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Creativity and education : some theories and procedures to enhance the development of creativity within a classroom setting.

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CREATIVITY AND EDUCATION:

Some Theories and Procedures to Enhance the Development of

Creativity Within A Classroom Setting

A Dissertation Presented

by

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DEDICATION

This dissertation is dedicated to Dwight W. Allen, whose

faith transcended upon and entered within this author.

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PREFACE

". . . As long as we ourselves are caught up in the process of
creation, we neither see nor understand; indeed we ought not to
understand, for nothing is more injurious to immediate experience
than cognition. But for the purpose of cognitive understanding
we must detach ourselves from the creative process and look at
it from the outside; only then does it become an image that
expresses what we are bound to call "meaning." What was a mere
phenomenon before, becomes something that in association with
other phenomena has meaning, that has a definite role to play,
serves certain ends, and exerts meaningful effects. And when
we have seen all this we get the feeling of having understood and
explained something. In this way we meet the demands of
science."

C. G. Jung. The Spirit in Man, Art, and Literature. From the collected works
of C. G. Jung. (Volume 15, Editors: Sir Herbert Read, Michael Fordham and
Gerhard Adler). Translated by R. F. G. Hull. The Bollinghen Foundation,
Pantheon Books, New York, 1966.

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CHAPTER I

INTRODUCTION

We are emerging into a new epoch of awareness. We need to learn
how to develop a new way of life, meaningfully informed. We need, further-
more, to recognize that this awareness, which we have called education, is
a lifetime process, to be lived whole. Education should encourage the
development of the creative process. It cannot be a segmented adventure.
It is part and parcel of living. It starts the day a person is conceived and
continues intertwined in everything he does in the cybernetic feedback of his
total being, whether of conscious, subliminal or unconscious fusion during
his lifetime.

Creation is the theme, tying all together: (1) creation in the universe,
an orderly progression; (2) creation in nature, symphonic in the total;
(3) creation in man, his emergent evolution; (4) creation in the person, his
way to growth and maturation; (5) creation in his knowing, way to resolution.
A totality of "Becoming, " as Maslow tells us.

Growth of living beings requires (1) increase of energies available
from outer sources, (2) increase of integration in the inner structure,

(3) increase of transactions with the environment to form (4) more fulfilling fittings, fitting to the creature. Growth of living beings is dependent on increase in these basic operations required of creative structures. Increasing life depends on participation in creation in increasing measure.

Education builds on communication's structure. Whether taken as the act of teaching in the presence of a learner, or as the system of the schools in the larger social structure, education is the conscious effort of a person, or a people, to afford nourishment for the growth of consciousness in the human species. Humans are caught with the requirement that they consciously cultivate growth of conscious knowing in their kind, derived from the fact of nature that we are each born as a problem-solving system, so broadly open to manifold inclusions that we must take responsibility for teaching one another how to use the system and what to feed it. Taught nothing of this, death ensues. Taught what is ill-fitting, sickness follows. Taught well, the fittings fit to the way creation goes, inside and out, and intercoursing. The discipline is toward ever more conscious knowing of creation-on-the-make, whether it be in nature's forming (as the natural sciences entail) or in society's forming (as the social sciences entail) or in man's forming of himself (as the arts and humanities entail). The aim of education is everywhere the same, and, when met, productive of a consciousness of creation which (1) includes more, (2) integrates more,

(3) guides more, and (4) fulfills more than would otherwise be the case.

Looking at man, we can see that perception functions (1) to increase man's reach into his environment for a wider reading, (2) to increase the internal organization of the significances then resulting, (3) to increase the span of controls on action for the further reachings, and (4) to increase the involvement in creation through more selective fittings in creation's moving. Perception was created in creation's womb, and creation is its function.

The view that learning involves the creative organization of the culture's knowledge with the individual's experiences to produce a new and unique perception of the culture by the learner is common to many behavioral scientists (Woodruff, 1969; Parnes, 1967; Crutchfield, 1969; Anderson, 1968; MacKinnon, 1966). Even a "Fact" in becoming learned becomes a part of a new structure which is recreated or at least reorganized by the learner (Crutchfield, 1969). It is particularly interesting to note the correspondence of the equilabration theory of Piaget (Flavell, 1966) with this viewpoint. Piaget assumes that a child conceptualizes the world through the assimilation of information derived from experience into the "his" previously existing logical schema. However, the logical schema, which is never adequate for the assimilation of the new experiences the child continually encounters, is forced to accommodate itself to include this new information.

Thus the child's perception of the world at any given instant consists of a series of "creative products" which have resulted from the interaction of the existing schemata of the child with the stimuli of the environment. Since both the child's schemata and experiences are unique unto himself, the "creative products" of each child are also unique. This concept incidentally, is quite similar to what Bergson calls "creative evolution."

The creative process is basic not only to learning, but it is the mechanism by which problem solving occurs. This statement is consistent with the findings of Guilford (1967). The acceptance of this position is evident from the existence of programs designed to facilitate problem solving behavior through direct instruction in stages of the creative process. Problem solving is dependent upon the creative process. To solve a problem is to create a solution. This is true if the solution involves only the selection of a previous solution which is judged to be reasonably appropriate to a new situation following some modification. If the choice of a solution requires no selection, judgment or modification, there is no problem.

In 1963 Parnes pointed out that research had demonstrated that a considerable part of creative behavior is learned and that, therefore, the development of creativity should be capable of facilitation by appropriate instruction. This is my assumption as well. Prior to 1963 little research relating instruction to the development of creative potential existed. In

education as in creativity research the emphasis for many years has been on the "product" and not the "process." The products have been those ideas, values, rules, and generalizations which are the substance of the culture and the content of the curriculum.

Although in principle educational theory has always recognized the need for attention to the development of creative and adaptive behaviors in children, instructional practice has been almost exclusively concerned with the transmission of knowledge and information to the child. The design of certain new creative educational curricula makes attention to only the structure of the discipline nearly impossible. They provide a definite opportunity for the child to engage in the creative behaviors essential to problem solving. Learning is essentially a creative ability. Therefore, much emphasis must be placed upon self-initiated exploring, observing, classifying, questioning, feeling, recording, translating, inferring, testing, representing experience and observations, communication, generalizing, elaborating, simplifying, and so on.

There are three basic underlying assumptions upon which this paper is based. The first is that certain unique psychological processes, referred to as "creativity," do in fact exist in man's repertoire of behaviors, although in our investigation of those behaviors, we may have merely scratched the surface. The second assumption is that cretive process is complex or

multidimensional, in nature.

Finally, it is this author's major assumption that man has latent, infinite creative abilities, ready to be developed. No man has the right to consider himself or another as being without great potential. Once he recognizes this, he may more readily realize his own inner strength. Indeed, the final result of this dissertation grew out of years of interest in attempting to resolve some of the major contradictions concerning the creative process as defined within educational theory and practice.

Current Interest in Creativity

We discern today a national, and to some extent, a recent world-wide interest in the subject of creativity. Recently a number of research studies, numerous periodicals and books on the creative process, undertaken by the scientific and educational community have appeared, and an impressive body of research is emerging.

Significant development has taken place in the field of creativity since the 1960 inaugural address of J. P. Guilford as President of the American Psychological Association. In his address, Guilford devoted time to questioning education's appalling neglect of creativity. It has become obvious that this speech was a turning point for research in creativity, for since then there has been a phenomenal growth of studies done on creativity and

related areas. One of the most frequent quotations from the 1950 address on creativity was to the effect that less than two percent of the books and articles included in the Psychological Abstracts for approximately the past quarter century bear directly on this subject.

During the century preceding 1950, possibilities for empirical investigation of creative genius and creative production became recognized, notably through the Galton study of hereditary creativeness. Otherwise, there were only some philosophical speculations and a few publications represented in anecdotal accounts of creative performances. One outcome was Wallas' model for describing steps that were regarded as creative processes. The model was subject to some experimental examination by Catherine Patrick in the late 1930's. J. Rossman provided a similar model after studying the reported performances of a large number of American inventors. Along the way, a number of psychometric psychologists had devised a few tests of ingenuity and originality, and they had found for various reasons which will shortly be discussed that such tests correlated very low with tests that went into scales for the assessment of intelligence. Another route of investigation was traveled by Harvey C. Lehman, who studied the biographies of productive people in many fields of activity in order to determine the relations of both quality and quantity of creative output to age during adult years.

From an examination of the theoretical writings of Gardner Murphy, John Dewey, Anton Ehrenzweig, Alfred North Whitehead, and of research studies shortly to be presented by Margaret Tripplett, Norman C. Meier, Caroline Tiebout, Rosamond Harding, and Catherine Patrick, it became evident that a more detailed and thorough understanding of the dynamics of perceptual and visual or imaginative processes was necessary to structure procedures for the enhancement of creative performance specifically within the realm of education.

In examining some of the voluminous theoretical literature on creativity and some of the research which has grown out of these varying strands of belief, it is evident that a more unified philosophy of creativity is needed. Neither theory or research by itself appear adequate at this time to explain the nature of creativity, of creative behavior in the class-room, or of practices which the teacher might engage in to, assist young adults of average abilities toward a more creative expression of their talents and potential within an educational setting.

Beliefs about creativity, range from the notion that creativity has a mysterious source which will never be understood - one which "comes down from Heaven" - to the opinion that it resides in the sub-conscious mind of the Creator. Some theorists suggest that creativity is a force which exists in "creative persons" and may on occasion be "released," while others

think that it is an ability possessed by all persons. There is a widespread view that creativity is enhanced, if not caused, by insanity, neuroticism, or just poor personality adjustment. There is also the belief that creativity comes about from a combination of hereditary traits and the accumulation of learned experience. This latter view is the most acceptable, and another major assumption of this paper. It includes the belief that creativity is a dynamic process whereby any person, to some degree, can remake himself in terms of attitudes, skills and abilities on the ond hand while producing a series of original and expressive products on the other. Research has tended to follow these varying theoretical foundations, although on the whole it has sought to find those attributes or qualities of "creative" persons which differentiate them from their "non-creative" brothers rather than show much concern for the dynamics of the creative process itself.

