

## **THE OUTLOOK FOR THE STUDY OF CREATIVITY: AN EMERGING DISCIPLINE?\***

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The purpose of this paper is to provide a framework for discussion surrounding the current status of inquiry into creativity and innovation. If progress is to be made in this area of study, we need a healthy discourse regarding the meaning of the domain, its key questions and methods, as well as the desired outcomes this area would provide. This paper will share (a) some of the historical developments and outcomes upon which this area of study rests (b) some initial frames of reference within which the domain of creativity and innovation may fall (c) and some theoretical and practical discussion and assumptions relevant for practitioners. In short, this paper will provide the rationale for the emerging discipline of creativity and innovation.

Key words: definitions of creativity, historical approaches, level, degree, development, creativity styles, creativity as a scientific discipline, trans-disciplinarity

The increasing levels of competition for shrinking global resources (and for methods which increase the productive outcomes from these resources), combined with larger amounts of complexity and change, foster the importance of the emerging line of work referred to as „the study of creativity“. What motivates those who study this subject? What would actually be the object or purpose of their study? Who would be involved in studying creativity and what disciplinary or methodological expertise should they hold? What would some of the benefits be and how would these be translated into practical outcomes? These are a few of the cen-

tral questions for the field of creativity and innovation as it seeks to become an emerging discipline.

Some could argue that the study of creativity began with the dawn of civilization. However, most people who have reviewed the status of deliberate and explicit research on the topic of creativity within the United States frequently points to the presidential address given to the American Psychological Association by Guilford (1950). He highlighted the neglect of the study of creativity and encouraged his colleagues to inquire into this complex area of human behavior. Since that time the literature which has creativity and innovation as its primary focus has been expanding. Although the field is fairly young, creativity research has been reviewed and summarized on an international level by various writers (Grønhaug & Kaufmann, 1988; Isaksen, 1987; Raina, 1980; Stein, 1974 & 1975; and Taylor & Getzels, 1975). In summing up the thirty-some year perspective, Treffinger (1986) indicated that the topic

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has been and continues to be of considerable interest to educators as well as social and behavioral scientists.

### WHY STUDY CREATIVITY?

Before going into the historical development of creativity research, it may be useful to reflect on some basic assumptions individuals would have to make in order to pursue the study of such a complex, abstract, or „fuzzy“, concept. If one were viewing the area of creativity research from the relatively well-defined territory of previously established disciplines, one might question a venture into such a tenuous endeavor. Arieti (1976) provided support for the importance of studying creativity by indicating:

*Whether it is considered from the viewpoint of its effects on society, or as one of the expressions of the human spirit, creativity stands out as an activity to be studied, cherished, cultivated (p. ix).*

Despite Arieti's assertion, there appears to be a widespread and natural resistance to studying a concept like creativity. Some of this resistance can actually stimulate productive inquiry. At times, however, this resistance is caused by what we call the mythology associated with creativity. As in human history, people often resort to mythus to explain that which defies the use of traditional tools or methods of explanation. Let us examine some of the assumptions necessary to deal with a few of these myths about creativity.

Some would assert that creativity is a mysterious phenomenon, one which defies systematic analysis and inquiry. Afterall, they may point out, „I have yet to see an acceptable, widely-utilized definition of this concept; how can you study something

which is not clearly defined?“ This very lack of definitional consensus embraces another closely-related area of resistance to studying creativity. This related line of thinking suggests that creativity is a mystical concept which is elusive, challenging explicit or scientific study. Both of these assertions about the qualities of creativity are based upon a rather rigid view of what a field must look like in order for valid scientific inquiry to take place. Whether creativity should or should not be studied need not be based upon having a unitary, pervasive and finite definition. Non traditional lines of inquiry have often contributed greatly to the advancement of science. As Kaplan (1964) has indicated:

*It is less important to draw a fine line between what is „scientific“ and what is not than to cherish every opportunity for scientific growth. There is no need for behavioral science to tighten its immigration laws against subversive aliens. Scientific institution are not so easily overthrown (p. 28).*

If one can put aside the debate regarding whether or not creativity should be studied, there is sufficient literature and support for asking creativity-related questions and developing theories of creativity (See: Hutson, 1981; Koestler, 1964; Rothenberg & Hausman, 1976; and Taylor, 1976; for example).

Another major source of resistance to studying creativity is the belief that creativity is a magical phenomenon. This line of thinking holds that only a few precious individuals have had real creativity. The implication is that these gifted geniuses have been given a special gift (perhaps through divine intervention) or have been possessed by a muse. Rather than attempt to find out the nature of these or how to nurture them in others, this myth

promotes the belief that it is more productive to simply appreciate the manifestations of genius. This line of resistance would promote simply allowing and enjoying the amazement provided by the magic provided by the lucky few, rather than conducting inquiry into the source of the wonder or surprise. The belief behind this myth is that too much inquiry or application of science would ruin the anticipation and spontaneity associated with creativity. In addition, those who believe that creativity is magical may promote the notion that it involves trickery or sleight of hand, rather than substance. A line of productive inquiry which calls this myth of magic into question is that of artificial intelligence and computerization of scientific discovery. Simon (1985) rejects the idea that sparks of genius need to be present in order for creativity to exist. He reported:

*As long as we refer to acts of creativity with awe and emphasize their unjathomability, we are unlikely to achieve an understanding of their processes. And without such an understanding of their processes. And without such an understanding, we are unlikely to be able to provide usable advice as to how to encourage or enhance them... Today we have a substantial body of empirical evidence about the processes that people use to think and to solve problems, and evidence, as well, that these same processes can account for the thinking and problem solving that is adjudged creative (p. 4).*

A third area of opposition to studying creativity comes from the belief that to be creative, you must be mad, weird or neurotic. Creativity is equated with pure novelty, which by definition, must be outside the realm of what is acceptable, traditional or standard. As a result, that which is creative often threatens and disrupts established systems and traditional ways of thinking. Overemphasis on novelty

promotes the view that creativity must involve madness. Creative behavior is often seen as totally undisciplined and spontaneous. Although there is literature and inquiry into the relationship of psychological pathology and high-level creatives, there are no consistent trends or findings to suggest that to be creative one must also be mad. In fact, MacKinnon (1978) offered the following summary of the research done at the Institute for Personality Assessment and Research at Berkeley:

*The full and complete picturing of the creative person will require many images. But if, despite this caution, one insists on asking what most generally characterizes the creative individual as he has revealed himself in the Berkeley studies, it is his high level of effective intelligence, his openness to experience, his freedom from crippling restraints and impoverishing inhibitions, his esthetic sensitivity, his cognitive flexibility, his independence in thought and action, his unquestioning commitment to creative endeavor, and his unceasing striving for solutions to the ever more difficult problems that he constantly sets for himself (p. 186).*

Another source of resistance to the study of creativity is the belief that creativity involves only fun, enjoyment and merrymaking. Therefore, creativity cannot involve anything of substance or hard work. Certainly nothing resembling scientific inquiry could be applied to such a subject. In addition, creativity is such a broad topic that it is already contained within all the traditional lines of inquiry. Of course, if it is included, it is usually on the fringe of any established discipline; and those within these disciplines who choose to pursue the study of creativity can often be placed outside the mainstream of support, recognition or acceptance.

