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Some Critical Issues
for Future Research in Creativity*

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As we have seen, empirical research has shed some light on each of the major facets of creativity—the creative product, the creative process, the creative person, and the creative situation. But its illuminations have been spotty and far from complete. There remain critical issues concerning each of these several aspects of creativity which can only be resolved through the findings of future research.

The Creative Product

I would argue that the starting point, indeed the bedrock of all studies of creativity, is an analysis of creative products, a determination of what it is that makes them different from more mundane products. This is the problem of the criterion, and only after we have come to some agreement about the criterion, which I shall argue is the creative product, are we in a position to study the other facets of creativity: the creative process, the creative person, and the creative situation. Each of these must be defined with reference to the creative product:

* The creative process or processes are those that result in creative products.
* A creative person is one who brings into existence creative products.
* The creative situation is that complex of circumstances which permits, and fosters, and makes possible creative productions.

In a very real sense, then, the study of creative products is the basis upon which all research on creativity rests and, until this foundation is more solidly built than it is at present, all creativity research will leave something to be desired (MacKinnon, 1975).

To speak of the creative product as though there were only one kind of product is a gross over-simplification. Creative products range from such concrete and tangible objects as a piece of sculpture or a physical invention to such intangibles as leadership or educational and business climates which permit those in them to express to the full their creative potential. Some have even spoken of the person as a product; for example, the individual who makes his own being and life a work of art. It seems likely that agreement among the experts concerning the creativeness of a product will be greater for those products that are public and relatively permanent.

Considerations such as these led us in the Institute of Personality, Assessment and Research (IPAR) study to draw our subjects from fields of creative endeavor in which the worker creates a public and relatively enduring product. The fields included writing, architecture, mathematics, and physical science and engineering research in industry.

The decision to choose as our criterion objects public and relatively enduring products had been, in part, influenced by our disappointing assessment study of Air Force officers (MacKinnon et al., 1958). Using many of the same tests and procedures which proved so

effective in predicting the creativity of architects, mathematicians, and others, we had had little success earlier in predicting the leadership of Air Force officers. In retrospect, it is clear that in the study of Air Force officers it was not the predictors that were at fault but rather the several criterion-measures of leadership.

A critical issue for future research in creativity is to find ways and means of studying creativity that eventuates not in objective, palpable, enduring objects but in subjective, intangible, and sometimes fleeting interpersonal relations, educational, social, business, and political climates which permit and encourage those in them to develop and to express to the full their creative potentials. In such a context the problem of studying the creative person is to identify and come to understand those who exert creative leadership. The study of interpersonal and social creativity is a far more difficult and demanding task than the study of personal creativity which so far has been the main focus of our researches. It is, of course, well to start with the investigation of the simpler problem before undertaking the more complex ones, but the time to begin is now.

What does it mean to speak of a leader, a business manager, a teacher, a governor, a general, a college president who is creative? The creativeness of such persons centers more in the realm of interpersonal and social relations than in the realm of ideas and theoretical problems while obviously not ignoring the latter.

At IPAR we have focused on the creativity of persons too much like ourselves, people whose creative products are somewhat like our own. If one thinks of these in terms of the values described by Spranger (1928), all of the creative groups we have studied have had as their highest values the theoretical and aesthetic—and these are the highest values of academicians too. In order to round out our picture of creativity and of creative persons, we need to study fields of endeavor where the highest values of the practitioners are economic, social, political, or religious, or some combination of these. Or, in fields of economic, social, political, and religious endeavor, will it turn out that the most creative workers also will have as their highest values, the theoretical and aesthetic?

What I am suggesting is that in our studies of creativity we, at least at IPAR, have been rather ethnocentric or at least inclined to draw our subjects from our own subculture. There have been some exceptions, of course; for example, the study of Irish business managers conducted in collaboration with the Irish Management Institute in 1965 (Barron & Egan, 1968). This study provided us an opportunity to assess a most fascinating group of men in Dublin. But the criterion was far from adequate, and I am afraid less light than we would have wished was shed on the creativity of Irish managers to say nothing of managers in general.