Varying ideas of what constitutes creative expression exist and depend partly upon the varied concepts of creativity previously mentioned and partly upon educational traditions. These range from the rather rare ideas that copying the work of another with skill is creative to any one of the following: (1) art work which is not a copy is creative; (2) work executed in the contemporary idiom is creative; (3) that he who uses novel materials is creative; (4) that which is personal and spontaneous is creative, (5) that which is a unique, expressive invention is creative, or (6) it is necessary

for several of these conditions to exist for a work to be termed truly creative.

The chief contradictions in belief concerning methods for the promotion of creative expression of students concern the amount of direction or possibly, its lack, in guiding their work. There are some who maintain that creative expression may be fostered by assigning problems and insisting upon a specific means for their solution. Others adhere to the view that complete freedom with no suggestion whatsoever from the instructor is the more fruitful procedure. Needless to say the problems of creativity, especially as they relate to education are numerous and complex.

Objectives of Dissertation: An Overview

The objective of this dissertation is to present some proposals concerning the fostering of creativity within the classroom which seem logical from an examination and analysis of theory and research findings, so as to attempt some resolutions to the previous mentioned concerns. This project was undertaken to formulate a philosophy of creativity based upon the examination of these sources; to analyze definitions, theories, and research findings; and, to propose suggestions for implementing creativity in the classroom for both art and non-art majors on all levels of education including the college level.

Specific objectives of this paper concern: (1) a discussion of ideas

regarding <u>definitions of creativity</u> which proved helpful in formulating the
philosophy; (2) a presentation of <u>findings from research studies</u> which relate
to creativity in general, to creativity enhancement that will assist students
to a greater and more productive-creative performance; (3) <u>a personal</u>
<u>philosophy of creativity</u> based upon these sources; (4) <u>suggestions</u> for class-
room procedures to assist the non-art major toward a more creative per-
formance transferable to all levels of education and learning competence.

    This work presents information which primarily concerns the
psychological nature of creativity, i.e., the way one performs when being
creative rather than data pertaining to the origin of art as a cultural
phenomenon in the history of the race.* For that reason, literature of
mostly a psychological orientation was chosen.

    The problem has been for the most part limited to: (1) a presentation
and analysis of descriptive statements which formed the basis of a <u>definition</u>
<u>of creativity</u>; (2) <u>quotations and analyses from theoretical writings,</u> and
(3) <u>quotations and analyses from research studies</u> concerning aspects of
creativity which formed the basis of a personal philosophy for implementing
the creative performance and attitudes of students with the various levels
and content of education.

---

*Creativity as defined from a psychological point of view is one phase
of a larger concept of creativity which includes socio-cultural aspects of the
evolution of ideas, inventions, discoveries, and aesthetic expressions on the
one hand and purely biological evolution on the other – both of which have been
delimited from this dissertation.

Recognizing both the breadth and complexity of the field of creativity on the one hand and the impossibility of reviewing all the available literature in the area on the other, the section of this dissertation devoted to theoretical statements is confined to materials from writers who have made the most important contributions to this philosophy of creativity.

Specifically, those concepts concerning procedures for the development of creativity with which this work deals concern concepts of:

1. Becoming a more creative person: including development of productive attitudes, perceptual abilities, and aesthetic sensitivity awareness.

2. The nature of creativity; concluding its role as an expression for communication for function and its relationship to the individual who produces it.

3. The nature of materials, processes, and techniques suitable for effective personal growth and success.

Description of Investigation Procedure

Three criteria were adopted in selecting research studies: (1) that these contain a reference to the words "creative" or "creativity" in the title or in the findings; (2) that they were referred to by another investigator as pertaining to creativity; (3) they seem to offer fruitful information in

fostering creative behavior.

In recommending procedures to develop greater creativity emphasis is placed upon classroom practices which will enhance the quantity and quality of the creative experience and its expression within the framework of the classroom.

Some of the literature surveyed in this work includes theory and research in art education, art abilities, creativity, and various areas of psychology such as visual perception, group dynamics, cognition, and imagination.

Quotations and summaries of key concepts which were found useful in the formulation of a philosophy of creativity were distilled from this literature and are included in this paper. Of course, this material was analyzed for its potential value in determining the philosophy. Finally, procedures which the key concepts suggest are recommended to enhance creative behavior and/or performance.

<u>Definition of the Philosophic Process</u>

Because of the frequent use of the word "philosophy," the following definition is attempted. This explanation is offered so that the reader may better understand the particular limitations placed upon philosophy by this author. To be able to give a precise definition of philosophy indeed is difficult.

It is like those other nearly impersible human enterprises of ideal society -

art, science, and religion: Every definition turns out to be the expression of

an individual and limited conception, reflecting the practice of that enterprise

in the definer's own culture, and shutting out as much as it includes.

Philosophy, in other words, is a human and cultural enterprise to be inquired

into, rather than a mere term to be defined.

The term "philosophy" means literally "the love of wisdom." Now

what "wisdom" consists of is something on which different men and different

cultures have varied widely. Philosophic concerns with the central problems

of the meaning and significance of human experience presupposes an

acquaintance with the widest range of facts and the possession of the conclusions

of all types of knowledge, as materials in which to reflect. But "meaning

and significance" is an affair of more than mere knowledge: it raises the

fundamental questions of importance, of relevance, and of relative value.

In this sense, philosophy is often called an interpretation of available know-

ledge. This means that philosophic thinking tries to organize the materials of

human experience into some reasonably coherent arrangement. It is within

those limitations that this author defines philosophy. It fits opposing or

irrelevant beliefs together into a some not too chaotic scheme, and it adjusts

weakening ideals to give some direction and exploration to the creative force without excluding too much.

As used by this author, philosophy involves a reflective appraisal of what we know little of in so many particular fields. It estimates how this bears upon the central problems of man's position in the great scheme of things and the importance and worth-whileness of his various enterprises. It is this writer's opinion that the philosophic search for what is significant is fundamentally a process of reflective evaluation.

The process of philosophic evaluation and interpretation is a relation-ship of two cooperating processes. On the one hand, it is the organization and adjustment of ideas and beliefs in terms of their relevance and importance to its author. On the other hand, this problem of organization involves a careful analysis of ideas to determine just what they are and whay they imply.

This philosophical interpretation of the meaning of creativity involves the analysis of just what the concept means, and what bearing it has on other ideas.

It is true that different men and different ages have given different answers to the central problems of philosophy, and most of them are still living answers today, capable for some at least of making life meaningful

and significant. This author believes that the individual cannot conscientiously accept a philosophy on the authority of experts, as he usually accepts his own science. On the fundamental issues he must make his own decisions, if he is to participate in philosophic thinking at all. But there is no such thing as "the meaning of creativity" on which all men will some day agree, it is quite possible for different men, and for different ages and cultures, to find quite different meanings of such a term, yet for all to be equally right and valid - all equally able, under the circumstances for which they are significant, to make a term or concept such as creativity, meaningful.

The first stage of the philosophic process utilized in this thesis is one of <u>organization.</u> A vast amount of theoretical literature and scientific research relating to creativity is organized in the order of significance as seen by this writer. The first five chapters are the foundations of knowledge in the creative area, its relavance determined mostly from personal experience, as well as its limitations.

The second stage is devoted to the careful analysis of the material to determine just what this material implies. Chapter six attempts to bring together the various concepts discussed and bring a closure of these various concepts and theories.

The final stage in this philosophical process is found in chapter seven when the "new" dosieres or resolutions on a definition of creativity occurs. It is synthesized into a new speculative function to produce possibly a new procedure to enhance the creative potential and productivity of a single individual. The philosophic view of creativity within this dissertation is the very case about which the rest of the paper revoles. So that the reader may more easily follow each chapter and its relationships to each other, the following concept of the philosophical view on creativity is given. (This definition may be found on page 251.)

Creativity is a complex condition wherein exists a continual inter-relationship between the creative person involved with the creative process within a creative environment to produce a creative product which is ongoing in time. Such is the philosophical view espoused in this thesis, such is the process of its investigation.

CHAPTER II

SOME DEFINITIONS AND CONCEPTS OF CREATIVITY

Some Sources of Confusion

Through research we are learning more about the experiences that
enhances curiosity and the freshness of approach which appear to be universal
attributes of all children; that is, a natural affinity towards creative
expression.

We are also learning more about the conditions which rigidify human
experience and inhibit an individual's freedom to be, and to express his
deeper self. We are belatedly becoming more aware of the conditions
restricting openness to experience, or circumstances which increase the
individual's lack of trust in himself thereby discouraging him from being
different; creative from daring to change, from venturing forth. We are
just beginning to learn what contributes freedom from threat; attitudes that
value innovation and change; to a willingness to be and to become. Increasingly
at long last, there is emerging some research which is beginning to provide
some clues to these questions.

However, a welter of conflicting opinions exists concerning the nature
of creativity and the conditions which promote it. At present these con-

flicting opinions are partly due to a lack of precise knowledge regarding

the working of the emotions and the mind, a plethora of personal biases of

individual value systems, where individuals have accepted ideas handed

down from the past without critical evaluation, the enormous and baffling

complexity of creativity with its diversity of form, and finally in part, due

to the failure to consider the precision of language. An example of this

confusion is the mistaken idea that creativity, genius and high I. Q. are the

same. Edward M. L. Burchard writes:

> Many contemporary psychologists have solved
> the problem by confusing creativity with high
> I. Q.. . . A confusion which does have the
> positive value of stimulating them to develop
> better intelligence test. The use of the term
> "talented" and "genius" for persons of High
> I. Q. is but one indication of this confusion. [1]

Yet even this idea is entangled with controversy. A friend of this

author related the incident of his remark to a fellow teacher that he was

surprised to learn one group of students had excelled another in creativity,

and the reply of the biology teacher was, "Well, that's to be expected; the

group you find creative is the lower I. Q. group."

On the other hand, this writer had a student teacher who taught

"gifted" students. She told me one day that she was a better teacher of

"average" students after working with the program designed for the "gifted."

I would attribute this to the fact that the student teacher had learned through

working with gifted children education procedures that can be helpful in stimulating the creative behavior of all students, irrespective of their level of functioning. To put it another way, while many people speak of developing educational programs specifically for gifted children, I would favor developing programs to cultivate giftedness in all children.

