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A Proposed Model for the Formulation of Creativity Research

The purpose of this article is to share a preliminary approach to the planning of future creativity research. The developers of the Research Planning Matrix (RPM)¹ represent diverse organizations and centers for the study of creativity. The article represents a synthesis based on many accumulated years of research and study on creativity. The authors have attempted to provide an illustration of cooperative efforts to organize and stimulate some productive dialogue for those interested in creativity research.

Although it is beyond the scope of this article to provide a comprehensive historical review of the field of creativity research,² it is important to view the RPM within some meaningful frame of reference. It is now 34 years since J. P. Guilford's pivotal presidential address to the American Psychological Association in which the central importance of creative talent in industry, government, education, art and science was pointed out. Guilford (1950) identified the appalling neglect of the study of creativity. He indicated that less than two-tenths of one percent of the books and articles indexed in the Psychological Abstracts for the first 23 years of its publication related directly to creativity. Since this landmark address, the number of studies, articles, books and conferences on the subject of creativity has increased dramatically.

¹Dr. Geir Kaufmann, Professor of Cognitive Psychology at the University of Bergen, Norway, and Mrs. Madelon Soloway, Director of the Institute for the Development of Intellectual Potential at the C. W. Post Center of Long Island University, New York, were active contributors to the development of the RPM and were present at the meetings held in Amagansett, New York.

²For a more comprehensive treatment of this topic, see Stein (1974) and Biondi and Parnes (1976).

Despite the increased efforts to study creativity, some very significant problems continue to exist. Some of these research problems relate to varying definitions and sampling procedures (Bullough, Bullough & Mauro, 1981), validity, reliability and usability of assessment procedures (Treffinger & Poggio, 1972), and many other critical issues. MacKinnon (1978) has provided some insight into the status of creativity research:

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.

Creativity researchers face a number of problems because it is difficult to know where we are and because we lack an appropriate guide to help decide where we shall go in the future. For example, the various definitions of creativity provide researchers quite an array of somewhat confusing and sometimes contradictory statements. As of now, no single definition of creativity has universal acceptance (Welsch, 1980). Eleven years after Guilford's address, Rhode's (1961) set out to examine the literature to find a single definition of creativity. Instead, he found four categories of definitions, the creative personality, the creative process, creative products and the environment for creativity (press). One of the biggest challenges to the field has been the definition and measurement of the elusive concept of creativity.

Despite the disparity of approaches, the proliferation of related terms and the tendency of researchers to concentrate on various narrow aspects of creativity, substantial progress has been made in the field. The authors believe the absence of an integrating conceptual framework has promoted an exaggerated image of confusion and contradiction. What is needed is a cooperatively-developed classification system around which creativity research can be planned, executed and shared.

Our purpose, therefore is to invite others in the field to participate with us in a cooperative effort to bring order to what we have and to shape our future course. Toward this end, we have developed a tentative framework for action.

The history of this proposed model dates back 17 years when a research assistant, Angelo M. Biondi, approached a roomful of major researchers in the study of creativity. He tried

to enlist their aid in identifying the similarities and differences between the existing models that were already creating confusion among members of the general public seeking to understand the creativity concept. One spokesman for the group, Donald MacKinnon, indicated that this effort, while necessary, was 20 years premature. During June 1983, identification of the need for common definitions and shared formulations was renewed by Stein (1983). Stein's presentation included a report on his recent attempt to integrate some of the work in the field of gifted, talented and creative children (Stein, in press). During this session, Stein proposed the formation of a consortium to coordinate and integrate the efforts of researchers in the creativity field. Many informal conversations among the authors ensued during the Annual Creative Problem-Solving Institute (Parnes, 1975). The time appeared ripe for cooperative effort to develop a conceptual schema to coordinate creativity research efforts. The developers of the RPM met during August at Stein's summer home in Amagansett, New York. The final agenda item of the meeting was to decide on "Research Formulation Group" as our name.

The main topic of the meeting was the presentation of a research planning matrix outline. We would later regard it as our atheoretical roadmap and guide. The ingredient was a creativity technique that many used before—it was Zwicky's morphological matrix (Zwicky, 1969). This morphological approach is best known for the use that Guilford made of it in his Structure-of-Intellect (SI) model. The tri-dimensional matrix of the SI was a theoretical model of classification for the many aspects of intelligence. It was produced as a result of Guilford's project on aptitudes of high level personnel while at the University of California (Guilford, 1977).

The group was aware that different scientific fields made major advances when they developed classification schema. The Periodic Table, systems of classifying flora, fauna and the animal kingdom were critical developments in the natural sciences. Might we not profit from a similar development? True, there were still differences among investigators in the field such as defining creativity and its associated theoretical underpinnings, but we need not confront these now. Can we not, like Linnaeus and Mendeleev, be quite empirical and select pragmatic criteria to advance our knowledge? A classification scheme would help us order previous work and knowledge. It would help us understand where we have been and clarify where we are now. What we "know" would be indicated and gaps in that knowledge would be readily observ-

able. Researchers and students could select these as problems to be solved. That would advance our knowledge and understanding of creativity—and so the work for the future would be cut out for us. With our desire for a valid understanding of the field through serious cooperative research the field might move forward positively.