The Creative Process

A major problem confronting anyone who undertakes the study of the creative process is that, although the creative act may be of brief duration, it more often is a protracted affair. The moment of insight and inspiration may be sudden and brief, but it comes usually only after prolonged searching. To observe the whole span of creative thought and action would require considerable periods of time; and for such a study, subjects would have to be available, not just for brief periods of observation and assessment, but for months and possibly years of observation and study.

In the absence of such ideal conditions for the study of creativity, investigators have tended to employ other approaches to the study of the creative process: retrospective reports, observation of performance on a time-limited creative task (e.g., writing a poem), factor analysis of the components of creative thinking, experimental manipulation and study of variables presumably relevant to creative thinking, and simulation of creative processes on the high-speed electronic computer.

Another approach worth exploring could be the study of highly creative persons who would be willing to introspect upon their on-going creative processes and allow clinically trained personologists to discover aspects of the creative process upon which they might be themselves unable to report. Combined with this might be a study of the free associations of the creative persons to the significant and germinal ideas in the chain of their creative thinking. The relation of dream content over time to the vicissitudes of the creative process could also be studied.

Still another technique which might be used with highly creative subjects who would be willing to cooperate, would be the induction of hypnosis in order to obtain a hypnotic trance reports on those phases of the creative process which normally go on outside of awareness.

A variation on this technique would be to hypnotize a group of subjects, implanting in each (through hypnotic suggestion) the same emotional complex; for example, a feeling of guilt because of an illegal or immoral act which they are told they have committed. Amnesia for the complex is suggested, but the subject is told that he will dream about the incident the following night. Since the content of the repressed complex is known to the experimenter, he is able to see the relation between this content and the form in which it is expressed in the subjects dreams. Thus he has a powerful technique for studying the varied expressions of a repressed complex, among them the symbolic transformations of elements of the repressed unconscious into that type of active fantasy which we recognize as creative process. Such a study has already been made (MacKinnon, 1971).

Concerning the so-called incubation period of the creative process, little is definitely known. Several hypotheses have been advanced concerning the role and function of the incubation period in arriving at a creative solution. One interprets the time away from the problem as permitting the operation of certain "unconscious processes" in finding a solution—a sort of unconscious cerebration. Another interpretation conceives of the passage of time away from direct and conscious attention to the problem as permitting the "unfreezing" of a fixated and inappropriate way of seeing the problem or its elements. A third interpretation suggests that the period of incubation permits the "retrieval" of information from memory storage, while a fourth theory conceives of the incubation period as permitting the "transformation" of material that is learned or perceived in conventional ways into novel patterns. It is time that experiments be undertaken to determine the relative weight of these and still other alternative interpretations of the incubation period.

The role of accident in the creative and innovative process has been rightly emphasized in the anecdotal literature. There can be little doubt that the "chance" occurrence of an event at the appropriate time during the creative process may be signally important in providing the cue or the material necessary for the creative act. There has been some research in this area but a great deal more needs to be done—and done systematically. The need is for studies to be made of (1) the conditions under which such accidents are more likely and less likely to occur, and (2) the conditions under which such accidents, if they do occur, are more likely to result in the desired creative effect.

A related phenomenon is the use of incidental cues in creative problem solving. First of all, under what conditions are such cues likely to be used? This is a motivational and perceptual problem. And secondly, are there individual and sex differences in the use of incidental cues (Mendelsohn & Griswold, 1964, 1966, 1967; Mendelsohn & Lindholm, 1972)?