In the work of Getzels and Jackson (1962) it was noted that in their "high creative group" there was less concern with conventional vocational goals (teacher, doctor, engineer) and more interest in so-called off-beat vocations (inventor, artist, disc jockey). Neither were the high creative groups overly concerned with whether or not they possessed the character traits admired by teachers or parents. These highly creative students were more self-reliant and independent, and despite the fact that they scored significantly lower (127) in mean I. Q. scores than their so-called brighter classmates (159), they attained the same degree of academic achievement as the high intelligence group.[2] The implication for the use (misuse) of I. Q. tests might be noted.

Since the Getzels and Jackson study it has become fasionable to point out that the highly intelligent person is not necessarily the most creative, and later investigations concerned with college grade-point averages have tended to bear this out.[3] However, in the haste for those on the short end of the standard intelligence scale to grab at this sign of re-

demption, they have frequently overlooked the fact that although measured

intelligence is not a sufficient condition for a high level creative output, it

does show up again and again as being a necessary ingredient. [4]

General Definitions of Creativity

Definitions of create, creation and creative

It is interesting that although the words creativity and creativeness

are listed in the dictionary, they are not defined. We are left to surmise

their meanings from the verb root create, from the adjective creative, and

the noun creation. The dictionary definition of the word create scarcely

hints at the overtones of meaning which the word carries with its multitude

of conflicting concepts as found in common usage. Webster defines create as,

"To bring into being; to cause to exist; to invest with a new form, office,

or character; to produce as a work of thought or imagination, esp. as a

work of art. "[5] He defines creation as, "Act of creating, or fact of being

created; specifically the act of causing to exist, or fact of being brought into

existence, by divine power; esp., the act of bringing this world into

existence out of nothing; act of constituting or investing with a new character,

title, or artistic embodiment; something which is created. "[6] Creative in

the dictionary sense means, "Having the power or quality of creating;

productive. "[7] These various definitions carry three essentially different

ideas as to the meaning of the word create or its derivatives: to make or produce, to invest with a new character, and to express an idea.

It is obviously necessary to turn elsewhere to seek a more comprehensive and detailed description of the concept of the nature of creativity.

Creative Thinking and Creative Expression

A part of the difficulty in the literature on creativity arises from the failure to find a clearly separate concept of creative thinking from creative expression (assuming there is a difference). Although creative thinking is almost certain to take place when creative expression occurs, the reverse is not necessarily true. Artistic creativeness consists of both creative thinking and creative expression in the sense of personal expressiveness. Scientific creativity is largely a matter of creative thinking and problem solving where, quite possibly, the personality of the creator is not reflected in the product in a direct personal manner.

Because the word create carries intrinsically different meanings it is no wonder that many writers have confined themselves to one or another of these meanings while others have scrambled all of the meanings without clearly differentiating the concepts involved.

Alex F. Osborn, in a somewhat recent book on creativity, has written almost exclusively in terms of newness where discovery and invention are

synonymous with creativity. He writes, "Industrial research used to do little more than take things apart in order to find out what caused what and why. The new research adds to such fact-finding a definite and conscious creative function aimed to discover new facts, arrive at new combinations, and finding new applications."[8]

Essentially the same idea is voiced by Earl Kelley and Marie Rasey, who say:

> Whenever an individual takes a set of known
> answers and contrives a new response,
> concept, or artifact he is creative. It is
> the process of taking the things we now
> have or now know and putting these together
> in such a way that something new emerges.[9]

A government-sponsored study on creativity conducted some time ago at the University of Southern California under the direction of Dr. J. P. Guilford[10] sought to discover by factor analysis the personality variable responsible for this kind of creativity. Dr. Guilford hypothesized factors responsible for the creative thinking of scientists, technologists and inventors as: sensitivity to problems, ideational fluency, flexibility of set, and an ability for reorganizing or redefining ability. His research programs consisted of the development of a number of tests to verify these hypotheses.[11] Guilford's work has had considerable effect upon the field of art education; Viktor Lowenfeld, for example, stated his belief in these factors as con- stituting the essence of creativity since they had been arrived at independently

by both Guilford and by Brittain working under Lowenfeld's direction.[12]
In this concept creativity is thought of as being a cluster of abilities which
more creative persons have to a greater degree than less creative persons
and as possible of being "released" when desired by stimulating the person
in various ways.

In the literature dealing with creativity frequent reference is made
to Max Wertheimer's Productive Thinking, where creative thinking is equated
with insightful problem solving.[13] Wertheimer contrasts this kind of thinking
which he calls "an intelligent reaction" with an ordinary kind of thinking
which he calls "a blind reaction."[14] He considers the former type of thinking
to be characterized by looking at situations freely and open-mindedly,
viewing the whole, trying to realize inner structural relations between the
problem and the situation. The latter type he says occurs when one is
blinded by habits, operates in a mechanized state of mind, giving piecemeal
attention to the problem and proceeding by piecemeal operations.[15]

Artistic and Scientific Creativity

Common ingredients of the creative process as found among both
scientists and expressive artists are sensitivity to minute aspects of the
media with which they work and the finding of new relationships resulting in
sudden insight. For this reason many writers on creativity have treated
both kinds of creativity in an undifferentiated fashion. Gardner Murphy[16]

writing on creativeness, treats it from this comprehensive view. He

comments on the prococity of Newton and Mozart as children, of the sus-

tained drive of Leonardo, Gauss, and Archimedes and of nervious instability

of Coleridge, Poe and Nietzche as possible contributing causes of their

creativity.

Burchard has called our attention to the neglect of discrimination

between artistic and scientific creativity as the basis of one of the sources

of confusion in some otherwise excellent attempts to study and measure

creativity. He says:

> Intuitively it would appear that abstract verbal
> intelligence of the kind measured by our con-
> ventional intelligence tests contributes more
> largely to scientific creation than it does to
> artistic. But leaving intuition aside, one thing
> is certain. Formal education is almost
> essential to the creative scientist and of minimal
> necessity to the artist. . . In the highest sense
> both science and art are essentially objective
> in that they each search for universals. But in
> this search, science is concerned with observa-
> tion and classification of external objects, art
> consists in the imposition of order upon emotional
> experience. [17]

Rene Fueloep-Miller at the Conference on Creativity[18] maintained

that the inventor as a creative scientist works in a different fashion from the

creative artist. He pointed out that the inventor has a certain object in

mind which he tries to achieve through problem solving. The work of the

creative artist is not goal-directed, according to Fueloep-Miller, and the artist is not driven by curiosity but by a desire for self-expression.[19] This author feels that this latter distinction may be invalid. The constant effort of the artist to project the visions which he creates in his mind's eye and his intense motivation to give them form which has significance both in relation to the original images and to the properties of the media and techniques with which he works would seem, at least to this author, to constitute a kind of curiosity, a type of goal-directed behavior.

Fueloep-Miller also spoke of the subtle differences in the various manifestations of creativity within the sciences and within the arts. He maintained that there is a distinction in art between representative artists who merely project reality and expressive artists who create reality anew. He made a similar distinction in the field of science between the discoverer who finds something previously overlooked and the inventor who creates something new.[20]

W. Edgar Vinacke holds a similar view of the subtlety of differences in types of creativity within the sciences and the arts. In writing of creative thinking Vinacke says, "Creative activity at times may be almost a simple problem situation. . . at other times it may be almost a fantasy or a dream, which is later reproduced in some form."[21] He continues to say:

> At one extreme, creative thinking may conceivably
> be very little except problem solving. An artist,
> as well as an inventor or reflective thinker, may
> set himself a definite problem and proceed to
> solve it according to disciplined and controlled
> application of techniques and hypotheses. At the
> other extreme, creative thinking may be of the
> intuitive and inspirational variety traditionally
> associated with creative endeavor.[22]

This variety of approaches to the concept of creativity to be found

even among the work procedures of artists helps to clarify the conflict which

arises from different interpretations of the word creative and the frequently

contradictory concepts which it cloaks. The problem is seen to be, in part,

one of lack of sufficient subtlety in language to cover adequately all the

nuances of meaning involved in the activities which have been termed creative.

<u>Various Concepts of Creativity</u>

Creativity Defined as Making Things - Use of Patterns

A few years ago this writer was sent as one of a team of persons to

help evaluate a high school program of instruction in a nearby town. In

checking over the self-rating sheet which had been prepared in advance by

the local staff it was noted that the art teacher had marked as a highest

level possible for creativity achieved by his pupils. Since all the work was

seen to have been copied from patterns the writer called the teacher's

attention to this error in scoring. His reply was, "Oh, I see what you mean.

To me, creativity simply means making things with skill and good crafts-
manship. " (Though this again, in certain circumstances, I suppose may be
agreed to be a valid statement.)

Creativity Defined As Making Things - Without Mechanical Aids

A concept of creativity which is frequently encountered is that of
making things without mechanical aids. This may range all the way from
copying freehand from nature to more inventive rearrangement of elements
seen or remembered. But the essential factor in this view is the lack of
using patterns. An example of this type of thinking, while quoted from a
child, is quite characteristic of the thinking of many teachers:

> I would start children creatively. . . not copying
> or filling colors on a page that's already been
> drawn for them. But just to give them paints
> and let them paint all over the place. . . and
> not force any ideas on them, but let them choose
> for themselves. [23]

Two different concepts of creativity are voiced here: the lack of use of
patterns in the production of art and the absence of teacher domination.

Creativity Defined As Spontaneous Self-Expression

While the imposition of ideas on the part of a teacher by no means
contributes to creativity, the reverse of this state of affairs is hardly enough
to insure the criterion of effective creativeness. Yet this too, is a common

definition and a great contributor to the concept of spontaneous self-expression as a synonymous phrase for the word creativity. Ralph Beelke, commenting on the confusion which exists in use of the word creative in articles appearing in education magazines notes that one meaning frequently found is". . . any activity which is not directed but free and spontaneous. . ."[24] He classifies this approach as leading to laissez-faire classroom practice, the chief value of which is purely therapeutic, if that.

