature closure, and psychological safety to deviate from socially prescribed behaviors and ordinary conventions. Instrumental action does not necessarily hurt creativity, but as we write earlier, in and of itself it is not particularly useful either (Amabile, 1996).

The problem is that, since the dawn of the Industrial Revolution, the juxtaposition of instrumental action, socially prescribed and enforced

behavior, and often apathy, has left a strong imprint upon the very idea of work in organizations. Efficient, standardized, and routinized work, enforced by social controls, and performed with dreadful boredom is exactly what Roy (1959) described 50 years ago. In his study, there was a clear and sharp line dividing play and work. The same line divided work and creativity for the latter was not even possible for his subjects. But creativity is the requirement of many types of work today; and this is where play becomes important, not as the point at which work stops, but as the point in which work originates.

Our literature describes play and work not as two sets of activities but as two antithetical behavioral orientations distinguished in terms of how the means and ends of any activity are handled (e.g., Glynn, 1994; Sandelands, 1988). Play is characterized by uncertainty-freedom-constraint and the loose and flexible association between means and ends; in fact, Webster's (1998) dictionary defines play as "*to move lightly, rapidly, or erratically; … to amuse oneself; … to move freely within limits.*" Work, on the other hand, is an instrumental orientation where the means are used to efficiently accommodate ends fixed in advance (March, 1976; Miller, 1973). That being the case, we may ask if at any given moment in time an activity in the workplace is either play or work (Glynn, 1994; Sandelands, 1988). It is unreasonable, however, to assume that the months or years of "moments" invested in discovering a treatment for cancer or in developing an advertising campaign are only play or only work. The very definition of work as an ends-orientated activity implies that the ends are known in advance. In creative industries, however, the ends are often so vague that one cannot know and pursue them without exploring "freely and erratically within limits." To work, one must have a purpose; to do creative work, one must move freely and erratically so as to discover and understand what is the purpose. From this point of view, the very purpose of work is often invented in play.

Roy's (1959) subjects did not play with their tasks because their tasks were fixed and efficiently streamlined in advance. But in creative industries the ends are only occasionally fixed in advance, and even when the ends are fixed in advance either the means are unclear and/or efficiency is rarely the major requirement. For example, if the task were to advertise a new car, the most efficient and streamlined orientation to the task would be to copy the existing campaign of an older car. This is hardly what you call work in advertising. When creativity is a requirement, the imperative is often to match means and ends not in an efficient or known way but in a surprising and unexpected way; which is to say, to intentionally complicate the activity – to play with the various possible configurations between means and ends.

In our "closet" research we have observed animation professionals in a broadcasting corporation whose job was to create fictional stories for children's television. Occasionally, they took flights of fancy, laughed, and fantasized ludicrously about seven-legged creatures, green zebras, and sharks flying in space shuttles. Is this play or work? It is play that creates work. It is a fluid between-and-betwixt world that generates a rich variety of characters, imagery, plots, and symbolism, some of which will later become the building blocks of work products in such organizational contexts.

During the last two decades, organizational research has focused on identifying personal, contextual, and situational determinants of creativity. An interesting question is what contexts of behaviors can simultaneously encompass all these diverse factors. In previous sections we have analyzed these factors and compared them with the elements of play to suggest that play may be in fact the only context of behavior that serves this function. In other words, we believe that, more often than not, creativity is born out of play. This statement may seem surprising when considering that play has historically been seen as a useless or even dangerous behavior in the workplace. However, a useful reminder here is that creativity itself has become important for organizations only in recent years. In fact, prior to the publication of Amabile's (1988) componential theory there was very little organizational research about creativity. Although today we know a lot about creativity, and although the modern work culture vividly celebrates the notions of "creativity" and "innovation" in general, it appears that actually nurturing creativity in practice is a difficult puzzle for most organizations, especially large, established firms (Dougherty & Heller, 1994; Staw, 1995). We believe that nurturing play in the workplace is an aspect of the same puzzle.

The very idea of a social organization implies order (Weick, 1998), which requires to some extent the control of behavior according to social prescriptions and rules. Organizations also have to balance immediate proliferation (by efficiently meeting instrumental ends) with future adaptation, which requires them to cultivate creativity and the ability to adapt flexibly to change (March, 1991). It would be instructive to consider how societies, as larger scale social systems, historically tackle this puzzle. Turner (1982) and Sutton-Smith (1997) have proposed that cultures historically balance these competing demands by maintaining two different social structures: a *normative structure*, a working equilibrium of roles, norms, rules, and structural obligations; and a *proto-structure*, a play-space of latent potential from which novelty can arise. Play temporarily dissolves the normative structure, frees people from structural obligations, and fosters novelty by

defamiliarizing the elements of the familiar (Turner, 1982). Play gives birth to new ideas, which, once rehearsed, may become part of the normative structure and lose their playful character. Play itself, however, maintains its capacity to produce novelty.

Huizinga (1955) traced the roots of most western institutions to the world of play. He notes, for instance, that the idea of *fair play* – the pursuit of mastery and excellence within a set of fixed and equal rules – first appeared in the Olympic Games two centuries before it became a principle of a new political system, democracy; and that the idea of betting on future potentialities of non-economic nature, including life and death, was first played in the Middle Ages as an infamous and even illegal game many centuries before it was transformed to a legitimate new business, life insurance. Entire industries, like aerospace engineering (Jacab, 1999), and companies, like Harley-Davidson, were born by the play of their founders rather than by planned instrumental activity: ''One could say that the whole of Silicon Valley stems from gangs of young men who carried on playing together beyond their college years'' (Nicholson, 2000, p. 179).