Another intriguing problem, as yet little studied, is the relative length of the several phases of the creative process, especially the phase of preparation, including the incubation period, and the phase of execution of the creative product. In some well-known instances of highly creative performance, both the period of preparation for the execution of the creative product and the period of execution itself have both been of extremely short duration—one thinks of Mozart and Schubert. In other cases, the period of preparation, including incubation, has been very long while the period of execution has been short, e.g., Darwin's development of the

theory of evolution and Einstein's theory of relativity. In still other notable instances, the periods of preparation including incubation and of execution have both been long, for example, the 20 years it took Brahms to write his First Symphony (Storr, 1972). These observed differences raise the interesting question as to whether the differences are due to the field of creativity, the subject matter of the creative endeavor or to differences in traits of personality and mind, or still other differences. In any case, there are fascinating problems here awaiting future research.

Ernst Kris' (1952) description of the creative person is well-known. He is one who is adept at what Kris called "regression in the service of the ego" or, in other words, movement from *secondary process* (rational, ordered, reality-oriented, purposeful) thinking, to *primary process* (free associative, disordered, reverie-like) thinking. Primary process, according to this view, increases the probability of novel ideas which are subsequently elaborated at secondary process levels.

Rapaport (1957) equated the continuum of states of consciousness from alert, objective thought through fantasy and reverie to dreaming with the secondary process-primary process continuum. Lindsley (1960) has drawn a parallel between differences in level of arousal (as assessed by EEG wave frequency) and the waking-dreaming continuum of states of consciousness. Rapaport's and Lindsley's parallels taken together have suggested to several researchers (Blum, 1961; Dawes, 1966; and Martindale, 1972) that movement from secondary process to primary process thought would be accompanied by decreases in level of arousal.

Martindale, for example, hypothesized that creative individuals would exhibit comparatively low levels of physiological arousal and sought to test the hypothesis by measuring the frequency of alpha rhythm in persons of more and less creativity. The hypothesis was not confirmed, possibly because of the inadequacy of his criterion of creativeness, which was a Composite Creativity Score consisting of the sum of subject's scores on the Remote Associates Test (RAT) and the Unusual Uses Test. Since there is some question as to whether RAT does indeed measure creativity, his criterion measure is, to say the least, questionable.

More basically one can question the hypothesis that creative persons would show a low level of physiological arousal. A more likely hypothesis would be that creative persons possess an above average ability for, or tendency toward, shifting among various levels of arousal. But everyone shifts from higher to lower levels of arousal as they move from alert states of awareness to states of reverie and sleep. Perhaps what characterizes creative persons is not just a tendency to shift among various levels of arousal but a tendency for the timing of the shifts to be different—for example, the states of low arousal may be longer lasting, or the frequency of shifts may be different. Or it may be that creative persons are more interested in and pay more attention to their experiences in lower states of physiological arousal: their hypnagogic visions while falling asleep, their daydreams as well as their night dreams, and their hypnopompic visions when wakening from sleep, reverie, etc.

What I would like to suggest is that this is an area of intriguing research as yet insufficiently pursued, although Martindale (1975) has continued to explore the psychophysiology of creativity. What needs to be done is to obtain the cooperation of truly creative persons—not students whose level of creativity is judged by test performance rather than by outstanding creative achievement—and monitor their levels of physiological arousal over long periods of time and in demonstrated relation to fallow periods and to periods of creative productivity.

For investigation of the relation between the more conscious ego functions and the more primitive layers of the personality, there are two further techniques at hand, beyond those that I have already mentioned. One involves the administration of a mind-altering drug, and the other a marked reduction of the stimulation of the exteroceptors. Both of these techniques have been employed in the study of perceptual and cognitive process, but not intensively enough with specific reference to the creative process. Both procedures have been shown to induce marked changes in consciousness and behavior, and both the degree and quality of

change vary greatly from person to person. The relation of these changes to other aspects of personality and especially to creative productivity has not been adequately studied, and cannot be until those who are subjected to such treatment are first thoroughly assessed. The two procedures which I have mentioned offer possibilities for the investigation of the consequences of bombarding the ego with primitive impulse and imagery. It should be noted, however, that such research is not without its hazards and requires, obviously, the closest medical as well as psychological monitoring of the subjects.