Thomas Munro has likewise called our attention to this concept. He writes:

> Art teachers who use the term often have. . . in mind. . . that a student's art is 'creative' if it was spontaneously conceived and executed by the student, not done in accordance with the teacher's directions. Likewise we sometimes contrast the creative adult artist with the mere artisan, however skilled, as one who conceives or thinks out the product instead of following another's instructions in executing it.[25]

The editors of a yearbook of the Association for Supervision and Curriculum Development have rightly warned that not all self-expression is creative. They comment:

> Some teachers are confused by a number of mis-conceptions of the true meaning of creativeness. A distinct handicap to clear thinking is the belief that children, when given an opportunity, pour

forth spontaneously and joyously their imaginings,
ideas and emotions in creative expression. Those
who are impressed by such thinking will find in
every uninhibited response the manifestation of
creative impulses.[26]

Creativity Defined as the Conception and Production Of Art Objects In Such A Way As To Be New To Society

In refuting the idea of all spontaneous self-expression being the

true essence of creativity some writers have taken the position that only

that is creative which is new in the history of the race or of civilization

as a whole. Munro contends:

> Anyone can produce some kind of art in a broad
> sense, even a person of very low intelligence and
> skill. But speaking strictly, the number of artists
> who are recognized by subsequent history as having
> made important, original contributions to art are
> few, indeed – a handful in any generation. Historians
> argued for centuries over which artists were the
> really creative innovators.[27]

Creativity Defined As The Conception and Production Of Art Objects In A Way Which Is New To The Individual

A number of writers have discussed the concept of creativity from

the point of view of the generation and expression of an idea new to the

performing artist. In fact, this is a much more prevalent thought than

that of the requirement of its uniqueness in history. The editors of the

Association for Supervision and Curriculum Development yearbook previously

referred to maintained that:

> Creativity implies a fresh response, unique to the
> creator; it is characterized by personal initiative
> and conscious effort; it involves thinking and doing
> according to self-applied tests; and is finally judged
> as an accurate expression by the initiator. [28]

They believe this fresh response to be a unique reorganization of prior

experience.[29]

Also to be grouped with the ideas of the essential qualification of

newness of experience to the individual is that of Edmund B. Feldman, although

it contains a slightly different emphasis. Feldman contends that, "For

anyone, a creative experience is a discovery of some unknown resource of

the self."[30]

Creativity Defined As Process of Working

Robert E. Johnson presents a view similar to that of Feldman,

adding the element of process or method of work to the basic idea that

creative experience represents the discovery of unknown personal resources.

Johnson writes:

> The creative art process is a process of objectifying
> all kinds of experiences - those which are consciously
> before us and those which are stored in memory as
> vague feelings and impulses. . . This definition means,

simply, that the individual as an artist, is merely
becoming more aware of the various parts of his
own personality and giving a special relation to
these parts.[31]

The nature of the creative process is clarified in greater detail in

a definitive statement by Henri Matisse who says:

The first step toward creation is to see every-
thing as it really is, and that demands a constant
effort.

To create is to express what we have within our-
selves. Every genuine creative effort comes from
within. We have also to nourish our feeling, and we
can do so only with materials derived from the
world about us. This is the process whereby the
artist incorporates and gradually assimilates the
external world within himself, until the object of
his drawing has become a part of his being, until
he has it within him and can project it on the canvas
as his own creation.

Thus a work of art is the climax of a long work of
preparation. The artist takes from his surroundings
everything that can nourish his internal vision,
either directly, when the object he is drawing is to
appear in his composition, or by analogy. In this
way he puts himself in a position where he can
create. He enriches himself internally with all
the forms he has mastered and which he will one
day set to a new rhythm.

It is in the expression of this rhythm that the artist's
work becomes really creative.[32]

Another elaboration of the idea of creativity as a process is that of

Stephen C. Pepper, who defines it in terms of the manifestation which it

sometimes takes proposes:

> It is the dynamics of the act that determines its
> creativity. If the dynamics of the activity develop
> within the work itself, so that the demands which
> emerge in the productive process arise out of the
> work itself and are satisfied within it, then it is
> a creative achievement. . . In creative activity
> the work produces itself, one forgets oneself, or is
> carried out of oneself. In creative activity, it is
> as if some other power were working through the
> artist and he was a mere instrument of the process.
> But also in creative activity, one's work is an
> expression of one's self and of one's times as
> reflected through one's self.[33]

Creativity Defined As The Conception and Production of Expressive Form

Suzanne Langer refers to this personal stamp of the artist's feeling

about his subject as "expressive form." The idea, closely related to the

concepts quoted previously from Matisse and Pepper, implies the communica-

tion power which a creative work possesses and conveys to the beholder.

Miss Langer says:

> A work of art. . . is more than an 'arrangement' of
> given things - even qualitative things. Something
> emerges from the arrangement of tones or colors,
> which was not there before, and this, rather than
> the arranged material, is the symbol of sentence.

>The making of this expressive form is the creative
>process that enlists a man's utmost technical skill
>in the service of his utmost power, imagination.
>Not the invention of new original turns, nor the
>adoption of novel themes, merits the word 'creative',
>but the making of any work symbolic of feeling, even
>in the most canonical context and manner. A thousand
>people may have used every device and convention of
>it before. A greek vase was almost always a creation,
>although its form was traditional and its decoration
>deviated but little from that of its numberless fore-
>runners. The creative principle, nonetheless, was
>probably active in it from the first throw of the clay. [34]

Creativity Defined As A Complex of Creative Qualities and Creative Forces

Ross L. Mooney of Ohio State University and participants in a graduate

seminar on "Research as Creative Inquiry" have prepared work sheets on the

characteristics of creativity.[35] These curriculum materials include the

listing of a number of terms suggested from a variety of sources which

are sometimes associated with the word creative. This work sheet lists words

associated with the characteristics of the creative person; of the creative

process; of the creative product; of the effects of a creative experience on

the creator and his environment; of the conditions which are favorable to

creative experiencing in the person creating and in his environment; and of

the characteristics of the feelings of persons coming into a creative

experience in the midst of it and having consummated such an experience.

Without being specifically stated as such the implication is made here that

the term creativity should not be used for any one creative aspect but for

the cluster of creative qualities as a whole. By this implied definition we

might speak of creativity taking place when a creative person is engaged in

a creative process under favorable internal and external conditions, and

undergoes feelings characteristic of a creative experience and produces a

creative product.

While it would be impossible to enumerate here all of the words

suggested on this list under these various categories as being associated with

the idea of creativity, it may be pointed out that the group of words suggests

a heightening and intensifying of feeling in the creative person, of effort in

the creative process and of effect in the creative product. Some of the words

applied to the creative person are, "original, divergent, imaginative,

spontaneous, free. . . intense, unique. . . fertile, disciplined, energetic."[36]

Some of the words applied to the creative process are, "experiencing,

experimenting. . . expressing. . . transforming. . . discovering,

originating. . . cumulatively expressing."[37] A few of the words applied to

the creative product are, "whole, imaginative, vital, new, animated, fresh,

lively, original, harmonious, . . universal,. . . challenging, and inviting."[38]

There is danger of circular reasoning when something is defined
in terms of qualities popularly believed to be characteristic of its parts. This
definition suffers from that weakness. Yet it tends to shed light by its
comprehensiveness on some of the conflict engendered by other partial
definitions.

No one of these concepts of the various authors quoted above when
taken singly seemed sufficiently comprehensive as a definition of creativity.
The view implied by Mooney that it is a complex of creative elements is
the most complete but might be spelled out in greater detail and strengthened
by the inclusion of certain portions of concepts presented from the statements
of other writers.

The point of view or definitive concept of creativity which this author
now holds emerged from an examination of all of these ideas but draws most
heavily upon those of Mooney, Matisse, Langer, Pepper, Johnson, Read,
Bergson, Jung and Whitehead.

The Author's Philosophy of Creativity As Supported In This Thesis

This view briefly is that creativity is a complex condition composed of: (1) the creative person and his feelings, (2) who functions in an environment which comprises inner and outer creative conditions, (3) who engages in a creative process which has an on-going character, and (4) where the creative product which results and is both new to the individual producing it and expressive of the personality of the creator, of his feeling about the idea to be expressed and is inherently expressive in itself.

The distinction to be made about the creative person is his heightened and intensified feeling, whether due to innate or learned abilities. Apparently some kind of intensified personal reaction is necessary for the creative process. Thus it follows that environmental conditions which are conducive to heightened productivity in the individual and intensified quality in his product constitute a phase in this complex set of conditions. The creative process is viewed here very much as Whitehead and Matisse describe it, namely as being ongoing, consisting of two phases: the constant absorbing and experiencing of new and stimulating material and the expression of it in a continuously changing, more perfected, and personal fashion. This implies that the process involves constant experimentation with ideas, media and

tools, techniques and processes, and the development of aesthetic relation-

ships which are an outgrowth of these. In the process discovery, origination

of new forms, and ever more subtle intergrations of skill and personal

understandings on the part of the person so involved should occur. In this

thesis the view held which differs from some other definitions is that there

is a constant emergence of revised expression resulting in new forms

characteristic of the creative product. Another specification about the quality

of the product is that it be not expressive of the self alone, but an expression

of the heightened feeling an individual has about an idea and which gives the

work significant form. Expression of the self alone may result in dull,

repetitive or stereotyped work. But work possessing expressive form which

results from the feeling and sensitivity of an artistic or creative individual

possesses expressiveness in itself, a type of intensity and vividness which

seems to have the power to convey a strong mood of excitement to others

who observe it. It is this distinction which Susanne Langer's definition of

creativity specifies. Mooney's associative words "vital, fresh, lively,

animated, challenging, inviting" convey the same discrimination.

One drawing in a series produced by a fourth-grade child which

differed from the rest illustrates the distinction. All but one might have

been termed stereotypes: they contained a house, a path, and "lollipop

trees, " a stick with a ball on the end, in colors which signified these objects but which seemed to lack any personal feeling or excitement. One drawing alone stood out from all the rest; a tree with blossoms and butterflies. Here the trunk, branches, leaves, buds and blossoms were differentiated and drawn with rhythmic lines, sometimes sturdy lines, sometimes delicate ones as the occasion demanded. Color in this drawing had a personal quality; a particular and beautiful harmony had been achieved. Evidentally the child in making this one drawing had recorded a personal interest in, or feeling about, trees in blossom surrounded by insects. The others represented a less noble effort, in my opinion, of going through the motions of producing "art work. " This one drawing was expressive of the feeling of the child for the idea he wished to convey; and the drawing, expressive in itself, reflected that feeling to this observer.*

In contrast to the overworked statement frequently encountered in the literature of art education that it is not the product in art which is important, but the process, [39] the position taken here is that the individual and his heightened feeling, the process of continuously being stimulated by new and vital experiences and by constant experimentation with ideas, knowledge, and materials at his command, and finally the ever new and expressive products are all phases of creativity, no one of which is possible

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*Of course one recognizes that there are other competency levels impinging upon a child's performance.

without the other. The expression of an idea and evaluation of that idea, once expressed, serves to clarify the idea for the creator and has great value in helping him to see new goals and to seek constantly higher levels of integration of his person and his skills.