Despite these sources of resistance to the study of creativity, there has

been a consistent growth of inquiry into this complex and multi-faceted phenomenon. In analyzing the variety of approaches which have been undertaken to understand creativity, it is clear that at least four broad and overlapping areas of inquiry have emerged. These include understanding and explaining (a) the characteristics of the creative personality; (b) the nature and stages of the creative process; (c) the attributes and precursors of the creative product; and (d) the nature of the creative environment or situation. The rationale for the pursuit of deliberate inquiry into creativity comes from a wide variety of sources and perspectives (Isaksen, 1988a; Treffinger, Isaksen & Firestien, 1983). The following assertions form the basis of our rationale for studying creativity.

#### *Creativity is definable*

One of the most basic assumptions underlying productive inquiry into the complex and multi-faceted concept of creativity is that it is seen as a natural human phenomenon. As such, it is possible (and desirable) to study, assess and develop creativity. Rather than having one universal definition, however, the field of creativity studies has many from which to choose. Despite the apparent confusion and contradictions implied by many of the definitions, there does appear to be some agreement in a few of the basic themes or strands. After reviewing twenty-two definitions of creativity, Welsch (1980) found significant levels of agreement of the key attributes of these definitions. She proposed the following definition from her review of the literature:

*Creativity is the process of generating unique products by transformation of existing products. These products, tangible*

*and intangible, must be unique only to the creator, and must meet the criteria of purpose and value established by the creator (p. 97).*

Of course, there are many other definitions of creativity which researchers and practitioners use. The Center for Creative Leadership studies the managerial and organizational applications of creativity and innovation and they use "...creativity is novel associations that are useful." Isaksen and Treffinger (1985) defined creativity as making and communicating meaningful new connections in order to (a) think of many possibilities; (b) think and experience in various ways and use different points of view; (c) think of new and unusual possibilities; and (d) guide in generating and selecting alternatives.

There are many other definitional approaches to creativity; most of which are derived from some particular theoretical frame of reference (see: Treffinger, Isaksen & Firestien, 1983). It appears that most individuals who attempt to assess creativity base their work in entirely different or, at times, unspecified, theoretical and definitional approaches. Instead of having a high degree of convergence on the assessment methodologies, there is an array which varies in theoretical grounding as well as in quality of technique. In reviewing the current status of creativity assessment, Treffinger (1987) indicated:

*The progress that has been made in recent years has principally enabled us to be more systematic in understanding, describing, and categorizing our theories and definitions, rather than achieving any unification around a single theory or definition. This progress has helped us to address more specifically the implications and concerns of theory and definition for creativity assessment. If we have not solved the problem yet, at least we are better informed about its nature and scope and better prepared to analyze our mea-*

surement decisions and their consequences. In view of the diversity of theories and definitions still confronting the researcher, it is scarcely surprising that there are many options and few universals in the area of creativity assessment (p. 107).

There appears to be a variety of definitions, theories and assessment approaches for the field of creativity. There is also mounting evidence that creativity is a complex of human attributes which can be effected by deliberate efforts (Amabile, 1987; Parnes, 1987; and Torrance, 1987).

### *Creativity is important*

The investigation of creativity can help shed light on some of the most challenging aspects of behavioral science and human existence. There are challenges within many facets of society to which an immediate or single correct response cannot be found. The increasing complexity of life and demand for new solutions to old or continuing problems call for a more creative type of thinking. Many of these challenges are of the utmost importance because they deal with our survival. Not only is creativity important for our survival as a human race, it can also help us better understand how the individual can develop to higher levels of productivity and satisfaction. As the historian Toynbee (1964) pointed out, To give a fair chance to potential creativity is a matter of life and death for any society (p. 4).

Humankind must learn to make new and useful adaptations to the emerging challenges in our global environment; success or failure in this learning will result in cultural advancement or international annihilation (Botkin, Elmandjra & Malitza, 1979). Not only are the results of this type

of learning important, the process individuals engage in is also healthy. Maslow (1959) described this when he stated:

*Self-actualizing creativeness is hard to define because sometimes it seems to be synonymous with health itself. And since self-actualization of health must ultimately be defined as the coming to pass of the fullest humanness, or as the "Being" of the person, it is as if self-actualizing creativity were almost synonymous with or a sine qua non aspect of... essential humanness (p. 94).*

### *The dynamic nature of knowledge: Change*

The increasing accumulation of factual information makes the comprehensive awareness of what is known more difficult, if not totally impossible. Developing and increasing our awareness of creativity helps to examine the imaginative and productive applications of knowledge. The focus is more upon the dynamic process of knowing and less on static recall and reproduction of data. In this way, creativity builds on knowledge because all creativity occurs in some context. For example, it would be very unlikely that a chemist would be adjudged creative without some basic (perhaps thorough) understanding of the field of chemistry. Basic knowledge may be a necessary condition for creativity, but not a sufficient condition. The creativity researcher may view the imaginative and meaningful application of knowledge as more important in explaining creativity. Rogers (1959) provided a succinct rationale for creativity research in relation to the nature of knowledge which, although nearly thirty years old, seems currently relevant:

*In a time when knowledge, constructive and destructive, is advancing by the most incredible leaps and bounds into a jan-*

*tastic atomic age, genuinely creative adaptation seems to represent the only possibility that man can keep abreast of the kaleidoscopic change in his world... consequently, it would seem to me that investigations of the process of creativity, the conditions under which this process occurs, and the ways in which it may be facilitated, are the utmost of importance (p. 70).*

### *The need for transferable skills*

From all sectors of our society there are calls for students, teachers, employees, managers, citizens, and leaders who know how to think critically and creatively. Since it is impossible to accurately predict what knowledge or information will be needed in the long-range future, it is important to focus on the development of skills which help individuals become more adaptable to new and changing circumstances. The ability and facility of using knowledge are more generalizable and more widely applicable than memorization and recall of data. Skills and abilities are more permanent and related to the process of solving problems. Focusing on the development of creative problem-solving skills can have short and long-term impact on dealing more effectively with challenges and opportunities. Further support for this focus is provided by those concerned with what the future will demand from our educational system. For example, Combs (1981) indicated:

*An educational system unable to predict the knowledge or behaviors demanded by the future will have to concentrate instead on producing persons able to solve problems that cannot presently be foreseen. Tomorrow's citizens must be effective problem-solvers; persons able to make good choices, to create solutions on the spot. That is precisely what intelligence is all about (p. 369).*

This thrust is not legitimized solely for the educational systems and the schools. It is an increasingly important focus for organizations and managers (Drucker, 1985).