There is still much more to learn about the creative process. Most investigators have tended to believe that the creative process is very much the same in all persons, and, to a degree, this is most probably so. However, the question still has to be asked: May there not be different kinds of creative process? To what extent are the creative processes of mathematicians, musicians, painters, entrepreneurs, and business managers, for example, alike and in what respects different? Even within the single field of mathematics, Helson and Crutchfield (1970a, 1970b) have shown that different mathematicians describe their thought processes quite differently, and sex differences have also been revealed (Helson, 1967, 1968). Mathematicians show a significant association between creativity and "sex appropriateness" of creative style. Creative male mathematicians tend to describe their approach to research as purposive, assertive, analytic, etc., revealing the traits of what Erich Neumann (1954) has called *patriarchal* consciousness. Creative women mathematicians, on the other hand, tend to describe their approach to research problems in terms of emotional brooding until an organic growth is realized, reception of ideas from the unconscious, etc., reflecting what Neumann has called *matriarchal* consciousness. Less creative men and women mathematicians each tended, less sharply, in the opposite direction. There is much more to learn about differences in creative style—and much more also, to learn about the differences in content in the creative process.

For example, are there different kinds of imagery, of metaphor, and of analogy used in different fields of creative endeavor? Is the use of geometric symbols more appropriate to the solution of certain problems than the employment of algebraic symbols? Or is the preference for one rather than the other determined by personal and temperamental factors? One thinks of Kurt Lewin's (1936) use of topology in his development of topological psychology, and of Harry Helson's (1964) use of quite different mathematical concepts in his development of adaptation-level theory. As psychologists, both were creatively seeking general laws of human behavior.

I would next like to raise the question as to whether creativity is always a matter of problem solving. I have often argued that it is, pointing out that the creative process starts only when one sees or senses a problem. The beginning of creativeness requires that one becomes aware of something that is wrong, or lacking or incomplete, or mysterious. One of the salient traits of a truly creative person is that he sees a problem where others do not, and this, I have thought, is why a creative person is often so unpopular. He insists on pointing out problems where others wish to deny their existence. A constantly questioning attitude is not an easy one to live with, yet in its absence many problems will not be sensed and consequently creative solutions to them will not be achieved.

But am I correct in so thinking, or is my doing so merely another instance or illustration of my own subculture boundness? Academicians are always raising questions. Their researches start with questions, for implicitly hypotheses are questions which the researcher seeks to answer either affirmatively or negatively. And the subjects whose creativity we have sought to study at IPAR, with the exception of creative writers, were all persons whose creative behavior started clearly with a question which they sought to answer, a problem which they sought to solve.

But is it accurate to say that the creative process in the painter, the sculptor, the musical composer, the poet, the artist in general starts with the conception and formulation of a problem? In the past I have written that "artistic creation no less than scientific creation involves

the solving of a problem, e.g., in painting to find a more appropriate expression of one's own experience, in dancing to convey more adequately a particular mood or theme, etc." More recently, Getzels and Csikszentmihalyi (1975) have sought to study the problem-finding activities of painters. Today I'm not so sure. If it is a problem that the artist senses, it typically is not one that is or can be stated verbally.

The artist has a need to express himself, to resolve some tension or imbalance, to do something with the materials of his art. However, does he have a problem to solve, and if he does in what sense is it a problem? This is yet another critical issue in future investigations of creativity.

In what respect is the creativity of a sick and tortured person the same as the creativity of a psychologically sound or of a calm and placid individual, and in what ways different? Maslow is only one of many who have tried to research this problem, but there is much more work that needs to be done in this area.

Many of the questions that can be raised about differences within the creative process become in a larger context questions about variations in style of creative work, different types of consciousness, indeed different types of creative persons, since cognitive processes are not purely cognitive in character but are vitally embedded in the total complex of personality.