It might be supposed by some that the specification of expressiveness as a requirement of the creative product would eliminate the conception and production of utilitarian creative objects and limit the concept of creativity ascribed to here to the most expressive forms of painting and sculpture. When Vinacke's distinction of both problem-solving creativity and intuitive, inspirational creativity is recalled one is led to see that expressiveness may be thought of in terms of a continuum. When an artist designes, i.e., conceives and produces, more utilitarian forms of art expression such as architecture, furniture, clothing, interior design, landscape design and the like, creativity may occur and the products then possess expressiveness in greater or lesser degree. One aspect of expressiveness under these conditions is the character the object has or the feeling it conveys to the observer. For example, a building may express elegance or simplicity, a chair may have sturdiness or lightness a costume casualness or formality. Thus expressiveness in the utilitarian arts is closely related to suitability to the purpose for which the object is designed. Suitability is likewise akin to questions of

utility and practicality. It is here that problem-solving and a conscious

approach come to the foreground in contrast to the more automatic uncon-

scious intuitive aspect of the creative process in the work of some artists

in the creation of painting and sculpture.

The question might also be raised whether or not the definition "to

conceive and produce creative works which are expressive of the feelings of

the individual about his subject, of his personality, and expressive in them-

selves" may encompass projects which go beyond the ability of the artist to

personally execute. Architecture, landscape design, theater design and

mass-produced furniture and household accessories each require a team of

workers. Production in this instance must not be thought of literally as

the use of the creative person's own hands, but as the process of thoroughly

absorbing a knowledge of technical requirements, conceiving an idea and

ably communicating it on the part of the creative individual as well as

continuing to grow from the evaluation of his past productions. The men who

execute the creative person's plans should likewise be able to grow in skill

if some of his revolutionary ideas are ever to be translated into actuality.

Occasionally, as in the case of some mass-production designing practices in

the field of product design, creativity comes about through joint planning

where the crystallization of the idea may come from an engineer or even a

skilled workman, but represents teamwork of a group of experts from varied fields.

A somewhat similar situation frequently exists in classroom practice, so far as teamwork goes, especially when group projects such as murals are in process. Even in the case of individual projects undertaken by students a somewhat different atmosphere occurs from that in which the creative student or artist usually works. For although this student is influenced to a certain degree by the interests and accomplishments of others, he tends to work in a situation where others are not present at the time he executes his ideas. The student in a classroom is a group member and group dynamics are at work at all times even though the effect is purely subconscious. Creativity in a group implies interaction of the group so that increased awareness, sensitivity, and changed behavior accrue to each member of the group resulting not from his personal excitement, discoveries and reintegrations of experience alone but from each of the other group members and from the intensified and electrified feeling of the group as a whole. If this quality fails to exist in a group, the full potential of its creativity is not present.

Finally, to paraphrase A. N. Whitehead, education is the acquisition of the art of the utilization of knowledge. This is an art very difficult to

impart. Whenever a textbook is written of real educational worth, you may be quite certain that some reviewer will say that it will be difficult to teach from it. We must not slip into the fallacy of assuming that we are comparing a given world with given perceptions of it. The physical world is, in some general sense of the term, a deduced concept. Our problem is, in fact, to fit the world to our perceptions, and not our perceptions to the world.[40]

CHAPTER III

REVIEW OF SOME THEORETICAL EXPLANATIONS ON CREATIVITY

Statements of a theoretical nature concerning various aspects of
creativity in general and creativity in the classroom setting are presented,
followed in each instance by a summary of significant concepts from the
statement of the composite definition of creativity which was presented.
Suggestions are made for the implementation of these concepts in class-
room practice for the enhancement of student creative performance.

Theoretical writings of Gardner Murphy and John Dewey have been
grouped under the title, "Creativity as Learned Behavior" since this seems
to be the chief differentiating characteristic of these highly significant
contributors to a philosophy of creativity. Many other significant ideas
are likewise to be found in the writings of Murphy and Dewey; some of these
recur in statements of other authors classified differently in this survey
of theoretical explanations of creativity.

A number of references were found in the literature examined
which related to the presence of unconscious processes in creative

activity. Wolfgang Goethe, Karl Jung, Gustav Bychowski, Anton Ehrenzweig, and Ernst Kriss each wrote about aspects of the unconscious nature of some phases of creating and some of these men discuss the great significance of emotion, attitudes and feelings within the creative process.

Motivation for the creative process, while sometimes discussed by writers grouped elsewhere, serves as the central idea in statements by Karl Buhler, Richard Guggenheimer, Otto Rank, and A. N. Whitehead.

Sorokin's contribution to this philosophy is his idea of a cluster of indispensable factors for creativity. Carl Rogers distinguishes a number of abilities of the creative person and several characteristics of the environment which contribute to positive rather than negative creativity.

In the pages which follow, key statements of these various writers on creativity are quoted or paraphrased and followed by a summary of significant concepts. It is all but impossible to group and classify these statements as well as the men responsible for them since in this author's opinion, expression on so complex a topic as creativity does not fall into neat categories.

<u>Theories of Enhanced Creativity As Learned Behavior</u>

Perhaps one of the most significant and comprehensive theories

of creativeness compatible with this writer's definition are those of

Gardner Murphy[1] and John Dewey.[2]

Murphy's Theory of Creativity.

Murphy has combined salient features from the theories of other

writers and added unique aspects of his own. He draws on Gestalt theories

to explain the phenomenon of insight of illumination (sometimes called

inspiration), on psychoanalytic theories of unconscious drives, and on

association doctrines regarding the gradual forging of mental connections,

summation, and dissocation. He incorporated the ideas of Catherine Patrick,

Eliot Dole Hutchinson and others who have written of the various stages in

creative thought and adds his own and most significant of all, concept of

creativity. This concept consists of the idea that creativeness is the summation

of learned activity growing out of extreme sensitivity to sensory experience

pursued until such a creative drive has become habitual. The unique aspect of

Murphy's theory is that he lays stress upon the cumulative character of

creative skills within the on-going life process of the individual. He writes:

There is, first, sensitiveness, the presence
of a need that satisfies itself and feeds upon
more and more material of a certain type -
color, space relations, tone, rhythm. As
satisfaction occurs, the need sets itself a
bigger, more complex goal of the same type;
and the individual learns to create. Second,
there is a long accumulation of experiences
which mediate richer and richer contact with
the material needed; this is a period of acquisition,
strain, and unfulfilled desire. Third, usually
in a moment of excited self-direction toward
the goal, an integration of the accumulated
material takes place in which both conscious
and unconscious storehouses of experience are
drawn from. A whole that is the answer to the
long quest is made manifest in a moment often
characerized by the term _illumination._ Finally,
as the need and the achievement are relived again
and again, it becomes clear that the need is not
perfectly fulfilled or that secondary needs are
still frustrated, and the work of art or of science
is accordingly hammered out until it is more
adequate. . . Indeed, all these phases of genius
or high creativeness have been noted many times
by modern writers. And they may of course be
present in rudimentary form, as when a two-
year old who loves paint dabbles his way slowly
into a "picture"; there is a continuum from such
creativeness to that of a Michelangelo.[3]

The integration of higher and more complex skills, according to

Murphy, results from a combination of hereditary and social factors. A

pattern of creative skills composed of affective and intellectual skills in

all cases and of motor skills in some of the arts and sciences is required.

Of the beginning of creativeness Murphy observes:

> The first great phase in the evolution of a creator
> appears to be extreme sensitiveness to a specific
> form of experience, usually sensory; it is especially
> likely to involve sight, sound, or the muscle sense.
> It embodies delight in these experiences, a need for
> more of them, a curiosity into their relationships;
> in other words, we are dealing with sensory and
> activity drives. Such a person dwells more and
> more upon these experiences, exposes himself to
> them, and as far as possible controls them so that
> at will he can have what he wants. He tries them in
> combination and selects the most delightful combina-
> tion; creation thus flows out of the original need for
> a form of experience.[4]

Not the sensory property alone, but complex hidden relations may

form the basis of this delight in the reordering of perceptual and imaginal

experience. Pleasure in this process whereby intensity and scope are

increased amounts finally to a full blown passion and the initial drive

results in an inveterate habit.[5]

Social factors may enhance or retard potential creativeness,

Murphy observes. He notes:

> Sensitivity varies from one individual to another,
> but it may also be stimulated or repressed
> culturally. . . Society gives appreciation, status,
> and a role to the potentially creative individual;
> or it may fail to give them, in which case potential
> creativeness withers at the root.[6]

The Interstimulation of creative persons which comes through contact,

exchange of ideas, and appreciation of each other contributes to an

environment conducive to creativity. Murphy remarks, "Where there is a

generation of creators, as with English poets, German musicians, and

American movelists after the First World War there is mutual stimulation

and release through understanding. "[7]   An environment which offers

freedom of emotional experience and expression is also a necessary

ingredient of the social complex which reinforces potential creativeness.

Murphy writes:

> A cultural soil rich in experience of love, hate,
> triumph, offers nourishment whether for Hebrew
> psalmists or Negro folk singers. Freedom to
> live and feel may also be involved; repetitious
> factory work may not be so conducive to creative
> work as the rich sensory and muscle experiences
> of farm life.[8]

Murphy warns that there is no short cut to creativicness, yet he

suggests three specific methods which may contribute to a conscious

realization of heightened creativity through planned procedures. These are

the opportunity for persons to help determine their own goals, training

in spontaneity, and an alternation between sociality and isolation. He

writes:

> There are, however, no short cuts in the educational
> process that leads to such release. What has been
> said here relates to the goal of free creativeness; the
> process of aiming toward such a goal must be con-
> tinuously implemented, year by year. Progressive
> education of the type which allows the child to specify
> his own goal, and especially of the type in which the
> members of the group assist one another in specifying
> their goals, has manifestly increased both intellectual
> and artistic powers. [9]

The second of these techniques, Morino's spontaneity training, Murphy feels

supports and reinforces methods from progressive education in the

liberation of "vast energies within the core of the ego which have as a rule

been left to accidental expression."[10] In this technique persons learn,

through playing various roles on a stage, to express themselves spontaneously

in order to fulfill themselves as persons and "reveal individuality which

life had taught them to conceal."[11] Of the third technique for fostering

creativity Murphy says, "In some cases. . . an alternation between sociality

and isolation may be the best educational device."[12]

Dewey's theory of creativity.