Work organizations as well can, and some times do, maintain such proto-structures. March (1976) argues that organizations are built upon three interrelated assumptions: the pre-existence of purpose, the primacy of consistency, and the primacy of rationality in human behavior. These three assumptions have improved the ability of organizations and their members to act purposively, consistently, and rationally, but the side effect is that they may lead to rigidity and adaptive failure in the long run. These assumptions strengthen the ability of the organization to flourish in the present but comprise its ability to create variability so as to adapt flexibly to change (March, 1991). It seems rational to consistently reproduce successful behaviors but this reduces variability because it results in a bias against alternatives that initially may appear to be worse than they actually are (Audia, Locke, & Smith, 2000; Denrell & March, 2001). A behavior that is successful in adaptive terms today may actually be ineffective or even dangerous tomorrow when the environment changes.

Organizations can prevent such problems by giving license to people to play with their work, temporarily freed from the rules of consistency, command, and control. The role of play is not to abolish purpose, consistency, and rationality from organizational life; rather, the role of play is to help organizations maintain more flexible and more sophisticated forms of consistency by encouraging their members to occasionally experiment with possible realities, behaviors, or identities (Barrett, 1998; March, 1976; Weick, 1979).

We view the normative organizational structure as consisting of rules, norms, and pressures for behavioral consistency; functional pressures; structural obligations; and a bias toward pursuing a pre-existing purpose by rationally accommodating means to ends. We have suggested that organizations can maintain a proto-structure and nurture play in two ways. First, delineating a space and time that legitimately, if temporarily, dissolves the normative structure is the most direct way for an organization to stimulate play; it is also the organizational structural analogue to what cultures have been doing throughout the course of civilization. Second, by providing freedom and stimulating work, which allow individuals to create their own play spaces within their workday. The boundaries of play in this case are not conspicuously institutionalized but are determined at individuals' discretion. Of course, individuals can also take the initiative and play, for example, by taking work home or by staying late at work, even when their organization does not support play (Pinchot, 1985). Similarly, diversionary play can occur spontaneously among colleagues be it within or out of the regular word day. These ways of enabling play are not mutually exclusive but may coexist.

In addition, we have argued that play facilitates creativity in three general ways. First, we have suggested that play as engagement with work tasks increases the likelihood of creativity in relation to the problem or task at hand via cognitive, affective, and motivational mechanisms. Play may generate new ideas for products or processes, which may then enter the normative structure and lose their playful character. For example, an industrial designer may generate in play a new idea for a toy or a mobile phone, but once this idea enters the normative organizational structure it will likely be manufactured in a streamlined, efficient, standardized, and routinized way. Play itself, however, maintains its capacity to produce novelty, that is, industrial designers can generate through play more new ideas for products. Second, we have suggested that play as engagement also develops an enduring disposition toward creativity. Play allows organizational members to practice the cognitive muscles of creativity, and by doing so, to strengthen their ability to respond creatively to future environmental demands. Play achieves this effect by providing a context in which people can practice the free recombination of their skills, experiences, and very perceptions of reality. Finally, we have argued that, by increasing psychological safety, by strengthening a culture's tolerance for new ideas, by offering to employees a channel for expressing disagreement and dissent, and by increasing the flow of diverse information through social networks, play as diversion contributes to the creation of a social context that is conducive to creativity.

Furthermore, play also generates many ideas that are inapplicable. These ideas may reenter the play world for further refinement or they may stay in the play world forever. This is sheer inefficiency, however, it is the type of inefficiency that creativity requires: to discover one idea that is original and useful, one has to generate variance – several ideas that are original but not useful or applicable. We cite earlier a passage in which Albert Einstein suggests that creativity is a "combinatorial play" where the existing elements of thought are freely combined to produce a large number of associations. Creativity depends on novelty, and novelty depends on such cognitive variation: the more and the more diverse cognitive elements are combined to solve a problem, the more original the solution will be (Simonton, 1999). We suggest earlier that, through both cognitive and affective mechanisms, play increases both the number and the diversity of cognitive elements that enter the creative process. Play is powerful precisely because in it people suspend disbelief and explore ideas that may seem at first unrealistic or improbable. The fact that many of them turn out to indeed be unrealistic or improbable should be viewed as a necessity, not a problem. While the cost of play is inefficiency, errors, or dead ends, the cost of not playing may actually be even more severe to organizations whose survival and prosperity depend on creative ability. By constraining play, such organizations may actually be constraining the creative process itself.

New ideas usually encounter resistance or rejection in the workplace (Dougherty & Heller, 1994; see also Amabile et al., 2005). Organizational resistance may be directed at constraining exploration in the first place or at questioning the commercial viability of a new idea once exploration is over. While the latter form of resistance is true and inevitable to some extent for the majority of new ideas in the stock market of organizational creativity, the former is disastrous for creativity because it blocks creativity before it can even begin. An important implication of this is that, although the ideas that emerge from the time and space of play may not be embraced by the organization for a while, or they may not be embraced at all, encouraging play allows the organization to cultivate a pool of numerous and diverse ideas for new products, processes, or solutions.