The Research Formulation Group has intended to invite cooperative planning and input efforts in order to design the RPM. Although the matrix may appear to be in "final form," this is not the understanding of the designers. In fact, we hope that this matrix is analyzed and redesigned to be more useful to fit specific research projects. We have attempted to survey the field and present an arrangement which fuses the fewest elements necessary to assist researchers in formulating meaningful inquiry. As a result, we plan to modify the model where necessary to provide more relevance to individual needs. We plan to initiate thinking and dialogue which will result in more cooperative integration of research efforts in the field of creativity.

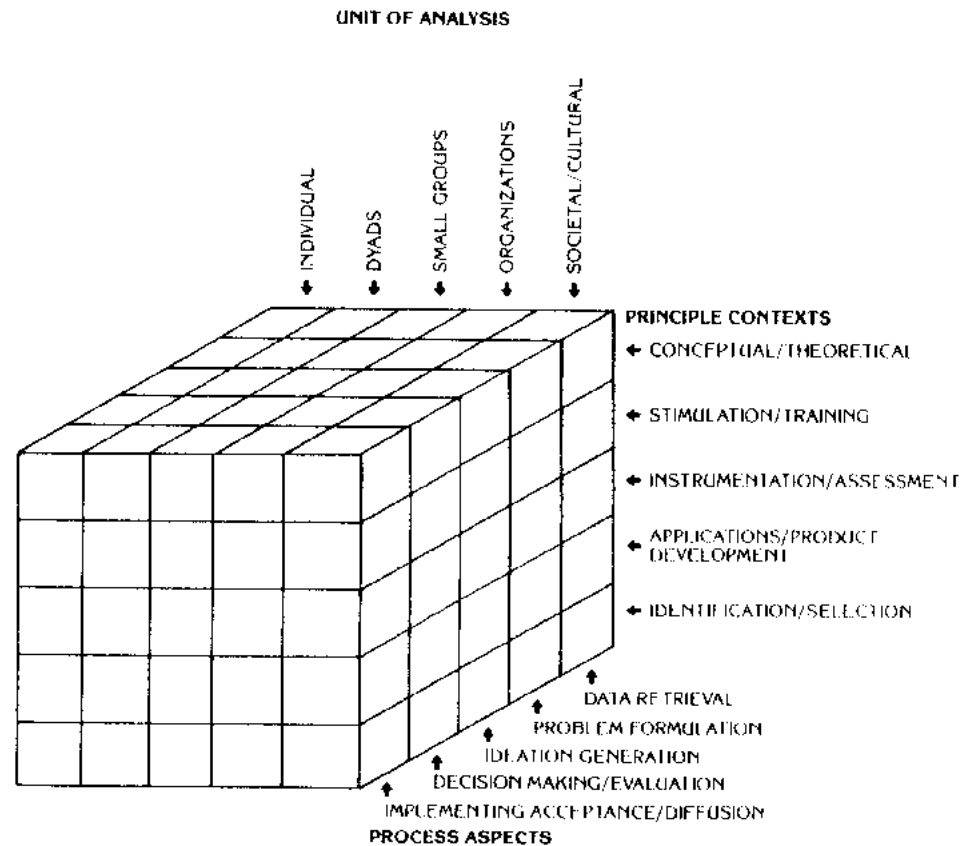
Formulation of a classification scheme is not, then, a radical idea. The question becomes: Does the classification proposal offered here offer you efficiencies or assistance in thinking about research in creativity? At first it might appear that creativity is too subtle and complicated to yield to anything less than a very complicated classification scheme. Yet, biologists have developed a classification system which cannot easily accommodate the platypus or the creeping slime mold—untidy creatures which do not fit easily into pigeonholes. While creativity research may be populated with more platypi and ambulatory fungi than primates and algae, yet there may be nonobvious connections between research findings that could be revealed if we had encouragement to look.

Ideally, a classification matrix will assist and encourage:

- a. The organization of existing creativity research.
- b. The planning of future research projects.
- c. The sharing of data and dialogue among researchers.
- d. Evaluation of research-funding priorities both by those who seek and those who distribute funds.

The RPM is arrayed as a cube. It is not intended to be a prescriptive model nor a theoretical entity like Guilford's SI. The proposed matrix might eventually serve as a framework for an active model. Some consideration was given to other geometries. A sphere, a cylinder or a tree diagram might be more suggestive. However, the group concluded that theoretical assumptions should dictate the eventual shape of the

FIGURE 1



model. The cube matrix is then, at this stage, nothing more than three cross-tabulated listings of aspects of creativity research.