Many of these same ideas expressed by Murphy are to be found in the

work of Dewey couched in a somewhat different language. He, too, infers that

creativity rests on the reorganization of experience, that it is, a learned activity,

and that it constitutes a construction in time. While Murphy speaks of "creative-

ness resulting from sensory drives refined and enriched through a hierarchy of more

complex integrations" and Dewey writes of "expression through impulsion

toward wholeness," both are saying the same thing. "Impulsion" is

defined by Dewey as ". . . a movement outward and forward of the whole

organism to which special impulses are auxiliary."[13]   He says of them,

"Impulsions are the beginnings of complete experience because they

proceed from need; from a hunger and demand that belongs to the organism

as a whole and that can be supplied only by instituting definite relations

(active relations, interactions) with the environment."[14]   He continues,

"The need that is manifest in the urgent impulsions that demand completion

through what the environment – and it alone – can supply, is a dynamic

acknowledgment of this dependence of the self for wholeness upon its

surroundings."[15]   Reintegration of the personality through this process

is explained as:

> The junction of the new and old is not a mere
> composition of forces, but is a re-creation in
> which the present impulsion gets form and
> solidarity while the old, the "stored," material
> is literally revived, given new life and soul
> through having to meet a new situation.
>
> It is this double change which converts an activity
> into an act of expression.[16]

That creativity as a learned activity is implied by Dewey as

evident from the following passage:

The child who has learned the effect his once
spontaneous act has upon those around him per-
forms "on purpose" an act that was blind. He
begins to manage and order his activities in
reference to their consequences. The consequences
undergone because of doing are incorporated as
the meaning of subsequent doings because the
relation between doing and undergoing is per-
ceived. . . An activity that was "natural" -
spontaneous and unintended - is transformed because
it is undertaken as a means to a consciously enter-
tained consequence. Such transformation marks
every deed of art.

. . . Dance and sport are activities in which acts
once performed spontaneously in separation are
assembled and converted from raw, crude material
into works of expressive art. Only where material
is employed as media is there expression and art.[17]

Dewey, like Murphy, carefully distinguishes the ongoing quality of

creativity. He says:

The act of expression that constitutes a work of
art is a construction in time, not an instantaneous
emission. And this statement signifies a great
deal more than that it takes time for the painter
to transfer his imaginative conception to canvas
and for the sculptor to complete his chipping of
marble. It means that the expression of the self
in and through a medium, constituting the work of
art, is itself a prolonged interaction of something
issuing from the self with objective conditions, a
process in which both of them acquire a form and
order they did not at first possess.[18]

Another idea expressed by Dewey is that emotion acts as a magnet

in the selection and organization of material for expression. He writes:

> In the development of an expressive act, the emotion
> operates like a magnet drawing to itself appropriate
> material: appropriate because it has an experienced
> emotional affinity for the state of mind already moving.
> Selection and organization of material are at once a
> function and a test of the emotion experienced. [19]

How this happens is explained as, ". . . when excitement about subject

matter goes deep, it stirs up a store of attitudes and meanings derived

from prior experience. As they are aroused into activity they become

conscious thoughts and emotions, emotionalized images. To be set on

fire by a thought or scene is to be inspired."[20] But Dewey cautions that

a proper balance of emotion must be maintained. He says, "insufficient

emotion shows itself in a coldly 'correct' product. Excessive emotion

obstructs the necessary elaboration and efinition of parts."[21]

As Murphy and a number of others have done, Dewey credits a

greater role to unconscious rather than to conscious thinking in the creative

process. He maintains:

> Subconscious maturation precedes creative
> production in every line of human endeavor.
> The direct effort of "wit and will" of itself never
> gave birth to anything that is not mechanical;
> their function is necessary, but it is to let
> loose allies that exist outside their scope.
> At different times we brook over different

things; we entertain purposes that, as far as conscious-
ness is concerned, are independent, being each appro-
priate to its own occasion; we perform different acts,
each with its own particular results. Yet as they all
proceed from one living creature they are somehow
bound together below the level of intention. They
work together, and finally something is born almost
in spite of conscious personality, and certainly not
because of its deliberate will. When patience has
done its perfect work, then man is taken possession
of by the appropriate muse and speaks and sings as
some god dictates.[22]

Elsewhere Dewey says:

Suddenness of emergence belongs to appearance of
material above the threshold of consciousness, not
to the process of its generation. Could we trace
any such manifestation to its roots and follow it
through its history, we should find at the beginning
an emotion comparatively gross and undefined. We
should find that it assumed definite shape only as it
worked itself through a series of changes in imagined
material. What most of us lack in order to be
artists is not the inceptive emotion, nor yet merely
technical skill in execution. It is the capacity to
work a vague idea and emotion over into terms of
some definite medium.

Expression is the clarification of turbid emotion;
our appetites know themselves when they are
transfigured.[23]

Scientists and artists alike, according to Dewey, create by un-

conscious processes or intuition rather than by conscious and logical "wit

and will" - the difference in the creative process of the two groups lies

in the use of direct experience in the work of artists and in the use of

symbols by scientists. Dewey observes:

> Persons who are conventionally set off from artists,
> "thinkers", scientists, do not operate by conscious
> wit and will to anything like the extent popularly
> supposed. They, too, press forward some end dimly
> and imprecisely prefigured, groping their way as they
> are lured on by the identity of an aura in which their
> observations and reflections swim. Only the psychology
> that has separated things which in reality belong
> together holds that scientists and philosophers think
> while poets and painters follow their feelings. In
> both, and to the same extent in the degree in which
> they are comparable rank, there is emotionalized
> thinking, and there are feelings whose substance
> consists of appreciated meanings of ideas. . . Those
> who are called artists have for their subject matter
> the qualities of things of direct experience; "intellectual"
> inquirers deal with these qualities but are not significant
> in their immediate presence. . . Thinking directly in
> terms of colors, tones, images, is a different
> operation technically from thinking in words.[24]

Simultaneous transformation of inner and outer materials con-

stitutes great art expression according to Dewey as he writes:

> It is not so generally recognized that a similar
> transformation similar to the transformation of
> physical materials such as marble and paint takes
> place on the side of "inner" materials, images,
> observations, memories and emotions. They are
> also progressively reformed; they, too, must be
> administered. This modification is the building up
> of a truly expressive act. . . Nor are there in fact
> two operations, one performed upon the outer material

and the other upon the inner and mental stuff.

> The work is artistic in the degree in which the
> two functions of transformation are effected by
> a single operation. As the painter places pigment
> upon the canvas, or imagines it placed there, his
> ideas and feelings are also ordered. As the writer
> composes in his medium of words what he wants
> to say, his idea takes on for himself perceptible
> form. [25]

Of the creative production Dewey says, ". . . art is not nature, but is nature, transformed by entering into new relationship where it evokes a new emotional response. "[26] He continues, ".   . the product awakens in other persons new perceptions of the common world. "[27]

Summary of Significant Concepts From These Theories

In summary, it may be seen that a number of characteristics of creativity as defined in this thesis emerges from these ideas of Murphy and Dewey. The abilities of the person who is creative are described by Murphy as <u>sensitivity to a particular sensory mode of experience</u> and as comprising affective, intellectual, and motor skills. The motivation of the creative person is said by Murphy to be <u>delight in sensory experiences and their relationships</u> and by Dewey to be an <u>impulsion toward wholeness</u>. The feelings of the creative person are described by Murphy as being <u>delight and pleasure in sensory experience.</u>

The environment conducive to creativity as characterized by Murphy consists of one in which <u>approval comes from parents, friends, and society in general</u>; in which there is <u>opportunity for contact with other creators</u>; one which offers <u>freedom of emotional experience and expression</u>; one in which <u>the creator has a large share in determining his own goals</u>; one in which there is an <u>opportunity for spontaneous behavior and freedom to be oneself</u>; and one in which there is an opportunity for an <u>alternation between sociality and isolation.</u>

The creative process as described by Murphy consists of an <u>accumulation of experiences</u>, their <u>intergration resulting in illumination or insight</u>, and a <u>process of polishing.</u> Dewey's explanation of the creative process may be summarized as: <u>the use of direct experience; a learned experience; a construction in time; a groping toward some dimly perceived ideas; perception of relations from previous spontaneous acts; subconscious maturation; emotion acting as a magnet in the selection and organization of material; reorganization of experience; emergence of ideas into conscious- ness where gross, undefined, turbid emotion takes on definite shape;</u> and the <u>simultaneous transformulation</u> inner and outer materials where each <u>orders the other.</u>

The creative product is described by Dewey as <u>nature transformed</u> <u>into new relationships</u> and as <u>something which awakens emotional responses</u> <u>and new perceptions of old meanings in the observer.</u>

Implications for Classroom Practice

A number of implications for classroom practice which attempts to foster creativity and creative expression would seem to follow from these theories. A teacher might very well consciously set out to determine which modes of sensory experience appeal most strongly to particular students and seek methods of tying visual experience to these other modes of experience. Informal discussion followed by a request for a written statement might serve as a procedure for securing the required information. Attempts to build a classroom atmosphere where fellow students give frequent and strong encouragement to each other as well as contact with creative workers from other fields such as music, drama, literature and dance should follow as a consequence of these theories. A teacher bent on fostering creativity among students should provide a climate of freedom and rich emotional experience and encourage students to enrich their emotional lives outside the classroom.

The involvement of students in intensely personal goals follows as an implication of these theories. This, translated into classroom practice, might mean joint decisions by groups for projects involving several persons and the pursuit of individual goals in projects undertaken alone. It does not necessarily follow that the teacher stands by idly with no voice in goal setting, but implies rather that his job is one of stimulating generously and helping students discover new relationships which lead to the setting of new goals. It is evident that in all cases students must be encouraged to set goals and choose undertakings that have intense personal significance for them if there is to be that degree of personal involvement required for sustained effort and high creativity.