Fundamentally, the inefficiency and novelty of play raise a question of balance – a balance that is difficult to find when considering how easily the standard assumptions of rationality, consistency, and fixed purpose can drive out play from an organizational setting (Benner & Tushman, 2003; March, 1993). From this point of view, the tendency of some organizations to legitimize a time and space for play is not surprising. By developing rules about play (such as demanding that people spend 10 or 20% of their time

experimenting), organizations can control the degree of inefficiency. A legitimate space and time serves this dual function: it contains to some extent the negative consequences of play while, at the same time, it nurtures and protects play from the functional pressures, structural obligations, and social pressures of the workplace. We also reiterate that such practices in and of themselves do not constitute play for individuals must be willing to play with their work as well.

Illustrative Examples

Pinchot (1985) has discussed several examples where a legitimate organizational time and space for play has led directly to creative ideas for new products, including the invention of the fiber Kevlar, one of the most successful and profitable innovations in DuPont over the years. Kevlar was invented when a team explored the idea in "free-time" for six months. During this period, no one else knew anything about the project. When asked why she kept the project secret, the chief chemist replied, "It was my job to spend some of my time exploring new ideas on my own. I did not need anyone's permission" (Pinchot, 1985, p. 212). Engineers at Google as well are expected to spend 20% of their time on non-core projects. They are encouraged to explore new products without allowing profitability or marketability to hinder their product-development efforts. Google CEO Eric Schmidt claims that most of the company's new products are not part of a strategic vision for the organization but result from these side projects (Batelle, 2005). O'Reilly and Rao (1997) mention Pfizer as an example of an organization that encourages play by pressing researchers not to fall into the common trap of concentrating in areas where they are familiar and comfortable but to stretch, instead, into new areas and approaches.

Deutschman (2004) has described the invention of the Elixir guitar strings at Gore. In one of Gore's medical products plants, an engineer took advantage of "free-time" to improve the gears of his mountain bike, inventing in that way Gore's "Ride-On" line of bike cables. Then he used that idea to develop cables that control the movement of oversized puppets in such places as Disney World, using guitar strings to control the movements. When he noticed that the guitar strings easily broke, he asked how he could develop less-brittle guitar strings. He teamed-up with a colleague who was an amateur musician and another colleague who helped develop Gore's non-breakable "Glide" dental floss. They played together for five years, in Gore's "free-time" and in their own free time, without "asking for anyone's permission or being subjected to any kind of oversight" (p. 61). According

to Deutschman (2004), today Gore controls 35% of the acoustic guitar strings market, although Gore had absolutely nothing to do with the music market prior to this invention.

These cases of creativity are next to inconceivable from the point of view of rationality, consistency, and fixed purpose that have long dominated management thinking. In the modern corporate contexts where time pressures and fixed ends rule, how can firms support the five-year-long exploration of a new product when the product itself is not known or when the idea behind the product keeps on changing all the time? How do you invent a non-breakable guitar string when your original purpose was to improve bike gears? When guitar strings, bike gears, and your own bike are not part of the activities at a medical products plant? How do you become the leader in the guitar strings market when you are not in that market and have not even considered entering it? When there is nothing in the identity, strategy, vision, or competence of the organization that actually points to that direction?

In our view, the answer to these questions is "by playing." By temporarily suspending functional pressures, structural obligations, and pressures for conformity and consistency, play delineates a transitional space, a between-and-betwixt world, in which organizational members explore and experiment with new variables, behaviors, or identities which may not seem immediately useful in generating products or solutions. By generating such variety in ideas and products, play leads to a more diverse set of options from which some get selected into our organizations and society (Campbell, 1960; Simonton, 1999). This play space thus functions as the cradle of creativity by allowing individuals to rehearse the production of novelty, to build a reservoir of adaptive responses that may turn out to be quite useful in the future, and also to generate creative ideas – new work for the future.

REMAINING PUZZLES

In this paper, we have defined play as an orientation consisting of five elements: a threshold experience; boundaries in time and space; uncertainty-freedom-constraint; a loose and flexible association between means and end; and positive affect. We have drawn a distinction between two organizational manifestations of play, play as engagement and play as diversion. We have argued that play as engagement facilitates the cognitive, affective, motivational, and skill dimensions of the creative processes, while play as diversion fosters a psychological and social-relational climate that is conducive to

creativity. We have discussed four conditions that facilitate or inhibit play, namely, job complexity, environmental threat, a legitimate organizational time and space for play, and individual differences, as well as the relationship between play as engagement and play as diversion. Finally, we have synthesized our arguments to conceptualize play as an organizational space of novelty potential. There are limitations, omissions, as well as contributions in our approach.

First, we have not addressed the epistemological debates surrounding the definition of play (cf. Sutton-Smith, 1997). However, previous organizational authors have discussed play without defining it (e.g., Amabile, 1996; Roy, 1959) or by focusing only on one or two of its elements (e.g., Glynn, 1994; Sandelands, 1988; Weick, 1979). While we reiterate that play is elusive, complex, and continues to defy a concise and broadly accepted definition, we have developed here a detailed definition of play that is well-anchored in influential works from diverse social science literatures.