It is not only important, but also quite possible to study creativity. What have been the major approaches to understanding creativity? What dimensions and methodologies have been explored? The following section will deal with these questions.

### HOW HAS CREATIVITY BEEN STUDIED?

Given the diversity of theories and definitions, there have been various approaches to the study of creativity. Exploration into this topic has often been categorized into four broad, overlapping and intertwining strands (Hallman, 1981; Rhodes, 1961; and Welsh, 1973). These broad categories have included: the study of the characteristics of the creative person; the stages of the creative process including the methods and techniques as well as their teachability; the characteristics of the creative product or outcome; and the nature of the environment which is conducive to creativity.

It is rare that anyone would attempt to study the person, without simultaneously considering the environment that person is in, as well as the product or outcome of the creative process in which the person was engaged. Although the four categories are uniquely identifiable academically, operationally and functionally all four are always present. One of the basic values of these categories is that they serve as useful organizers of creativity literature and research.

Aside from these four basic categories of definition, theory and literatu-

re, there has been a rather pervasive approach to the investigation of creativity. Generally, this approach can be referred to as a focus on „level“ of creativity. The following section of this paper will provide more detail on this approach. Other approaches have included the development of creative ability and, more recently, a focus on the styles of creativity.

One of the factors contributing to the complexity of the study of creativity is the interdisciplinary nature of the concept. No single discipline can legitimately claim to have exclusive rights to the study of creativity. Creativity research is found in the arts as well as in the sciences. In addition, within the disciplines there are many possible contexts within which to study creativity [Isaksen, Stein, Hills & Cyskiewicz, 1984]. Creativity has been studied in managerial, business and industrial areas; in disciplines such as engineering mathematics, philosophy, physics and English. There is also a vast collection of literature on the educational implications of creativity.

Much of the research on creativity over the past forty years has been produced through the efforts of various centers. These centers are spread across the United States and have emerged on an international basis. The University of Southern California provided the home for Guilford's work. The Institute of Personality Assessment and Research is housed at the University of California's Berkeley Campus. Van de Ven is studying innovation processes at the Strategic Management Research Center at the University of Minnesota. Other, more applied, centers are located at the Center for Studies in Creativity (State University College at Buffalo), the Center for Creative Leadership (Gre-

ensboro, North Carolina) and the Torrance Center for Creative Studies (at the University of Georgia). There are also many centers in countries such as the United Kingdom, Norway, Sweden, The Netherlands, and West Germany.

#### *Early approaches: Genius, giftedness and originality*

The early historical perspective for creativity research focused on identification of creative talent in people. This search was primarily carried out by psychologists concerned with identifying individual differences in people. For example, Willerman [1979] indicated that:

*Perhaps there are no more fascinating subjects in the study of human individual differences than those who represent the highest extremes on measures of achievement. Their extraordinary accomplishments earn for them a place in the pages of history, to be admired and revered. For want of a better term, we shall call such individuals geniuses (p. 321).*

One of the earliest to inquire into the nature of genius was Galton (1869) who attempted to understand the hereditary determination of creative performances. This early focus on genius and eminence provided the bias of examining high levels of creativity in people. Not only was the bias on high levels or degrees of performance, but the evaluation was done by others. Thus, the high degree of creativity needed to be socially or culturally „conferred“. Willerman [1979] indicated:

*While many have regarded genius as emerging either from divine inspiration or from madness, there is little or no evidence to support either proposition. In any case, the determination of genius is usually based on the consensus of acknow-*

ledged experts in the appropriate field (p. 336).

The early search for genius and the belief that these few gifted individuals were touched by God, possessed by a muse, or mad, established a situation which was unproductive at best for the field of creativity research. The focus on the highest levels of human accomplishment and creativity may have assisted investigators reaching agreement on who to study, but it created a separation between the „geniuses“ and the „masses“.

Following the early interest in identifying those of exceptional creative talent and productivity, psychologists concerned with identification of individual differences turned their attention to the testing of intelligence. The search for measures of intelligence was related to the examination of characteristics that prepare some individuals for higher levels of performance. This line of investigation provided very little attention to issues of creativity.

For example, the early tests of intelligence were aimed at predicting academic achievement. This type of achievement did not seem to rely upon self-initiated ideas, especially when the focus was on evaluation of classroom achievement. Therefore, the selection of abilities to be measured in many intelligence scales omitted those especially relevant to creative potential. In describing the selection of abilities for the first revision of the Binet-scale, Guilford (1967) reported the following incidental result in a faulty experiment:

*Terman (1906) had administered to two extreme groups (of seven each, out of 500 subjects who had been ranked for brightness versus dullness by their teachers) a set of experimental tests, one of which he recognized as a test of ingenuity. The ingenuity test failed to discriminate the extreme groups, but all the other tests*

*were successful in doing so. Thus, over the years, tests of creative qualities have been almost nonexistent in intelligence scales (p. 4).*

Getzels (1987) described the history of the systematic investigation of creativity as occurring in three overlapping periods. He explained that each period had a dominant (not exclusive) focus; starting with genius, followed by giftedness and moving on to originality. He indicated that creativity research has its contemporary history in the work of Galton (1869).

*During the intervening more than hundred years, the inquiry shifted from the study of genius defined, as Galton had, by recognized achievement to the study of giftedness defined, as Terman (1925) had, by performance on an intelligence test, and from the study of giftedness to the study of originality, or more broadly creativity proper defined by a wide range of criteria including recognized achievement and a variety of mental tests (p. 88).*

The move from viewing giftedness as a function of IQ to investigating creativity as measured by divergent thinking and originality is documented by the literature regarding the creativity-intelligence distinction (Getzels & Jackson, 1962; Torrance, 1960). It is clearly beyond the scope of this paper to thoroughly review the creativity-intelligence distinction. It is, however, important to recognize that this early separation of the constructs of intelligence and creativity promulgated much inquiry into the nature of their relationship and confounded an already confusing situation. This schism will be revisited when we explore the developmental aspects of creativity.