An opportunity for free and easy social contacts in the classroom with formal and informal exchange of ideas as well as periods of quiet and uninterrupted thinking is suggested by Murphy's observation on the value of an alternation between sociality and isolation.

Perhaps the most significant of these ideas is that of creativity being a construction in time, or the ongoingness of the creative process. The implication of this important concept is that past accomplishments be utilized by the student in setting increasingly more complex goals for himself.

An example may verify this concept. Rather than isolating experiences in sketching, block-printing of greeting cards and stenciling of textiles, each might progressively be built upon the former with appropriate modifications so that a sense of power in utilizing accumulated learnings might acrue. No mandatory procedure is implied; should the student desire entirely new ideas with which to work he should be at liberty to find and use them.

Likewise, students should be encouraged to polish ideas that have come quickly in the rough. Again it must be stated that a proper balance must be maintained for in every group there is likely to exist the perfectionist who might polish forever without striking out anew unless encouraged to do so.

The final implication of these theories concerns attitudes to be taken toward the art product itself. The group in reviewing its work should ask itself for evidence of ongoing growth in expression and whether the art product under consideration evokes emotional reactions and new perceptions of former truth.

Theories of Unconscious Processes in Creativity

As stressed in the definition of creativity of Stephen Pepper previously and alluded to directly by Dewey and obliquely by Murphy, the

idea of the effortless pouring forth of ideas in high level expression is one of the central ideas of many creativity concepts. It is variously explained by different groups of writers as being of supernatural origin (Plato, Friedrich Nietzsche, and Wolfgang Goethe) or by unconscious processes (Richard Guggenheimer, Nathaniel Hirsch, Carl Jung, Gustav Bychowski, Ernest Kriss, and Anton Ehrenzweig).

Sources of Such Theories

This theory of the automatic expression which eludes conscious control, has an ancient heritage; going back to Plato, who, in the dialogue Phaedrus - speaks through the voices of his character, Socrates, telling us that:

> There is also a third kind of madness, of those who are possessed by the Muses: which enters into a delicate and virgin soul, and there inspiring frenzy, awakens lyrical and all other numbers. . . for the instruction of posterity. But he who having no touch of the Muses' madness in his soul, comes to the door and thinks that he will get into the temple by the help of art - he, I say, and his poetry are not admitted; the same man is nowhere at all when he enters into rivalry with the madman.[28]

These ideas are reflected in statements by Nietzsche and by Goethe when describing their own experiences in the creative process. Nietzsche commented, "One is the mere incarnation, mouthpiece, or medium of

an Almighty power. . . A thought suddenly flashes up like lightning; it
comes with necessity, without faltering. I have never had any choice in
the matter."[29]

Goethe professed:

> No productivity of the highest kind, no remarkable
> conception, no discovery, no great thought that
> bears fruit and has result, is in the power of
> anyone. Such things are above earthly control. . .
> They are akin to the daemon, which does with
> him what it pleases and to which he unconsciously
> resigns himself whilst he believes he is acting
> from his own impulse.[30]

Richard Guggenheimer explains the manner in which sudden
revelations come as being the result of unconscious association rather than
due to the presence of a divine spirit operating through the person of an
artist:

> There is a mistaken notion that great ideas and
> discoveries sometimes occur out of the blue. They
> often seem to, in the shape of dreams, or in
> sudden 'revelations' at odd moments while not
> even consciously sought. Actually they are the
> ultimate co-ordinations of enormous numbers of
> facts and ideas separately learned and finally
> grasped as a whole meaning.[31]

Nathaniel Hirsh holds a similar view, when he writes:

> The origin of intellectual intuition is then nothing
> mysterious, nor is it mystical in the sense that it
> is antiscientific. . . intuition is the complete
> unification of the drives of the unlike tendencies in

the human being into a consolidated whole, thereby
producing a surplus of mental energy which is con-
verted into creative activity. 32

Carl Jung has elaborated in vivid terms the distinction between

works produced by conscious and by unconscious methods. He distinguishes

two types of artistic creation: one which he calls the psychological and

the other the visionary. He says of these:

> The psychological work of art always takes its
> materials from the vast realm of conscious human
> experience - from the vivid foregound of life . . .
> I have called this mode of artistic creation
> psychological because in its activity it nowhere
> transcends the bounds of psychological intelligibility.
> Everything that it embraces - the experience as well
> as its artistic expression - belongs to the realm of the
> understandable. Even the basic experiences them-
> selves, though non-rational, have nothing strange
> about them. . .[on the other hand there is a] profound
> difference. . .between the psychological and the
> visionary modes of artistic creation. The latter
> reverses all the conditions of the former. The
> experience that furnishes the strange something
> that derives its existence from the hinterland of man's
> mind - that suggests the abyss of time separating us
> from pre-human ages, or evokes a super-human
> world of contrasting light and darkness. It is a
> primordial experience which surpasses man's under-
> standing and to which he is therefore in danger of
> succumbing. The value and the force of the experi-
> ence are given by its enormity. It arises from time-
> less depths; it is foreign and cold, many-sided,
> demonic and grotesque. . .Is it a vision of other
> worlds, or of the obscuration of the spirit, or of the

beginning of things before the age of man, or of the unborn generations of the future. [33]

Of the second type of creator Jung remarks:

> It is not alone the creator of this kind of art who is in touch with the night-side of life, but the seers, prophets, leaders and elighteners also. . . Yet, even in our midst, the poet now and then catches sight of the figures that people the night-world   the spirits, demons and gods. . . In short, he sees something of that psychic world that strikes terror into the savage and the barbarian. [34]

It is understandable from these remarks of Jung's why his theories have been termed by some unbelievers as mystical.

He observes that in seeking the cause of creativity the psychologist must refrain from designating any one psychic process, taken by itself, as being necessary. [35] In fact, Jung doubts that psychology will ever be able to causally explain creativity. He remarks:

> The creative act, which is the absolute anti-thesis of mere reaction, will forever elude the human understanding. It can only be described in its manifestations; it can be obscurely sensed, but never wholly grasped. Psychology and the study of art will always have to turn to one another for help and the one will not invalidate the other. . . It is a principle in the study of art that a psychic product is some-thing in and for itself - whether the work of art or the artist himself is in question. [36]

Jung observes that too much self-criticism hinders creativity, "All too easily does self-criticism poison one's naivete, that priceless possession, or rather gift, which no creative man can be without."[37]

Three contemporary psychoanalytic writers, Gustav Bychowski, Ernst Kriss, and Anton Ehrenzweig offer additional details concerning unconscious processes in creative activity. Bychowski assumes that extreme fluidity in the ability to concentrate on objects and to withdraw attention from them accounts for one of the chief differences between artists or creative individuals and other persons.[38] He attributes divergent or multiple identifications to sounds, shapes, colors and odors to the presence of synethesia in the perceiving and memory processes.[39] The artist, he believes, is no different than others in the process of sublimation except in the scope and intensity of his sublimations.[40] This he does by projecting intense feeling on objects in his environment.[41]

Ehrenzweig elaborates the concept of the unconscious source of creativity. By distinguishing between surface perception and depth perception, conscious and unconscious processes, he contrasts the appreciative and the creative acts in the art process. He writes, "Creativeness may be an indivisible process in which the artist and the public each contribute their share."[42] What the artist does is a primary process, to

furnish inarticulate form material from the unconscious, while the public

through a secondary process rearticulates material which the artist has

made thing-free or gestalt-free. [43] The working processes of traditional

artists and of modern artists are contrasted in somewhat similar fashion.

Modern painting, he says, is gestalt-free and the artist creates auto-

matically whereas traditional painting uses partly form control and partly

automatic processes. [44] These differences are due to differences between

surface and depth perception. He writes:

> The difference between surface and depth perception
> is not the extreme contrast which it appears to be
> to the surface mind- one precise and differentiated,
> the other chaotic and undifferentiated - but it is a
> difference of gradual transition from a low primitive
> stage of differentiation up to the highest gestalt
> level. [45]

Ehrenzweig believes there is a strong tendency in most artists

gradually to incorporate the secondary conscious perceptions which attend

so-called "appreciation" of art into their manner of working and in this

way encrust their work with a personal "style" which is no longer freely

inventive. Only the strongest artists, he says, continue to elaborate

unconscious nondifferentiated material. [46]

Vividness in the work of the artist is explained by Ehrenzweig as

being not a function of a precise "good" gestalt, but of the repressed

processes of perception fused into an image. The diminished interest of the artist in the world of reality (the world of form constancy, tone constancy, color constancy) enables him to bring up the biologically less relevant distortions of perspective, chiaroscuro and the like.[47]

> Ehrenzweig's theory is somewhat difficult to comprehend in the absence of visual illustrative material since he does not always make himself clear on the matter of either the "good" gestalt or on modern art. Since the "good" gestalt of Gestalt psychology refers both to form, size, and color constancy perceptions as well as to what we tend to think of as aesthetic organization of visual material and since "modern" art in Ehrenzweig's book apparently refers to both modern art as art since the Renaissance, i.e., realistic art, as well as to purely contemporary art by which we assume he means either abstract, non-objective, or abstract expressionistic art it is difficult to follow his reasoning. When he says ". . .from a low primitive stage of differentiation up to the highest gestalt level. . ." we are further confused since the perception of constancies involves less differentiation than the perception of non-constancies or the "repressed" retinal images.[48]

Kriss turns his attention to the application of Freud's theories of mobile and bound psychic energy and of the unconscious and preconscious mental processes to an explanation of inspiration and elaboration in the creative process. According to Kriss, Freud distinguishes the preconscious from the unconscious by the fact that the preconscious contains material

which is ". . . capable of becoming conscious easily and under conditions
which frequently arise" while in unconscious processes ". . . such a
transformation is difficult, and can only come about with great expenditure
of energy or may never occur."[49] Kriss notes Freud's theory that
". . . unconscious processes use mobile psychic energy; preconscious
processes, bound energy. The two degrees of mobility correspond to two
types of discharge characterized as the primary and secondary processes."[50]

While the energy of the unconscious process is characterized as
mobile, the bound energy of the preconscious processes which is easily
available to the ego and consciousness is described as being of two kinds:
"neutralized" energy and libido and agression in their non-neutralized
form.[51]

Kriss summarizes Freud's theory of energy transformation basic
to his own explanation of energy use in creativity. He writes:

> The assumption that the ego directs counter-
> cathexes against the id is essential to any study
> of preconscious mental processes; also essential
> is the assumption that a preconscious process
> from which the ego withdraws cathexis becomes
> subject to cathexis with id (mobile) energy and
> will be drawn into the primary process. . . The
> reverse (unconscious material becomes pre-
> conscious) occurs when id derivatives are

> catheected with ego energy and become part of
> the preconscious mental processes. . . They
> may do so. . . if the level of conflict has been
> reduced and the id impulse has become more
> acceptable.[52]

Freud believed, Kris says, that in fantasy more libido and aggression

(non-neutralized bound energy) is discharged while purposeful reflection

and problem solving requires the discharge of more "neutralized" energy.[53]

Kris believes also that ego regression, i.e., primitivization of ego

functions, occurs in sleep, falling asleep, fantasy, intoxication, psychosis

and also during many types of creative processes.[54]

The central thesis of Kris' elaboration of Freudian hypotheses

concerns a shift in "cathexis of ego functions: in two different phases of

the creative process: the inspirational and the elaborational phases.