Second, play can be defined not only at the behavioral but also at the evolutionary and cultural levels. Play is a fundamental human function whose manifestation is not limited to any gender, race, age, culture, or era (Huizinga, 1955). Play is at first a kind of biological, pre-linguistic enactment that places its own demands on human existence across cultures and eras (Sutton-Smith, 1997). Before it becomes a hobby or a game, play is a natural impulse – an evolutionary endowment to humans that lasts from childhood to senility (Sandelands, 1988). Furthermore, while the play impulse is a gift of nature, the expression of play itself is a cultural phenomenon. Even solitary forms of play are cultural phenomena for, historically, not all children have played with Barbie dolls and not all societies have played monopoly. Play is an indispensable element of culture – it shapes and it is shaped, in turn, by it (Huizinga, 1955). The performances, contests, and festivals of play, expressed in rich and highly varied stylizations, have been at the core of social and cultural life from the story-telling gatherings of the primitive caves to the modern city sports, theaters, and festivals (Sandelands, 2003; Turner, 1982). Portrayals of play as an evolutionary mechanism for enforcing organismic adaptive variability (Sutton-Smith, 1997) and as a social protoplasmic element in which culture originates (Huizinga, 1955), are well in line with and could further enhance our arguments. Given the complex nature of play, however, we had to make some choices in this paper in order to explore it as an organizational behavior.

Third, our analysis lacks some precision in the sense that play is polymorphous and manifested in varied forms (e.g., simulations, role-plays, fantasy, rule-bound games). While there are differences between these

forms, we view our discussion of the elements of play as generally applying well enough across all forms of play. Furthermore, while previous articles have largely focused on either play as diversion or play as engagement, we have maintained here a dual focus that allows a more complete picture of play to emerge. That said, our understanding of play can and should be advanced by exploring in greater detail its diverse forms. For example, fantasy may be more important to affect-laden thoughts (LeDoux, 1996), while group simulations may be more important to developing collective adaptive variability (de Geus, 1996). Future research can shed light on these issues and explore in greater detail various manifestations, forms, and "moments" of play in organizational life.

Fourth, we have not discussed the effects of play on group-level creativity. Our literature on play has been so limited, to date, that we had to introduce several concepts at the individual level of analysis. For example, examining how "affect-laden thoughts" appear at the group level would require us to write a paper only about group play. Furthermore, key creativity variables, such as the creative process, have not been adequately theorized at the group level, to date. We hope that our arguments about play and creativity at the individual level will be further developed by future research to include group processes. Moreover, although our analysis has focused on the micro level, we have also explored several macro-level issues, such as the relationship between play and organizational culture, and the ways by which organizations can nurture and benefit from play.

Last but not least, while our focus was on the relationship between play and creativity, we emphasize that play offers several other opportunities for novel theory development and empirical research. Play appears to be a factor in other phenomena that, like creativity, are at the heart of organizational life. In recent years, our field has started to explore the role of play in other fruitful areas of organizational research, including work identity (e.g., Ibarra, 1999, 2003), collective identity (e.g., Marotto et al., 2003; Sandelands, 2003), psychological adjustment to the realities of the workplace (e.g., Elsbach & Hargadon, 2002; Jett & George, 2003), and organizational culture (e.g., Deal & Kennedy, 1982; Sutton-Smith, 1997). When these dimensions of organizational life are also taken into account, play appears to be an important phenomenon embedded in the deep texture of organizational life.

To wonder about play is to puzzle with questions that are at the heart of our discipline. For example, why have centuries of attempts at rationalizing work behavior failed to extinguish play from organizations? Perhaps play can help us reexamine what is timeless and what is ephemeral in human behavior.

Why have play institutions, like the theater, stood the test of time? Perhaps play can help us to understand why our modern organizations often live and die too fast. Why is the passion and devotion with which people pursue their play activities at home often only a dream for many employing organizations? Perhaps play can teach us a lot about human motivation. The fact that the idea of free competition within a set of equal rules was born in play should remind us of how our economic markets got started. In an era where our "serious" economies are troubled by corruption and scandals, play in its undiluted forms can educate us about competition that is serious indeed.

In 1788 Goethe (1987, p. 30) observed that while in the classical era people could enjoy theater a few weeks of the year, "at present there is at least one play-house [in Rome] open in summer and autumn as well as winter." Goethe would be surprised if he knew that today there is a plethora of theaters, playhouses, operas, and sports arenas in our cities. Although the nature of these institutions and the nature of play itself have been transformed over the centuries, there is something that appears to have not changed at all: people continue to find some of the fullest and most rewarding experiences in their lives in such play spaces. In an era biased toward "real" and "true" information, why do people find meaning and joy in creating and enacting "false," symbolic worlds? Perhaps because there is something more fundamental in human nature than the image of the "sober," rational agent. In probably the most important treatise on play of all times, Huizinga (1955) wrote that, alongside the original world of nature, humans create through play a poetic world of fiction, contest, and imagination in which all culture and novelty originate. If a fraction of Huizinga's argument were true, several dimensions of organizational behavior – and the very idea of behavior in organizations – could be revisited in novel, fresh ways. The field of play, and the field for play, remains for us an inviting, puzzling, and exciting territory of organizational behavior.

NOTES

1. Taking too much time away from monotonous tasks to play computer games or play with other colleagues can have important economic costs for organizations. This is, in fact, the reason that diversionary play is often seen as a waste of time. Note, however, that what triggers work disengagement in this case is not play itself but the very nature of the work. Considering the psychological costs associated with monotonous, boring, and alienating organizational work, diversionary play seems to be more of an alleviation of the problem and less of the problem itself. We do not explore this issue further here because it is associated with organizational contexts where creativity is usually not a requirement or even a possibility of the job.

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REFERENCES

Abramis, D. J. (1990). Play in work: Childish hedonism or adult enthusiasm? *American Behavioral Scientist*, *33*, 353–373.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. In: B. M. Staw & L. L. Cummings (Eds), *Research in organizational behavior*, (Vol. 10, pp. 123–167). Greenwich, CT: JAI.