The three aspects of dimensions chosen are:

1. The *units of analysis*—the individual, the dyad or groups.
2. The *principal context*—research theoretical purposes, research of training methods or in training the exceptional child or development of a measurement technique.
3. The *process aspect*—research which focused upon problem formulation, or upon ideation and incubation or particular combinations of process stages.

Each dimension will be discussed briefly.

Unit of
Analysis

The first of the three categories of the matrix identifies the various units of analysis which creativity research might examine. The focus within this category could be on individuals, dyads, small groups, organizations and societies or cultures.

Earliest commentary on creativity originated with scholars in philosophy or aesthetics and in literature, e.g., the "creative vision" and the role of imagination in poetry. Usually the unit of analysis was the individual artist. The divine muse presumably struck people one at a time rather than in wholesale lots. When the concept of harnessing the collective knowledge and imagination of groups of people was given impetus by Gordon's and Osborn's techniques, a body of research began to accumulate concerning groups. More recently, attention has shifted toward enrichment of or reorganization of the environment for creativity and research focus began to include families, schools and organizations. While no one would expect that the results of a study of the fantasy lives of classical composers would translate directly to an investigation of enrichment programs in middle schools, it may be premature to assume that no useful generalizations could be made across units of analysis. Clearly, there are studies in which the units are mixed. An investigation of creativity in individuals might also devote equal attention to the family and to the societal-cultural setting. However, all possible combinations of units of analysis seem unlikely. It might be of interest to see which combinations are most frequent and to confirm that no logical combinations have been neglected.

Principle
Contexts

The next dimension of the RPM provides some of the principle contexts toward which creativity research might be

directed. This category relates to where the results may be used and suggests the area where the possible results or products of research will have relevance. The elements of this dimension include: conceptual or theoretical research; stimulation and training; instrumentation and assessment; applications and product development; and identification and selection.

Research in any field may be to test theory, generate new information, apply established theory or document the validity of a technique for providing useful measurements. Of necessity, a youthful scientific discipline devotes a greater proportion of attention to fact-finding and measurement than to theory-testing. The intent underlying the contexts dimension is to propose a way to catalog creativity research goals in a manner which will aid both the seasoned and the neophyte investigator in literature review. Are there measurement techniques which intuitively align well with an existing theoretical formulation? Are there assessment findings which might suggest a way to bridge a gap in an incomplete theoretical construct? Are there findings in cognition, perception or memory research which should be brought into creativity research?

Eventually, the conceptual-theoretical stratum of the matrix may be elaborated into several layers, such as state vs. trait models, developmental theories or motivation-based theories. Such an elaboration might be assisted by the existence of a commonly-shared classification matrix.

Process
Aspects

The third dimension of the RPM is concerned with aspects of the creative process. We have included this dimension to illustrate what is involved in the actual research.

The process aspects of the matrix include: data retrieval; problem formulation; ideation generation; decision-making and evaluation; and implementation, acceptance or diffusion.

Once thinking about creativity moved away from the role of divine inspiration illuminating lightbulbs in the heads of people who then shouted, "Eureka!", attention was directed toward sequences in the development of the act. The RPM does not provide an ultimate linear progression of the creative process. These process labels are tentative and subject to clarification, expansion or replacement. The process descriptions do attempt to provide a nonprescriptive reflection of concepts in the research literature about different ingredients in creative activity.

Some studies will clearly relate to particular process aspects and others may involve none or a combination. For example,

some researchers may focus on establishing a corporate environment (an organizational unit of analysis) to facilitate innovation (a stimulation or training context). In this case, the researcher may wish to focus on idea-generating techniques. Some other researchers may have the same unit of analysis and context, but prefer to examine problem formulating techniques.

The matrix has many potential uses which we will discuss in subsequent publications. Were this an article intended to actually encourage the adaptation of the matrix as it has been developed, we would have provided a number of sample classifications and some illustrations of its use. However, instead of stating the potential implications of the matrix, we are encouraging some active involvement in its more final development. In fact, there are two ways the reader can become involved. One way is to write a critique or provide some alternative configuration or elements to the existing proposed RPM. This written response will be examined and if it is included in a publication, the contribution will be acknowledged and credited. These suggestions should be sent to Dr. Stan Gryskiewicz who directs the Creativity Development Division at the Center for Creative Leadership.

A more interactive way for the reader to become involved in the matrix is to attend the 30th Annual Creative Problem-Solving Institute (CPSI). A Creativity Research Symposium entitled "Frontiers in Creativity Research" is being planned as a part of the program. Should this avenue be of interest, the reader should contact Dr. Scott G. Isaksen who directs the Interdisciplinary Center for Creative Studies at the State University College at Buffalo. Enrollment information for the 30th CPSI is also available by writing directly to the Creative Education Foundation (1300 Elmwood Avenue, 214 Chase Hall, Buffalo, New York 14222).

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