In terms of creativity research, the focus on level or degree was firmly established as the mainstream of inquiry. Guilford's address (1950) provides an enlightening example of this emphasis:

*In its narrow sense, creativity refers to the abilities that are most characteristic of creative people. Creative abilities determine whether the individual has the power to exhibit creative behavior to a noteworthy degree. . . . A creative pattern is manifest in creative behavior, which includes such activities as inventing, designing, contriving, composing, and planning. People who exhibit these types of behavior to a marked degree are recognized as being creative [p. 444]. [Emphasis mine].*

This emphasis on level was prevalent in the work of many creativity researchers. MacKinnon's work (1978) on identifying characteristics of creative architects provides an example. In describing a few of the details and rationale for his study he reported:

*It should be clear that any attempt to discover the distinguishing traits of creative persons can succeed only in so far as some group of qualified experts can agree upon who are the more and who are the less creative workers in a given field of endeavor. In our study of architects, we began by asking a panel of experts-five professors of architecture, each working independently to nominate the 40 most creative architects in the United States (p. 56).*

The result of MacKinnon's request was the development of a list of 86 architects, 64 of whom were invited to participate in the study. Eleven editors of major architectural journals were asked to rate the creativity of these 64. The forty nominated architects who actually participated in the study were also asked to rate the creativity of the 64 invited subjects [including themselves]. The editors' rating correlated  $+ .88$  with the ratings of the architects, supporting the assumption that agreement about the relative creativeness of individual members of a specific group is possible. This type of agreement was essential for an effective study of the traits of creative individuals. Thus, the focus on high levels or degrees of creativity

seemed to be a major thrust for those who formed the early deliberate psychological research on this topic.

Early development and focus on level or degree of creativity provided the creativity researcher with a number of advantages. Having a socially-determined and consensus-based approach to identifying behaviors and characteristics of high creatives provided easier agreement on the question of „Who is creative?“ There may be other advantages to this approach aside from agreement on sampling. For example, it may be important to better understand some of the specific characteristics of the highly creative for those who wish to understand the qualities for historical, descriptive, or developmental reasons.

#### *The development of creativity*

A related line of creativity research, which focused on deliberate development of creativity, seemed to be based on a different orientation. This orientation rejected the notion that there was only one kind of creativity that which is associated with great tangible achievements. For example, Maslow (1968) differentiated between special talent creativeness and self-actualizing creativeness. The latter type was described as being more widespread and „... the universal heritage of every human being (p. 136)“. This orientation suggested that creativity was something that could be nurtured. Thus, a line of research developed to investigate this point of view.

It may appear that orientation to creativity as a widely-distributed characteristic was separate from the level orientation of those concerned with traits of the highly creative. However, those concerned with development of creative abilities were ac-

tually attempting to measure the impact on level or degree of creativity. Parnes and Noller (1972a & b) designed a two-year program to enhance the creativity of college students. They hypothesized that those students completing a four-semester sequence of creative studies courses would perform significantly better than control-group students on: measures of creative application of academic subject matter; non-academic areas calling for creative performance; personality factors associated with creativity; and selected tests of mental ability and problem solving. The most comprehensive reporting of the results of this line of research are reported in Torrance (1986 & 1987a) and Parnes (1987). Clearly, those concerned with the development of creativity in individuals were attempting to increase levels or degrees of creative performance. They do so through programs designed to increase the likelihood and deliberateness of the manifestation of creative behavior. They teach specific methods and techniques and provide for the practice and transfer of these tools to other areas of work. Those who plan creativity development programs are deliberate about their planning efforts and may chose to weave these skills into existing curricular areas, or they may provide them as a distinct area of focus (Isaksen & Parnes, 1985).

Some of the criticism surrounding this research (see Mansfield, Busse and Krepelka, 1978, for example) raises question about research methodology, test validity and the general construct of creativity. Rather impressive explanations have been provided by Torrance & Presbury (1984) and other researchers who indicate criteria of success can go far beyond tests of ideational fluency. This is especially important in light of the limitations

of level approaches mentioned above. The focus on a particular subset of the larger nomological network of creative ability, such as the ideational or associative fluency variable, has been the subject of widespread concern. Simply measuring an individual's ability to generate a large number of ideas did not appear to be a sufficient overall measure of creative ability. This type of concern is illustrated by those who examined the relationship between measures of fluency and its relationship to intelligence tests (see, for example: Williams & Fleming, 1969; and Wallach, 1971) and other variables such as test instructions and response time (Van Mondfrans, Feldhusen, Treffinger & Ferris, 1971). To counter some of the reservations on the validity of the testing issues, there is an emerging set of data to support the long-term predictive validity of some of the tests of creative performance which are based on fluency, flexibility and originality measures (Torrance & Wu, 1981; Torrance, 1987b).

In critiquing the creativity-intelligence distinction, Wallach (1971) mentioned the importance of understanding that although ideational productivity may predict a range of non-academic accomplishments, the presence or absence of creative attainments depends on many other considerations besides the fluency factor. He was very critical of those who treat correlates of ideational fluency as if they were correlates of creative attainments themselves. He accounted for this misuse by indicating "... (t)he temptation arises because administering the test is easier in most instances than finding out about the behavior [p. 17]." In relation to creativity development programs which only focus on increasing a person's level of ideational fluency, Wallach rejected the

idea that these programs actually make people more creative. If programs are to be designed to enhance creativity, then he suggested training arrangements that make a person more competent at creative attainments themselves (such as writing novels well, excellence in acting, etc.). In short, Wallach stressed that learning about what covaries with creativity differences forces us to consider correlates of creative attainments themselves. In summing his position on the creativity-intelligence distinction, Wallach (1971) reported that the traditional measures of intellectual skills appear to be very limited in their ability to predict non-academic achievements frequently referred to as creativity, talent and innovation. He stated:

*We may conclude, then, that within the upper part of the intellectual skills range intelligence test scores and grades on standard academic subject matter are not effective signs as to who will manifest the strongest creative attainments in non-academic contexts. Empirical documentation of this relative unpredictability of creativity criteria from intellectual skills data suggests a separation between these two realms genuinely exists [p. 30].*

Those concerned with the development of individual creative capacities have been working in a domain which includes questions regarding the relationship of creativity and intelligence variables. Some have argued that our conception of human intelligence needs to be broader (Gardner, 1985; and Guilford, 1977). Some have found important new avenues of inquiry from their initial researches into the creativity-intelligence distinction (Getzels, 1987). Others suggest a return to a simpler state of affairs in which we should take a restrictive or reductionist viewpoint. Whatever the orientation, it is important to understand that those interested in creativity research will very often also be concerned with

the ability to deliberately develop creativity-relevant skills and abilities. In this regard, it seems that we can do something to deliberately improve the skills of creative problem solving. Rose and Lin (1984), in concluding a report of their meta analysis of creativity training effects, reported:

*The overall results of this meta-analysis suggest that training does affect creativity. While it seems obvious to state that training and practice develop skills the obvious often needs to be stated. Creative thinking is at once a skill that can be developed through various teaching methodologies and an innate ability that some individuals have in greater abundance than others. This dual nature of creativity is not a contradiction of human development but an affirmation of the flexibility and malleability of individual potential. Through education and training the innate creative thinking ability of individuals can be stimulated and nourished [p. 22].*

Those concerned with development of creative abilities and skills endorse the view that individuals have various levels of creative potential. Within the limits of these levels, individuals may acquire and learn to use methods and techniques which increase the likelihood of manifesting that potential (Gowan, Khatena & Torrance, 1981; Guilford, 1986). In a sense, they are not so much teaching creativity as they are developing and practicing skills which help individuals to use the creativity they have.

Level of creativity has been a traditional focus of interest for those involved in creativity research and the development of creative abilities and skills. An essential issue for this line of work has been how broadly or narrowly the researcher conceives creativity. Rothenberg and Hausman (1976) asserted:

*If creativity is conceived as equivalent to the broad and general qualities of spontaneity and openness, then we may*

center our inquiry on creativity in everyone. If, on the other hand, creativity is conceived as requiring radical change, productive of far-reaching new value, then we should confine our study to special talent or genius (p. 8).

### *Style of Creativity*

An entirely different perspective for creativity research breaks away from the focus on level or degree. Instead of focusing on how much creativity a person has or to what degree a product is creative, the focus is upon how a person shows his or her creativity. This approach has been referred to as examining an individual's creativity style [Kirton, 1987]. At the core of this approach is the concept of cognitive style. The study of cognitive styles is a subset of the discipline of cognitive psychology, which focuses on examining individual differences. As Hayes [1978] indicated:

*Cognitive psychology is a modern approach to the study of the processes by which people come to understand the world, such processes as memory, learning, comprehending language, problem solving, and creativity. Cognitive psychology has been influenced by developments in linguistics, computer science, and, of course, by earlier work in philosophy and psychology (p. 1).*

Within the field of cognitive psychology, there is considerable interest and effort being focused on the issue of cognitive styles. Goldstein and Blackman [1978] discussed the nature of cognitive styles and provided the following definition:

*Cognitive style is a hypothetical construct that has been developed to explain the process of mediation between stimuli and responses. The term cognitive style refers to the characteristic ways in which individuals conceptually organize the environment (p. 2).*

There is a diversity of definitions, theories, constructs and instrumentation of cognitive styles. Despite the lack of clarity, a few trends are discernible. For example, nearly all these constructs of style seem to differentiate style from ability. As Kogan [1976] reported:

*...it may prove helpful to distinguish cognitive styles from the more general ability domain. Whereas the latter is concerned with level of performance — high (or accurate) at one extreme and low (or inaccurate) at the other — cognitive styles are purported to deal with the manner in which individuals acquire, store, retrieve, and transform information (p. 105).*

The separation of level from style may be a result of basic differences in the historical development of measurement methods for each approach. For example, abilities generally tend to be unipolar traits while styles are bipolar. Abilities are narrower in scope and are measured in terms of level of performance. Abilities have their roots in mental test theory or models of human intelligence and have been closely aligned with educational applications. Messick [1976] reported that psychologists concerned with abilities have generally developed instruments for use with large groups in school settings through the use of paper and pencil tests. As a result, ability measures appear more concerned with correctness or accuracy of response and level of overall achievement. In contrast, styles are measured by degree of manner of performance. Cognitive styles have their roots in the study of perception and personality. These concepts are more closely tied with the laboratory or clinic. Psychologists concerned with measuring cognitive styles have frequently used clinical tools or laboratory apparatus typically deriving scores from

individual administration. As a result, cognitive style measures often "... emphasize process of responding as revealed through multiple part scores which frequently include indexes of speed and latency (Messick, 1976, p. 10)."

Although there may appear to be a clear distinction drawn between level or ability and cognitive style, the separation may not be as sharp as some would suggest. Some stylistic dimensions may be related to ability domains in both conception and measurement. Kogan (1973) attempted to classify degrees of difference and overlap between cognitive styles and abilities. He classified cognitive styles into three broad types. The first type included those styles, like field independence versus field dependence [Witkin, 1977], for which assessment is based on accuracy versus inaccuracy of performance. This type of style is closely related to the ability or level domain. The second type of cognitive style, like cognitive complexity (Bieri, 1961), is not derived through accuracy of performance provides a continuum upon which a values distinction is imposed. A greater value is placed on the one, more valued, end of the dimension for this type of style. The third type of style is reported to be the most purely stylistic. No correctness of performance or value judgement is placed upon the kinds of results obtained. An example of this third type is "breadth of categorization (Pettigrew, 1958)". It would appear that some cognitive styles will be more closely related to ability, thus level and degree, approaches while others could be referred to as more "pure" measures of style. Of course, a number of theoretical approaches may have a mixed set of relationships. Not only can styles vary

on the distinctions mentioned above, but also in terms of the particular information-processing operations the style is emphasizing and the relative level of pervasiveness or generality the style may possess.

There is an increasing interest in researching relationships between creativity and cognitive style. Bloomberg (1967) examined creativity's relationship to field independence-dependence. Del Gaudio (1976) investigated creativity's relationship to psychological differentiation and mobility. Gundlach and Gesell (1979) also studied creativity's relationship to psychological differentiation. Other researchers have investigated the relationship between problem finding, creativity and cognitive style (Artley, Van Horn, Friedrich & Carroll, 1980). After reviewing much of the available literature on this area, Messick (1976) indicated that:

*In the realm of creativity, there is an intimate intertwining of abilities and cognitive styles and other stylistic dimensions that share some of the features of both, suggesting that distinctions in this area are labile and boundaries permeable (p. 11).*

The senior author's interest in the relationship between cognitive styles and creativity stems from experience and research relating to the Creative Studies Project (Parnes & Noller, 1973 & 1974). This project studied the effects of a two year creativity development program on a variety of level-oriented variables. A few of the abilities with which the study was concerned included: the ability to cope with real-life situational tests including the generation and evaluation of ideas; applying creative abilities in special tests in English courses; performance on the semantic and behavioral half of Guilford's SOI model;

and a range of other variables. The program was very successful in impacting many of the variables measured (Khatena & Parnes, 1974; Parnes & Noller, 1972a & 1972b; Reese, Parnes, Trefflinger & Kaltsounis, 1976; and Rose & Lin, 1984). In general, the program was able to impact the abilities or level of creativity of the experimental subjects. There were, however, some findings which suggested a relationship of the program to style of creativity as well as to level of creativity.