Amabile, T. M. (1996). *Creativity in context*. Boulder, CO: Westview Press.

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and creativity at work. *Administrative Science Quarterly*, *50*, 367–403.

Amabile, T. M., & Conti, R. (1999). Changes in the work environment during downsizing. *Academy of Management Journal*, *42*, 630–640.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, *39*, 1154–1184.

Amabile, T. M., Hill, K. G., Hennessey, B. A., & Tighe, E. (1994). The work preference inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology*, *66*, 950–967.

Anand, N., & Watson, M. R. (2004). Tournament rituals in the evolution of fields: The case of the Grammy awards. *Academy of Management Journal*, *47*, 59–80.

Asforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *Academy of Management Review*, *25*, 472–491.

Audia, P. G., Locke, E. A., & Smith, K. G. (2000). The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal*, *43*, 837–853.

Bailey, J. R., & Ford, C. M. (1994). Of methods and metaphors: Theatre and self-exploration in the laboratory. *Journal of Applied Behavioral Science*, *30*, 381–396.

Barrett, F. J. (1998). Creativity and improvisation in jazz and organizations: Implications for organizational learning. *Organization Science*, *9*, 605–622.

Barron, F., Montuori, A., & Barron, A. (1997). *Creators on creating*. New York: Tarcher/Putnam.

Basadur, M. (1994). Managing the creative process in organizations. In: M. A. Runco (Ed.), *Problem solving, problem finding, and creativity* (pp. 237–268). Norwood, NJ: Ablex.

Basadur, M., Wakabayashi, M., & Graen, G. B. (1990). Individual problem-solving styles and attitudes toward divergent thinking before and after training. *Creativity Research Journal*, *3*, 22–32.

Bateson, G. (1955). A theory of play and fantasy. *Psychiatric Research Reports*, *2*, 39–51.

Battelle, J. (2005). The 70 percent solution. *Business 2.0*, *6*, 134–136.

Beatty, J. E., & Torbert, W. R. (2003). The false duality of work and leisure. *Journal of Management Inquiry*, *12*, 239–252.

Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, *28*, 238–256.

Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, *99*, 229–246.

Boland, R. J., & Hoffman, R. (1983). Humor in a machine shop: An interpretation of symbolic action. In: L. R. Pondy, P. J. Frost, G. Morgan, & T. C. Dandridge (Eds), *Organizational symbolism* (pp. 187–198). Monographs in Organizational Behavior and Industrial Relations. Greenwich, CT: JAI.

Bruner, J. S. (1972). Nature and uses of immaturity. *American Psychologist*, *27*, 687–708.

Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology*, *110*, 349–399.

Caillois, R. (2001). Man, play, and games. In: M. Barash (Trans.). New York: Free Press.

Campbell, D. J. (1988). Task complexity: A review and analysis. *Academy of Management Review*, *13*, 40–53.

Campbell, D. T. (1960). Blind variation and selective retention in creative thought as in other knowledge processes. *Psychological Review*, *67*, 380–400.

Collins, M. A., & Amabile, T. M. (1999). Motivation and creativity. In: R. Sternberg (Ed.), *Handbook of creativity* (pp. 297–312). Cambridge, MA: Cambridge University Press.

Costa, T. P., & McCrae, R. R. (1988). From catalog to classification: Murray's needs and the five-factor model. *Journal of Personality and Social Psychology*, *55*, 258–265.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.

Csikszentmihalyi, M. (1997). *Creativity: Flow and the psychology of discovery and invention*. New York: HarperPerennial.

Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology*, *56*, 815–822.

D'Abate, C. P. (2004). *All in a day's work: Personal business on the job and the factors behind nonwork engagement*. Paper presented at the annual meeting of the Academy of Management, New Orleans, LA.

Dandridge, T. C. (1986). Ceremony as an integration of work and play. *Organization Studies*, *7*, 159–170.

Dansky, J. L. (1999). Play. In: M. A. Runco & S. R. Pritzker (Eds), *Encyclopedia of creativity*, (Vol. 2, pp. 393–408). San Diego, CA: Academic Press.

Dansky, J. L., & Silverman, I. W. (1973). Effects of play on associative fluency in pre-school aged children. *Developmental Psychology*, *9*, 38–43.

Dansky, J. L., & Silverman, I. W. (1975). Play: A general facilitator of associative fluency. *Developmental Psychology*, *11*, 104.

de Geus, A. P. (1996). Planning as learning. In: K. Starkey (Ed.), *How organizations learn* (pp. 92–99). London, UK: International Thomson Business Press.

Deal, T. E., & Kennedy, A. A. (1982). *Corporate cultures: The rites and rituals of corporate life*. Reading, MA: Addison-Wesley.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Denrell, J., & March, J. G. (2001). Adaptation as information restriction: The hot stove effect. *Organization Science*, *12*, 523–538.

Deutschman, A. (2004). The fabric of creativity. *Fast Company*, (89) 54–62.

Dougherty, D., & Heller, T. (1994). The illegitimacy of successful product innovations in established firms. *Organization Science*, (5), 200–218.

Dudek, S. Z. (1980). Primary process ideation. In: Woody, R.H. (Ed.), *Encyclopedia of Clinical Assessment* (Vol. 1, pp. 520–539). San Francisco: Jossey-Bass.