The Creative Person

As far as the creative person is concerned, we have discovered traits which differentiate creative persons from their less creative colleagues in a number of fields and professions. But these, for the most part, are group findings which shed little light on the pronounced individuality of creative persons. We at IPAR have been impressed by the generality of our research findings. The design of our study was one that would permit us to say something about what characterizes the creative worker generally, regardless of his special field of endeavor and type of creativity, as well as to delineate the characteristics of the creative worker and his mode of work in each of the areas studied. The difficulty, as I've already pointed out, is that the fields of creative endeavor which we chose to study were too close to one another, too similar in their demands, and too much like our own field of endeavor. We did find differences, as others have between scientists and between different kinds of scientists and those whose creativity is expressed in the realm of art. But there is probably much more in the way of differences between creative practitioners in the varied fields of human endeavor than we have so far been able to even hint at.

We need to go even further in our search for differences among creative persons, focusing our attention upon individuals who are outstandingly creative and upon various types of creative persons, since clearly there is no single mold into which all who are creative will fit. Research on the individuality and typology of creative persons has not been entirely neglected, but it remains largely a task for the future.

We need to know more about the motivation of creativity. "What drives an artist or scientist to engage in his creative activity is a question of great interest, but one which has been somewhat neglected in academic studies of creativity" (Storr, 1972, p. xi)—although not entirely so. In general, academic psychologists have tended to stress and to study the intellective and cognitive skills and abilities as determinants of creativity (e.g., Guilford, 1977), while the psycho-analysis and derivative dynamic psychologists have been more concerned with the dynamics of creation (e.g., Storr, 1972).

The motivational theories of creativity are many and varied. According to some, creativity serves as a defense, just as a neurotic symptom is seen as serving as a defense against primitive impulses or pathological states of conflict whether paranoid-schizoid or depressive. Others see creativity as reflecting a compulsive need to order and control, while others view it as providing expression for the wish-fulfilling fantasies of the dissatisfied. Another view is

that man engages in creative activity in an attempt to avoid or overcome feelings of alienation. Some theorists point to such extrinsic factors as fame and wealth as the driving forces behind creative striving. Others are more impressed by such intrinsic motives as enjoyment and pleasure in the exercising of one's skills, or competence motivation. Here the emphasis is upon self-rewarding activities, activities for activities' sake. Need for novelty and need for play have also been proposed as motives leading to creative behavior.

Analytic writers who have studied the motivations of artists and the forces driving their artistic achievements have tended to forget Freud's dictum that all behavior is over-determined and in each case have tended to find and to stress a single motive.

While there are exceptions, the more general rule has been for each investigator demonstrating the role of some motivational factor, earlier neglected, to so stress the motive he has discovered as to seem to deny, at least to overlook, the possible significance and role of other motivational factors and their interaction with the motive upon which he is now focusing.

What is needed, I believe, is a tolerance of multiplicity. Creative behavior is no different from any other form of behavior in being almost certainly the expression of not only one, but many motives. We need not choose among the different motivational theories of creative behavior. We can find confirming cases for each of them. Our need is to seek for still other and as yet unnoticed motivational factors leading to creative striving, and demonstrate, not how each of them is a factor in any given bit of creative behavior for a given person, but how they act in concert in the creative striving of persons.

A similar point can be made in respect to the many approaches to the study of creativity. In his book of readings entitled *Creativity: Theory and Research*, Bloomberg (1973) has grouped the reproduced papers under seven approaches: the psychoanalytic approach, the humanistic approach, the environmental approach, the associative approach, the factorial approach, the cognitive-developmental approach, and the holistic approach. All of these approaches should be pursued, along with still others. The time may come when we will have a single, integrated approach to the conceptualization and study of creativity, but that day, I believe, is far off.

If, as Freud believed, sublimation is the defense against primitive impulses that leads to artistic achievement, it is not clear why he believed that psychoanalysis should heighten an artist's capacity for artistic achievement.