Although the two-year program was very successful for the experimental subjects who stayed with the entire program, there were some subjects who chose to drop out of the program. Experimental and control subjects who stayed with the program were comparable on nearly all the personality assessments conducted. There were some interesting findings regarding those experiments and controls who dropped out. They possessed characteristics that were more direct towards deviancy or culturally disapproved behavior; in closer contact with their primary processes; freer, more impulsive; more likely to drop out of college; and less responsible and more anxious. Drop-outs seemed to be more interested in artistic forms of creativity and left the program because of disappointment with the nature of the course. Implications and more extensive description of the findings of the drop-outs are reported extensively in Parnes & Noller (1973).

The authors described a possible explanation for the "drop out phenomenon" by describing two very different types of people. They used the terms "lines" and "squiggles" in much the same way Juster (1963) does in his book *The Dot and the Line*. The line is described as being straight, rigid, disciplined, responsible, seeking

the ability to bend or twist, and to become more free and open. The opposing type of person, the squiggle, is described as undisciplined, unruly, wild, unconventional, original, and uninhibited. In Juster's story, the squiggle loses out to the line who has learned to merge his innate freedom and spontaneity with his self-discipline and responsibility. The drop-outs seemed to more like the squiggles; the stay-ins seemed to be more like the lines. The Creative Studies Program seemed better suited to the needs of the lines. The program's emphasis was on learning and applying many divergent techniques of creative problem solving. Perhaps the squiggles had already mastered these skills and needed some assistance with convergent techniques. The lines were very likely to have been able to recognize the impact of the learning in broadening their repertoire of skills and abilities.

It is interesting to note the similarities between the descriptions provided for lines and squiggles and the descriptions of the adaptor and innovator (Kirton, 1976). The similarity of these descriptions provided support for the use of the KAI in studying the cognitive styles of students in the Creative Studies Program.

With this in mind, we began work on the Cognitive Styles Project at the Center for Studies in Creativity as a follow-up to a component of the Creative Studies Project. The purpose of the Cognitive Styles Project is to examine the relationships between the cognitive style of the student and his/her preferences and abilities in learning and applying the skills of creative problem solving (CPS). Early work focused on preparing a course text which would respond to the apparent imbalance in favor of divergent techniques. The new text provided an

open format and included much more emphasis on convergent methods and techniques (Isaksen & Treffinger, 1985). The next step was to see if a more direct measure of style would provide an indication of student preference in learning and applying CPS.

Zilewicz (1986) found that students of different styles reported major differences in how they learned and applied CPS methods and techniques. He used Gregorc's (1982) measure of style and found that undergraduate students in creative studies classes whose scores on the Style Delineator showed a clear difference in the way they perceived and ordered information also showed clear differences in the way they preferred to generate and evaluate ideas, work with groups, and carry out plans of action. In short, he found that individuals with different cognitive styles reported that they have different strengths and weaknesses on various components of the creative problem-solving process.

The next major phase of the project was to examine available instrumentation to see which assessment device would be most fruitful for use in the instructionally-oriented research program. The project involved the Myers-Briggs Type Indicator (Myers & McCaully, 1985), The KAI (Kirton, 1976), and the Style Delineator (Gregorc, 1982). The Style Delineator was dropped due to its inadequate psychometric properties (Jonjak & Isaksen, 1988; and Sewall, 1986). The two remaining instruments are still being included in the data-base of the project. Current work involves determining the behavioral predictability of the instrumentation to specific methods, techniques, and stages of CPS.

For example, Puccio (1987) found that scores on the KAI were able to discriminate fluency and originality

of problem statements generated by students when solving a real task provided from the railroad industry. In examining the effect of style and fluency on the originality of problem statements, he found that fluency accounted for most of the variance in the predicted behavior. Questions are now being raised regarding the actual qualitative attributes of the measure of originality employed in the study. Current research at the Center focuses on the examination of qualitative differences in specific creative problem-solving behaviors. Work is also underway to develop instrumentation to assist individuals in obtaining information about their orientation to the process methods and techniques; as well as examining the relationship of style and level of creativity (Isaksen & Puccio, 1988).

The future tasks of the Cognitive Styles Project at the Center include continuing the collection of data regarding student styles and performance on a variety of behaviors relevant to the instruction program; being better able to target specific techniques to particular types of people for specific tasks; being able to provide better information on the preferences of certain types of students for certain techniques; and to enable students to be more flexible by focusing on understanding the value of learning and applying techniques that may not fit their preferred style.

Should it be possible to clearly and consistently differentiate level from style of creativity, there are many productive possibilities for those interested in understanding the nature of creativity. There would also be important implications for those seeking to develop creativity in others. This differentiation may be applied to more than personality. For example, perhaps products could be qualitatively exa-

mined and found to lean in a particular stylistic direction. This kind of examination could also be applicable to environments. Environments could be assessed to determine if there are stylistic preferences to certain persons, products or process methodologies.

### IS CREATIVITY A DISCIPLINE?

As the review provided above suggests, creativity has been researched from a variety of perspectives. However, the question yet to be examined is: Can the subject of creativity be called a discipline? Is creativity merely a topic which has interdisciplinary implications and applications? Is there reason to believe the claim of Magyari-Beck (1985) that there is sufficient rationale to found an emerging discipline called creatology?

The answers to these questions depend upon what is meant by the word „discipline“ and on the criteria for applying such a word to a field of inquiry. There are no simple approaches to this task, but progress in this area is important to better structure the future of creativity research.

Let us first turn attention to the word „discipline“. There are many different definitions of this word. Generally, a discipline is a way of making discoveries or generalizations within a particular domain or way of knowing (Passow, 1962). King and Brownell (1966) indicated that:

*Each discipline, at any time in history ... is best described as a community of discourse, a company of persons moving in modest disarray toward its own goal. There have been and are now many such companies, more all the time. We attempt to institutionalize them in schools, colleges and universities (p. 62).*

A discipline has also been seen as a defined area of study; a network of

facts, writings, and other works of scholars associated with the field; and the individuals sharing a common intellectual commitment (King & Brownell, 1966). A discipline has a particular domain providing the subject matter for the field. A discipline also has methods or rules for conducting inquiry in order to make sense of knowledge and add to it. The results of having a domain and methodology is that a discipline also has a history or a tradition. Finally, „The distinguishing mark of any discipline is that the knowledge which comprises it is instructive — that it is peculiarly suited for teaching and learning (Phenix, 1962, p. 58).“

### PHILOSOPHICAL AND CURRICULAR CONSIDERATIONS

If we wish to teach and learn effectively within any area of inquiry, we must define our boundaries, identify basic assumptions and develop explicit guidelines for sharing knowledge. Such a course of action is initially a philosophical task, but is also a curricular one. Zais (1976) notes that „philosophy and curriculum in a very real sense are variant approaches to the same problem. Both are concerned with central question: What can man [or woman] become?“ (p. 106).