Dudek, S. Z. (1999). Affect in artists and architects. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 109–127). Philadelphia, PA: Brunner/Mazel.

Duncan, W. J., Smeltzer, L. R., & Leap, T. L. (1990). Humor and work: Applications of joking behavior to management. *Journal of Management*, *16*, 255–278.

Dutton, J. E., Dukerich, J. M., & Harquail, C. V. (1994). Organizational images and member identification. *Administrative Science Quarterly*, *39*, 239–263.

Dutton, J. E., & Jackson, S. E. (1987). Categorizing strategic issues: Links to organizational actions. *Academy of Management Review*, *12*, 76–90.

Ederlyi, M. H. (1992). Psychodynamics and the unconscious. *American Psychologist*, *47*, 784–787.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*, 350–383.

Elsbach, K.D., & Hargadon, A.B. (2002). *Enhancing creativity through "mind-less" work: An expanded model of managerial job-enrinchment*. Paper presented at the annual meeting of the Academy of Management, Denver, CO.

Estrada, C., Young, M., & Isen, A. M. (1994). Positive affect influences creative problem solving and reported source of practice satisfaction in physicians. *Motivation and Emotion*, *18*, 285–299.

Falassi, A. (1987). Festival: Definition and morphology. In: A. Falassi (Ed.), *Time out of time* (pp. 1–10). Albuquerue: University of New Mexico Press.

Fein, G. (1987). Pretend play: Creativity and consciousness. In: P. Golritz & J. Wohlwill (Eds), *Curiosity, imagination, and play* (pp. 281–304). Hillsdale, NJ: Lawrence Erlbaum.

Feist, G. J. (1999a). The influence of personality on artistic and scientific creativity. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 273–296). New York: Cambridge University Press.

Feist, G. J. (1999b). Affect in artistic and scientific creativity. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 93–108). Philadelphia, PA: Brunner/Mazel.

Feldman, D. H. (1999). The development of creativity. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 169–186). New York, NY: Cambridge University Press.

Filipowicz, A. (2003). Playtime is over: The influence of positive affect on subsequent interaction tasks. Paper presented at the annual meeting of the Academy of Management, Seattle, WA.

Freud, S. (1926). Creative writers and daydreaming. In: P. E. Vernon (Ed.), *Creativity* (pp. 126–136). New York: Penguin.

Gardner, H. (1993). *Creating minds*. New York: Basic Books.

Getz, I., & Lubart, T. I. (1999). The emotional resonance model of creativity: Theoretical and practical extensions. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 41–56). Philadelphia, PA: Brunner/Mazel.

Getzels, S., & Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem-finding in art*. New York: Wiley.

Glynn, M. A. (1994). Effects of work task cues and play task cues on information processing, judgment, and motivation. *Journal of Applied Psychology*, *79*, 34–45.

Glynn, M. A., & Webster, J. (1992). The adult playfulness scale: An initial assessment. *Psychological Reports*, *71*, 83–103.

Goethe, von J. W. (1987). The Roman carnival. In: A. Falassi (Ed.), *Time out of time* (pp. 13–34). Albuquerue: University of New Mexico Press. (Originally published 1789.)

Goffman, E. (1959). *The presentation of self in everyday life*. New York: Anchor.
Granovetter, M. S. (1973). The strength of weak ties. *American Jounal of Sociology*, *78*, 1360–1380.
Guilford, J. P. (1950). Creativity. *American Psychologist*, *5*, 444–454.
Guilford, J. P. (1968). *Intelligence, creativity, and their educational implications*. San Diego: Knapp.
Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
Hallowell, R. (1996). Southwest Airlines: A case study linking employee needs satisfaction and organizational capabilities to competitive advantage. *Human Resource Management*, *35*, 513–534.
Huizinga, J. (1955). *Homo ludens: A study of the play element in culture*. Boston, MA: Beacon Press.
Huy, Q. N. (1999). Emotional capability, emotional intelligence, and radical change. *Academy of Management Review*, *24*, 245–325.
Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly*, *44*, 764–791.
Ibarra, H. (2003). *Identity play/identities in play: Transition, experimentation, and the process of career change*. Paper presented at the annual meeting of the Academy of Management, Seattle, WA.
Isaksen, S. G., Lauer, K. J., Ekvall, G., & Britz, A. (2000–2001). Perceptions of the best and worst climates for creativity: Preliminary validation evidence for the situational outlook questionnaire. *Creativity Research Journal*, *13*, 171–284.
Isen, A. M. (1999). On the relationship between affect and creative problem solving. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 3–17). Philadelphia, PA: Brunner/Mazel.
Isen, A. M., & Geva, N. (1987). The influence of positive affect on acceptable level of risk: The person with a large canoe has a large worry. *Organizational Behavior and Human Decision Processes*, *39*, 145–154.
Jacab, P. L. (1999). Wilbur and Orville Wright. In: M. A. Runco & S. R. Pritzker (Eds), *Encyclopedia of creativity* (Vol. 2, pp. 721–726). San Diego, CA: Academic Press.
Jackson, D. N. (1984). *Personality research form manual*. Port Huron, MI: Research Psychologists Press.
Jett, Q. R., & George, J. M. (2003). Work interrupted: A closer look at the role of interruptions in organizational life. *Academy of Management Review*, *28*, 494–507.
Kahn, B., & Isen, A. M. (1993). The influence of positive affect on variety-seeking among safe, enjoyable products. *Journal of Consumer Research*, *20*, 257–270.
Kelley, T., & Littman, J. (2001). *The art of innovation*. London, UK: Harper Collins.
Klinger, E. (1971). *Structure and functions of fantasy*. New York: Wiley.
Kolb, A. Y. (2000). *Play: An interdisciplinary integration of research*. Doctoral dissertation, Case Western Reserve University, Cleveland, OH.
Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning of development*. Englewood Cliffs, NJ: Prentice-Hall.
Kolb, D. A. (1996). Management and the learning process. In: K. Starkey (Ed.), *How organizations learn* (pp. 270–287). London, UK: International Thomson Business Press.
LeDoux, D. J. (1996). *The emotional brain*. New York: Touchstone.
Levinson, D. J. (1981). *The Season's of a man's life*. New York: Ballantine Books.
Lieberman, J. N. (1977). *Playfulness: Its relation to imagination and creativity*. San Diego, CA: Academic Press.