As Storr (1972) has pointed out,

> *Since one of the objects of psychoanalysis is to help people rid themselves of their infantile sexuality, and attain satisfaction by the integration of these remnants of childhood under the supremacy of the genital drive, it is hard to see why the artistic impulse, in successfully analyzed artists, should escape analytic dissolution. Fenichel, for example, is explicit in stating that sublimations are at least partially abolished as a result of psychoanalytic treatment (p.6).*

This contradiction in Freudian theory has long intrigued me. I have fantasied a test of the theory that would not be difficult to execute. All one would have to do would be to gather the names of recognized artists and then determine which of them had ever been analyzed and, if so, precisely when. Some indication of the success or effectiveness of the analysis as judged both by analyst and artist and possibly others would have to be obtained. Further, a sample of artists who had felt the need for analysis but had not carried through for one reason or another would also have to be drawn.

The artists in question would have to be ones who had been productive over a considerable period of time, both before and after their actual or contemplated analysis. The task would then be to get "experts" ignorant of whether the artists had ever been analyzed or considered analysis, and have them rate or evaluate the artistic merit and level of creativeness of the

artists' output over time. Mean ratings of the works completed before the analysis could be compared with those done after the analysis, due attention being given, of course, to the judged effectiveness of the analytic therapy.

In recent years there has been an increasing attack upon trait theories of personality for their failure to provide an adequate basis for the prediction of behavior. Those who hold this view, assert that behavior is much more a function of the situations in which individuals find themselves than it is of the presumed enduring traits of personality and character of the individual. The trait theory and the situational theory in their extreme forms are both inadequate in my judgment. Our task, if we are to predict behavior, is to specify both traits and situations; but more important still is the task of studying the interaction between the two classes of variables. This has certainly not been done sufficiently in the study of creativity. A task for the future is to study intensively under experimentally controlled conditions the role of interpersonal and social relations in facilitating and inhibiting creativity and an assessment center offers an ideal setting for such investigations. Subjects who have been thoroughly studied by a multiplicity of assessment techniques can be assigned to groups of known composition, with subsequent observation of the effects of variation in persons, in interpersonal relationships, and in group structures upon the creativity both of individuals in the groups and of groups qua groups in solving problems either undertaken by them or assigned to them.

Such experimental studies of the creative process would have their value and their place, but as previously noted the creative process often requires days, weeks, months, or even years for the full running of its course. What is needed is an opportunity to study creative persons over considerable periods of time in order that fluctuations in creativity can be related to changing life-conditions. Such data would not be obtained entirely or even mainly through the medium of interviews but through observation of the subjects in the natural milieu of their daily lives, with special reference to the conditions under which they work. In such investigations the investigators would be ever-present observers. This brings us to the creative situation.

The Creative Situation

In considering the creative situation, the problem is to discover those characteristics of the life circumstance and the social, cultural, and work milieu which facilitate or inhibit the appearance of creative thought and action.

What kinds of home and educational environments tend to nurture and develop the creative potential of youngsters? If we look only at the generality, ignoring for the moment wide diversity and individual exceptions, we may note that the biographies of our creative subjects reveal several recurrent themes: an early development of interest in and sensitive awareness of their inner experience, and of their ideational, imaginal, and symbolic processes, such introversion of interest often stemming from an unhappiness or loneliness in childhood due to sickness, a lack of siblings or companions, a natural shyness, etc.; the possession of special skills and abilities which the child enjoyed exercising and the expression of which was encouraged and rewarded by one parent or the other or some other adult; aesthetic and intellectual interests of one or both parents similar to those of the child; an unusual freedom for the child in making his own decisions and exploring his universe whether granted by the parents or asserted by the child, in other words, an early and unusual amount of independence both in thought and action; a lack of intense closeness between parent and child so that neither overdependence was fostered nor a feeling of rejection experienced, in short, a kind of parent-child relationship that had a liberating effect on the child; a lack of anxious concern on the part of the parents; the presence of effective adults of both sexes, not necessarily the father or the mother, with whom identification could be made and who offered effective models for the development of positive ego-ideals; frequent moving during the early years, often from abroad to this country, providing both personal and cultural enrichment for the

child; and freedom from pressure to establish prematurely one's professional identity.