If creativity studies is to become a discipline, the decision-making process that structures it must be concerned with the philosophical categories of ontology (the nature of its reality), epistemology (the nature of its knowledge) and axiology (the nature of its value).

#### *Ontology*

From a philosophical standpoint ontology is concerned with the question

„What is real?“ Given the profusion of definitions of creativity, it would appear that scholars in the field could benefit from asking this question and examining as carefully as possible. Until we ascribe parameters to our own area of inquiry, we cannot expect others to apply creativity studies in useful and meaningful ways. In spite of our progress toward understanding and verifying constructs of creativity, they will remain unfriendly to a majority of individuals, groups, and organizations unless the ontology of the field is made more explicit.

The nature of reality in the field of creativity studies does not demand nor does it productively need, a single unifacted definition, but it does need deliberate, explicit inquiry into the meaning of its diverse language and approaches. Until we clarify the language we use and the meaning we ascribe to that language, we will be redundantly asking and answering the questions What is creativity? Is it real? Does it exist in the same way as the things it appears to represent? How can we tell?

### *Epistemology*

Directly related to the philosophical category of ontology is epistemology — the nature of knowledge and the nature of knowing. Epistemology asks the questions What is true? How do we recognize truth? How are we aware that we know something?

Zais (1976) reminds us of the classic philosophical position that our determination of what is true is basically derived from our fundamental belief about what is real. He further notes that we should expect to find certain ways of knowing associated with particular ontologies and that those ways of knowing are neither discrete nor

exclusive to any single way of viewing reality.

Zais describes three historical perspectives whose sources of reality originate from world views that are (a) *other-worldly*, spiritual, platonic; (b) *earth-centered*, involving the physical universe and its workings; and (c) *human-centered*, experiential, process oriented. He further summarizes ways of knowing related to these perspectives as

1. Knowing by insight with no empirical basis;
2. Knowing by authority;
3. Knowing by uncovering through the senses or perceptions;
4. Knowing by intersubjective verification or common sense;
5. Knowing by logic; and
6. Knowing by constructing.

The caution notwithstanding that ways of knowing are neither discrete nor exclusive to any single view of reality, it is clear that in regard to creativity studies our epistemological household is not yet in order. Again, the issue is not one of a single truth but of a deliberate examination of what those who know by authority hold to be true. What areas of inquiry should serious scholars of creativity pursue? Why? And how?

Future directions in creativity research will continue to be convoluted until we identify and examine basic assumptions around our current knowledge of creativity. Without more clarity around our own epistemology we run the risk of taking another twenty years to dispel the opposing mythologies that either everything is creative or nothing is creative.

### *Axiology*

A third philosophical category concerns values. Axiology addresses the question What is good, preferable, or

desirable? Our values are central influences in guiding the decisions and choices we make in any endeavor. These choices are traditionally viewed as either ethical or aesthetic. Ethics refers to decisions and choices we make that are considered right/wrong or good/bad. Aesthetics refers to choices about beauty and enjoyment (Zais, 1976).

MacKinnon (1978) broaches ethical and aesthetic concerns in his description of criteria for determining a creative product. He describes them as optimal criteria for making decisions about creative products that have a high level of impact on society and culture.

Futurist educators, (Cornish, 1977; Henchley & Yates, 1974; Kauffman, 1976; Toffler, 1970; Torrance, 1977; Whaley, 1984), in encouraging the need for alternative ways of forming tomorrow's reality, include creative process skills as essential elements in their philosophy and curricular considerations. They provide an explicit values perspective by training people to examine the consequences of probable, possible, and preferred futures. They further encourage learners to develop and concretize their preferred futures and to direct their choices and decision toward these stated values.

Given the current status of interest in and demand for creativity studies, clarity about standards and practices for scholars and practitioners is imperative. Guidelines for ethical behavior such as those described by the American Psychological Association are helpful, but they do not fully address the needs of our field. Individuals concerned with the future of creativity studies are beginning to address axiological issues (Isaksen, 1989), but the questions of what values are shared and what a reasonable commitment to the spirit and intent

of these values is should be a collegial task. As with our ontology and epistemology the goal is not to develop a unilateral values system, but to provide parameters and guidelines for future action that accurately reflect the reality and knowledge base of those who choose to identify themselves as researchers and practitioners in our field.

#### POTENTIAL CRITERIA FOR DISCIPLINARY EXCELLENCE

It is clear that the field of creativity studies has a variety of instructive implications. One area of application is the learning of creative problem solving (CPS). For example, individuals or groups can learn some basic divergent and convergent CPS techniques. The techniques can initially be taught and learned outside of any context or be woven into a particular subject matter the student is learning. (Generally, they are introduced outside of context.) Then the techniques are linked together to form a process. This process experience can take on three different, but related, componential aspects: formulating and stating the problem; generating ideas and options; and evaluating and putting the ideas into action. Individuals or groups can learn how to string the techniques together within the three major components of CPS as well as to use the qualities of the six major stages and the dynamic balance of divergence and convergence (Isaksen, 1986). They can also learn about a variety of dynamics to consider when using CPS (Isaksen, 1988b). The outcome of this type of learning is the application of CPS on real challenges and opportunities needing a new and useful approach.

In examining the disciplines as cur-

riculum content, Phenix (1962) pointed out a well-known dualism that exists between methods of professional scholarship or research and methods of instruction. This dualism has a long history and appears to be currently pervasive in our thinking about the curriculum (ASCD, 1985). This division provides two very different perspectives on the question of the meaning of a discipline. On the one hand academic scholars pride themselves on their erudition and have little regard for the teaching and sharing of this knowledge. On the other hand, professional educators pursue the problems of teaching and learning with little regard for the standards of rigorous scholarship. Phenix (1962) suggests that this dualism is destructive to both scholarship and education and asserts that we need to focus on the essential meaning of a discipline as a body of instructive knowledge. He also provides three fundamental features which measure the degree and quality of any discipline. These include (a) analytic simplification; (b) synthetic coordination; and (c) dynamism.