Locke, K. D. (1989). Social play in daily interactions at the workplace: An ethnographic description of social play and its relationship to social solidarity in a medical setting. Doctoral dissertation, Case Western Reserve University, Cleveland, OH.

Locke, K. D. (1996). A funny thing happened! The management of consumer emotions in service encounters. *Organization Science*, *7*, 40–59.

Luchins, A. S. (1942). Mechanization in problem solving. *Psychological Monographs*, *54*(248), 1–95.

Madjar, N. G., Oldham, G. R., & Pratt, M. G. (2002). There's no place like home? The contributions of work and nonwork support to employees' creative performance. *Academy of Management Journal*, *45*, 757–767.

Mainemelis, C. (2001). When the muse takes it all: A model for the experience of timelessness in organizations. *Academy of Management Review*, *26*, 548–565.

Mainemelis, C. (2002). Time and timelessness: Creativity in (and out of) the temporal dimension. *Creativity Research Journal*, *14*, 227–238.

Mainemelis, C., Goldenberg, V., & Ranganathan, R. (2006). *Inside the black box of total involvement: Immersion, joy, and creativity at work*. Working paper. London Business School.

March, J. G. (1976). The technology of foolishness. In: J. G. March & J. Olsen (Eds), *Ambiguity and choice in organizations* (pp. 69–81). Bergen, Norway: Universitetsforlaget.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*, 71–87.

Marotto, M., Statler, M., Victor, B., & Roos, J. (2003). *Creating collective virtuosity through serious play*. Paper presented at the annual meeting of the Academy of Management, Seattle, WA.

Massimini, F., & Delle Fave, A. (2000). Individual development in a bio-cultural perspective. *American Psychologist*, *55*, 24–33.

McPherson, B. D., Curtis, J. E., & Loy, J. W. (1989). *The social significance of sport*. Champaign, IL: Human Kinetics Press.

Meyer, A. D. (1982). How ideologies supplant formal structures and shape responses to environment. *Journal of Management Studies*, *19*, 45–61.

Miller, S. (1973). Ends, means, and galumphing: Some leitmotifs of play. *American Anthropologist*, *75*, 87–98.

Nachmanovitch, S. (1990). *Free play*. New York: Tarcher/Perigee.

Nemeth, C. J. (1997). Managing innovation: When less is more. *California Management Review*, *40*, 59–74.

Nicholson, N. (2000). *Managing the human animal*. London: Texere.

Nickerson, R. S. (1999). Enhancing creativity. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 392–430). New York: Cambridge University Press.

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, *39*, 607–634.

Ortony, A. (1993). Metaphor, language, and thought. In: A. Ortony (Ed.), *Metaphor and thought* (2nd ed.). New York: Cambridge University Press.

O'Reilly, B., & Rao, R. M. (1997). New products new ideas. *Fortune*, *135*, 60–65.

Perry-Smith, J. E. (2006). Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, *49*, 85–101.

Perry-Smith, J. E., & Shalley, C. E. (2003). The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review*, *28*, 89–106.

Pfeffer, J. (1981). Management as symbolic action: The creation and maintenance of organizational paradigms. *Research in Organizational Behavior*, *3*, 1–52.

Piaget, J. (2001). *Play, dreams, and imitation in childhood*. London, UK: Routledge (Original work published 1951.)

Pinchot, G. (1985). *Intrapreneuring*. New York: Harper & Row.

Pondy, L. R. (1983). The role of metaphors and myths in organization and in the facilitation of change. In: L. R. Pondy, P. J. Frost, G. Morgan & T. C. Dandridge (Eds), *Organizational symbolism. Monographs in organizational behavior and industrial relations* (pp. 81–92). Greenwich, CT: JAI.

Rogers, C. (1954). Towards a theory of creativity. In: M. A. Runco & R. S. Albert (Eds), *Theories of creativity* (pp. 234–249). Newbury Park, CA: Sage Publications.

Roy, D. F. (1953). Work satisfaction and social reward in quota achievement: An analysis of piecework incentive. *American Sociological Review*, *18*, 507–514.

Roy, D. F. (1959). "Banana time." Job satisfaction and informal interaction. *Human Organization*, *18*, 158–168.

Runco, M. A. (1999). Divergent thinking. In: M. A. Runco & S. R. Pritzker (Eds), *Encyclopedia of creativity* (Vol. 1, pp. 577–582). San Diego, CA: Academic Press.

Runco, M. A., & Sakamoto, S. O. (1999). Experimental studies of creativity. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 62–92). New York: Cambridge University Press.