Beyond the generality of our findings, what needs to be differentiated are the many paths along which persons travel toward the full development and expression of their creative potential. What is needed is a delineation of the many types of life histories that lead to creative productivity.

An example of what I have in mind is such a biographical typology as is to be found in Helson's (1973) study of male writers of fantasies for children. Having described three types of literary genre in these fantasies—the heroic, the tender, and the comic—she was able to relate these patterns of fantasy to types of childhood pathologies found in the writer's life histories. The *heroic* pattern of fantasy appears to have originated in compensation for father-deprivation; the *comic* pattern, on the other hand, appears to reflect early conflict between admiration for the father and reluctance to take his role.

But the clearest model of the kind of analysis I have in mind is to be found in Jack Block's (1971) *Lives Through Time*. Using data from the longitudinal studies of the Institute of Human Development at Berkeley, Block identified types of personality, not at a given point in time but at several points in the life history—childhood, adolescence, adulthood—in other words, types of personality through time. Similar studies need to be conducted with other samples to discover types of personality through time that end up being creative.

This brings us to still another question: What is the nature of the wider social and political climate that is most supportive of and conducive to creative expression? I believe that most of us, on the basis of some experimental work, e.g., Lewin's and Lippitt's (1938) studies of authoritarian, laissez-faire, and democratic group atmospheres as well as our own political sentiments, are inclined to think that creative potential is most apt to come to expression in a democratic rather than an authoritarian state. That may well be so, but before we decide that the matter is all that simple we should recall that German scientists were able to create rocket bombs under Hitler, and that Russian scientists beat American scientists in putting the first satellite into orbit. There is still need for plenty of research before we will haver an adequate or very complete understanding of the role of educational, social, and political factors in facilitating or inhibiting creative potential.

If the fullest possible answer to this question is to be found, the study of creativity will have to become cross-cultural. The main focus of creativity studies has been the United States; increasingly creativity is being researched in Europe, with perhaps the greatest amount of attention being given to such studies in countries behind the Iron Curtain: Czechoslovakia, Poland, Romania, and the USSR. All of these countries, despite other differences, have this in common: they are developed, achieving societies.

But what about creativity in the more primitive and undeveloped countries? Would the definition of creativity generally accepted by European and American psychologists be valid for these other societies and cultures? No one has addressed this question with more insightful understanding than Renaldo Maduro (1976) in his pioneering study of artistic creativity in a Brahmin community of painters called Nathdwara, a sacred pilgrim center in Rajasthan, western India. In this work, Maduro discusses the western psychoanalytic theories of art and creativity in relation to six Hindu folk theories, and in an empirical study of the Hindu Brahmin painters, Maduro successfully applied a research design modeled on my (1962) study of American architects. But this is only the beginning of much work still to be done in studying creativity in more primitive and less developed communities around the world.

Some years ago Jack Conrad, Professor of Anthropology at Southwestern University in Memphis came to IPAR to learn as much about creativity as he could. His purpose in so doing was to prepare himself to study creativity as it expressed itself in African tribes. Part of his research was to identify four different cultures, two of which he would feel justified in labeling creative while the other two would be representative of relatively uncreative cultures. After a year of study of the cross-cultural files at Yale, he picked his four tribes for study, but

unfortunately his projected research has not as yet been funded. Such a study, if properly executed, would require, I would think, considerable rethinking of just what creativity is and how it manifests itself in different cultures.

What I am suggesting is that the definition and testing of creativity may be as much based on the same kind of culture-bound presuppositions and biases as are the definition and testing of intelligence. If this is a valid point of view, then research in creativity, although rather intensively pursued during the last quarter century, is in for some rather considerable extension.

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