#### *Analytic simplification*

The primary test of the value of any discipline is how well it simplifies understanding. The criterion of analytic simplification is built on the view of a discipline as a conceptual system within which to gather a large group of cognitive elements. This conceptual system provides a common framework of ideas. It is clear that the field of creativity studies has a wide array of theories, models and techniques from which to draw. The critical aspect of analytic simplification is that there be some coherence and agreement among these theories in order to provide some degree of

clarification for the field. The profusion of perspectives and theoretical approaches regarding creativity currently provides the creativity scholar with some degree of confusion. The field appears ready for some sorting and discrimination, as well as some basic classification.

#### *Synthetic coordination*

This criterion rests upon the view of a discipline as a conceptual structure whose function is to reveal significant patterns and relationships. Thus a discipline can be viewed as a synthetic structure of concepts made possible by discriminating similarities through analysis. These concepts are not isolated but are seen in their interconnections and relationships. Through synthetic coordination, a discipline is a community of concepts.

The field of creativity studies is currently undergoing much of this type of inquiry and work. For example, Welsch (1980) was able to review the definitions of creativity of over twenty major researchers and identify some common threads of meaning. Rhodes (1961) provided an early analysis of the common elements of the literature. More collected works are now available from which researchers can draw (Sternberg, 1988). Improvement on this criterion would mean much less reinventing some of the basic research questions which have already been well examined.

#### *Dynamism*

This criterion provides a view of a discipline as a living body of knowledge, containing within itself the principle of growth. The concepts within a discipline go beyond simplification and coordination, they invite further analysis and synthesis. It is

on this criterion that the field of creativity studies clearly does well. There is a growing body of literature as well as an increasing number of scholars and journals within which to share research. The opportunity to begin important international networks is currently increasing the dynamism of the field (Colemont, Grøholt, Rickards and Smeekes, 1988).

If one holds to a very strict definition of discipline, based on these criteria, it may be fair to refer to creativity studies as an emerging discipline. An alternative is to see creativity studies as a multidisciplinary or interdisciplinary topic. If a multidisciplinary topic, then creativity would simply involve several disciplines each of which would offer its own perspective on the nature and the nurture of creativity. Integration would be left to the student. If seen as an interdisciplinary topic, creativity would attempt to integrate the contributions of several disciplines in order to discover the relationships among these disciplines.

However, the study of creativity and its nurturance might be viewed as a transdisciplinary issue. In reviewing the definition of interdisciplinary studies, Meeth (1978) provided the following view of transdisciplinary programs:

*The highest level of integrated study is transdisciplinary, which is not of the discipline at all. Transdisciplinary means beyond the disciplines. Whereas interdisciplinary programs start with the discipline; transdisciplinary programs start with the issue or problem and, through the processes of problem solving, bring to bear the knowledge of those disciplines that contributes to a solution or resolution (p. 10).*

One of the advantages to viewing creativity from a transdisciplinary viewpoints is that a wide range of

disciplinary perspectives may be surveyed for relevant information and concepts. In fact, although much of the literature in the United States comes from a psychological research tradition, it is clear that many other disciplines have something to offer the field of creativity studies. Such disciplines and economics, sociology, philosophy, anthropology, history and others, have much to offer this emerging line of inquiry. This becomes even more clear after examining the creativity matrix put forth by Magyar-Beck (1985). This matrix provides for the study of creativity at a variety of levels including cultural, organizational, small group and interpersonal. Many disciplines can be viewed as potentially productive from this perspective.

## THE OUTLOOK

The general outlook for this emerging field is quite optimistic. This is true, not only for the reasons of change, competition and complexity, but because there are promising developments in the area of management and education which point to the need and promise for this kind of study. The need to revise our schooling to teach thinking skills, learning skills and other higher-order cognitive abilities is gaining in popularity and in substance (Resnick, 1987). In writing of the new academic frontier of creative and innovative management, Kozmetsky (1984) reported:

*The thesis of this paper is that the university of tomorrow must get prepared to research and teach creative and innovative management as a new discipline that requires understanding and implementation of solutions to generalized as well as specific problems of society (p. 3).*

The assertion that the field of management studies needs to include study and application of our knowledge of creativity and innovation is supported by Drucker (1985), Kuhn (1986), Ijiri and Kuhn (1988), and others.

The outlook for the future developments of creativity research and study depends on the field's ability to respond to the deficiencies identified within the criteria mentioned by Phoenix. In the broadest possible sense, there is sufficient rationale for believing that the field of creativity studies offers an instructive body of knowledge. This may be a transdisciplinary body of knowledge, but there do appear to be some basic assumptions upon which to view the instructiveness of this emerging field.

The authors offer the following assumptions to open a dialogue on the potential of creativity as an emerging discipline.

1. Creativity involves human growth and is therefore a component of living. Learning and teaching about and for creativity is not merely a supplemental or preparatory activity separate from life and everyday experiences.

2. The diverse nature of creativity is positive. Understanding, developing and using this diversity is a strength rather than a weakness.

3. Subject matter provides the raw material for learning but adds value only when put to use in relevant and meaningful ways; transfer and application of learning are creative outcomes as well.

4. Learning and teaching about and for creativity allows individuals to develop process skills that will enable them to acquire and use data necessary for a variety of tasks. Acquiring these skills allows learners to more

effectively deal with unknown or unpredictable events and challenges.

5. What is relative, meaningful and useful to learners varies according to each individual's background, experience, style and needs.

6. The learner's needs and involvement provide the initial purpose and motivation for creative learning; developing an awareness and understanding of those needs is important.

7. Personally meaningful learning involves interaction and effective communication with others. Creative learning takes place within a variety of contexts and under a variety of conditions. Conditions that promote open exchange and acceptance of ideas foster positive interaction.

8. The deliberate learning and teaching of a problem-solving process has long-range importance for an individual's creative growth; solutions to problems may have immediate benefit but these outcomes are the results of a productive interaction among person, process and environment.

9. In addition to learning and teaching, it is possible and important to document the impact, effect and value of creativity. Methodologies for such inquiry should be diverse, comprehensive and appropriate to the multifaceted nature of the field.

These assumptions point to a few of the instructional implications for some of what is known within the field of creativity studies.

This paper has outlined a rationale for studying creativity; the historical approaches to this study; and some discussion regarding the current status of work in this area. Inquiring into the status of creativity studies as a discipline makes it necessary to explicate some beliefs and assumptions regarding the nature of knowledge as well as indicating a few of the in-

structional implications of creativity. The future of this field of inquiry depends greatly on our ability to face the recurring dialectic of theory vs. practice and to expand the boundaries of our community of discourse to improve its quality and relevance.

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