Russ, S. W. (1993). *Affect and creativity: The role of affect and play in the creative process*. Hillsdale, NJ: Lawrence Erlbaum.

Russ, S.W. (Ed.). (1999). Play, affect, and creativity: Theory and researcht. In: *Affect, creative experience, and psychological adjustment* (pp. 57–75). Philadelphia, PA: Brunner/Mazel.

Russ, S. W. (2004). *Play in child development and psychotherapy: Toward empirically supported practice*. Mahwah, NJ: Lawrence Erlbaum.

Russ, S. W., & Grossman-McKee, A. (1990). Affective expression in children's fantasy, primary process thinking on the Rorschach, and divergent thinking. *Journal of Personality Assessment*, *54*, 756–771.

Russ, S. W., & Kaugars, A. S. (2000–2001). Emotion in children's play and creative problem solving. *Creativity Research Journal*, *13*, 211–219.

Russ, S. W., Robins, A. L., & Christiano, B. A. (1999). Pretend play: Longitudinal prediction of creativity from affect in fantasy in children. *Creativity Research Journal*, *12*, 129–139.

Sandelands, L. E. (1988). Effects of work and play signals on task evaluation. *Journal of Applied Social Psychology*, *18*, 1032–1048.

Sandelands, L. E. (2003). *Thinking about social life*. Lanham, MD: University Press of America.

Sandelands, L. E., & Buckner, G. C. (1989). Of art and work: Aesthetic experience and the psychology of work feelings. In: L. L. Cummings, & B. M. Staw (Eds), *Research in Organizational Behavior*, 11, 105–131.

Schrage, M. (2000). *Serious play*. Cambridge, MA: Harvard Business School Press.

Scratchley, S. S., & Hakstian, A. R. (2000–2001). The measurement and prediction of managerial creativity. *Creativity Research Journal*, *13*, 367–384.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, *30*, 933–958.

Shaw, M. P. (1999). On the role of affect in scientific discovery. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 57–75). Philadelphia, PA: Brunner/Mazel.

Simon, H. A. (1997). *Administrative behavior*. New York: Free Press (First published 1945).

Simonton, D. K. (1999). Creativity as blind variation and selective retention: Is the creative process Darwinian? *Psychological Inquiry*, *10*, 309–328.

Singer, D. G., & Singer, J. L. (1990). *The house of make-believe*. Cambridge, MA: Harvard University Press.

Spariosu, M. I. (1989). *Dionysus reborn: Play and the aesthetic dimension in modern philosophical and scientific discourse*. Ithaca, NY: Cornell University Press.

Starbuck, W. H., & Webster, J. (1991). When is play productive? *Accounting, Management, & Information Technology*, *1*, 71–90.

Staw, B. M. (1995). Why no one really wants creativity. In: C. M. Ford & D. A. Gioia (Eds), *Creative action in organizations: Ivory tower visions and real world voices* (pp. 161–166). Thousand Oaks, CA: Sage.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, *26*, 501–525.

Sternberg, R. J., & O'Hara, L. A. (1999). Creativity and intelligence. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 251–272). New York: Cambridge University Press.

Suler, J. R. (1980). Primary process thinking and creativity. *Psychological Bulletin*, *88*, 144–165.

Sutton, R. I., & Hargadon, A. (1997). Brainstorming groups in context: Effectiveness in a product design firm. *Administrative Science Quarterly*, *42*, 685–718.

Sutton-Smith, B. (1997). *The ambiguity of play*. Cambridge, MA: Harvard University Press.

Torrance, E. P. (1995). The nature of creativity as manifest in its testing. In: R. J. Sternberg (Ed.), *The nature of creativity* (pp. 43–75). New York: Cambridge University Press.

Turner, V. (1982). *From ritual to theatre: The human seriousness of play*. New York: PAJ.

Turner, V. (1987). Carnival, ritual, and play in Rio de Janeiro. In: A. Falassi (Ed.), *Time out of time* (pp. 74–90). Albuquerue: University of New Mexico Press.

Van Maanen, J. (1978). People processing: Strategies of organizational socialization. *Organizational Dynamics*, *7*, 18–36.

Vosburg, S., & Kaufmann, G. (1999). Mood and creativity research: The view from the conceptual organizing perspective. In: S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 19–39). Philadelphia, PA: Brunner/Mazel.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Ward, T. B., Smith, S. M., & Finke, R. A. (1999). Creative cognition. In: R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 189–212). New York: Cambridge University Press.

Webster, J. (1998). *Webster's new world dictionary and thesaurus*. Renton, WA: Topics Entertainment.

Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: Development of a measure with workplace implications. *MIS Quarterly*, (16), 201–226.

Webster, J., & Martocchio, J. J. (1993). Turning work into play: Implications for microcomputer software training. *Journal of Management*, *19*, 127–146.

Weick, K. E. (1979). *The social psychology of organizing*. Reading, MA: Addison-Wesley.

Weick, K. E. (1998). Improvisation as a mindset for organizational analysis. *Organization Science*, *9*, 543–555.

Wilkins, A. L. (1983). Organizational stories as symbols which control the organization. In: L. R. Pondy, P. J. Frost, G. Morgan & T. C. Dandridge (Eds), *Organizational symbolism. Monographs in organizational behavior and industrial relations* (pp. 81–92). Greenwich, CT: JAI.

Winnicott, D. W. (2001). *Playing and reality*. London, UK: Brunner-Rutledge (first published 1971).

Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of Management Review*, *18*, 293–321.