During the inspirational phase, he explains, "countercathectic energies

of the ego" are withdrawn in fantasy and added to the speed, force, or

intensity with which the preconscious thoughts are formed. This

"hypercathetix of preconscious thought" accounts for the ". . . clarification

that occurs after intense concentration when the solution to an insoluble

problem suddenly presents itself following a period of rest."[55] While

during the elaborational phase, which corresponds to Freud's "purposeful

reflection," he says, "the countercathectic barrier may be reinforced,

work proceeds slowly, cathexis is directed to ego functions such as

reality testing, formulation, or general purposes of communication.

Alternation between the two phases may be rapid, oscillating, or distribu-

ted over longer stretches of time."[56] Kris also observes that inspiration

has many features in common with regressive processes and elaboration

with what characterizes "work," i.e., dedication and concentration.[57]

The explanation of Kris uses psychoanalytic language to explain

the distinction which Israel Dvorine makes concerning the operation of

cortical and sub-cortical levels in shifts in focus of attention. Dvorine

writes:

> To facilitate the smooth, rhythmic activity of
> all the organs the central nervous system of an
> individual functions on two levels, cortical and
> subcortical. To the higher centers of the brain
> are delegated the learning of new patterns of
> association, the learning of new skills and the
> acquisition of new information, in other words,
> everything that is new to the individual. When
> these brain patterns have been learned and
> integrated, when the new skills have been per-
> fected, they are then shifted to the control of
> the lower cortical levels, which do not require
> the same degree of attention on the part of the
> individual as do the higher center.
>
> Sub-cortical level of performance is outside of
> the focus of attention. It is on its borderline,
> the zone of transition, ready to be shifted to the
> higher center, if the need should suddenly arise.

All the stimuli received by the brain are not given
the same degree of attention at the same time.
One of the factors which contributes to a smooth,
well integrated performance of any skill is the
ability of the organism to abstract from the
constant flux of stimuli, at the appropriate
moment, only those stimuli which need to be
brought to the foreground within the focus of
attention. All other stimuli are relegated to the
background, either as a frame of reference or to
store them for future recall.

Thus, the awareness or perception of one's
environment and the reactions of an individual
to his environment is the end result of a complex
neurological pattern of organization.[58]

Summary of Significant Concepts From These Theories

Significant ideas from these theories of the unconscious nature

of the creative process may be summarized as: the importance of the

ability of the creative person to follow his intuition; to refrain from too

much self-criticism; to be emotionally excited about his subject; to

pursue the poetic, emotional, non-rational, imaginative aspects of living

as well as the logical and prosaic; and the importance of seeking new

expression rather than merely repeating itself.

Implications for Classroom Practice

While on the surface the significance of unconscious process in
perceiving or learning, in thinking, and in expression might appear negli-
gible in that they are uncontrollable in the classroom, on second thought
this is seen not to be true. Whatever conditions might be found conducive
to unconscious mental processes would have enormous significance for
learning and expression. Teaching by conscious, logical principles might
then be found to block learning, thinking and expression, or at least an
excess of this kind of teaching. Perhaps an alteration between conscious
logical methods and conditions favorable to unconscious feeling and intuition
might prove the more fruitful approach in fostering creativity. (Such an
approach may be found in a short work entitled, Analytic Anthropokinetic
Phenomenology by W. D. Leopold.) Another such approach might include
the use of background music for considerable portions of laboratory time
and "wall criticisms" where the student is encouraged in a non-directive
Rogerian manner to tell how he felt during the production of his work rather
than to point out successful and unsuccessful aspects of the product.

Whatever the approach used, what we learn through understanding
will not, I sincerely hope, petrify into intellectual theory, but will become
our instrument which, through practical application, will improve in quality
until it can serve its purpose as perfectly as possible. Its main purpose

is the better adaption of human behavior, and adaptation in two directions. The human being must be adapted on two fronts, first to external life - profession, family, society, and second, to the vital demands of his own nature.

A purely technical and practical education is no safeguard against delusion. It lacks the culture whose innermost law is the continuity of history, the long procession of man's living and creative unconscious. When we realize that the child gradually develops out of an unconscious state into a conscious one, we can understand why most environmental and educational influences or at any rate the most lasting, are those directed toward his unconscious.

In what way, then, can the unconscious knowledge and experience be brought to consciousness within our educational system? An approach directed toward the understanding, recognition and implications of archetypical patterns and primordial images is required. This approach demands not only knowledge of the world but knowledge of the self. It demands not only the questioning of the world but also necessitates self-criticism. Archetypical images and primordial patterns need to be united within the student so that the student is drawn out of himself onto other paths, which, in the last analysis, may well be the true meaning of education.

It is, unfortunately, only too clear that if the individual is not truly regenerated in spirit, society cannot be either; for society is the sum total of individuals in need of redemption. True, all sorts of attempts are being made to level out glaring racial contacts by appealing to people's idealism, enthusiasm, and ethical conscience, but, characteristically, one forgets to apply the necessary self-criticism.

And it is just this conscious recognition and consideration that are needed wherever a human relationship is to be established. The question of human relationship and of the inner cohesion of our society is our most urgent one, in view of the automation of the pent-up mass man, whose personal relationships are undermined by general mistrust. It would therefore be very much in the interest of the free society to give some thought to the question of human relationship from an educational and psychological point of view, for in this resides its real cohesion and consequently its strength.

Today, our basic convictions have become increasingly reactionalistic. Our philosophy is no longer a way of life, as it was in antiquity. It has turned into an exclusively intellectual and academic affair. Our denominational religions with their archaic rites and conceptions - justified

enough in themselves - express a view of the world which caused no great

difficulties in the Middle Ages but have become strange and unintelligible

to the man of today. Despite this conflict with the modern scientific out-

look, a deep instinct bids man to hang on to ideas which, if taken literally,

leave out of account all the mental developments of the last five hundred

years. The obvious purpose of this is to prevent him from falling into the

abyss of nihilistic despair. But even when, as rationalists, we feel

impelled to criticize contemporary religion as literalistic, narrow minded

and obsolescent, we should never forget that the creeds proclaim a

doctrine whose symbols, although their interpretation may be disputed,

nevertheless possess a creative life of their own by virtue of their archetypical

character. Intellectual understanding is by no means indispensable in all

cases, but is only called for when evaluation through feeling and intuition

does not suffice.

Theories of "Function Pleasure," "Great Effort," and the "Will to Form" As Motivation for Creativity

Theories drawn from the writings of Karl Buhler, Richard Gugen-

heimer, and Otto Rank are presented together here since each tends to

center around positive adjustment: work well done and habits of disciplined

effort and to explain motivation of creative expression.

Sources of Such Theories

Buhler finds what he calls "function pleasure" at the basis of both children's playing and adult creativity. He observes that "function pleasure" arises from joy in activity which involves use of muscles and sense organs and extends all the way from the simple kind found in children's play to the complex type experienced by highly creative persons. Furthermore Buhler believes "function pleasure" serves a useful role in helping to perfect accomplishment and lead to increasingly more complex forms of behavior.[59] This idea sounds very similar to that expressed by Murphy concerning creativity as learned activity growing out of pleasure in pursuit of sensory material pursued until a habit is formed.[60]

Richard Guggenheimer believes ". . . great disciplinary effort is required for most productive minds before they reach a stage where they are able to swiftly launch themselves into completely spontaneous absorption in the creative business at hand."[61] For this, great perceptive ability, freedom from inner conflict, intense concentration, and resoluteness of purpose are required.[62] He remarks:

> Any penetration to the nature of truly great persons
> invariably reveals struggle, relentless waging of
> war against the negative forces that threaten all
> human character. While sensitivity is essential
> to creating and appreciating art, courage is another

essential not so clearly understood. The kind of
courage required is that of detaching oneself from
habits that are uniquely practical spontaneous ways
of being. It is not easy to understand the difficulties
connected with this necessity, but it is impossible
to grasp the real meaning and process of creativity
without such understanding.

Artistic creativity is closely related to spiritual
integration, and any achievement of successful
integration involves courageous effort.

He who sees beautifully and reveals beautifully
does so less by virtue of any special eye or hand
and more by virtue of an inner light and fire.
Mere skill, while advantageous, cannot produce great
art. Skill is a superb and necessary instrument,
but it functions at its happiest level only when it
is guided by a mature mind and an exalted spirit,
character and creativity are profoundly related.[63]

The detachment from practical affairs of which Guggenheimer writes is

not the detachment of the psychotic but lack of attachment to the kind of

utilitarian preoccupation that renders persons blind to the world about

them. He says:

They detach themselves from their self-interest
and see a thing for itself rather than for them-
selves. They have a wider grasp of reality and
a more direct appreciation. Our aim is to develop
more of this kind of creative detachment, even
while living practical lives. This means ridding
ourselves of that pernicious anxiety complex, so
characteristic today, which keeps us narrowly

focused on what we erroneously consider our
personal security. [64]

Otto Rank proposes that the "will to form" motivates creative
production. The individual urge to eternalization of the personality with
the purpose of immortalization of objects in abstract form, he says, is a
principle inherent in the creative art form itself. The self labelling and
self training of an artist furnishes the basis of his productivity. [65]

Rank feels that it is impossible to bring all productive types of
personality under one heading. [66] He states that there is a difference
between individual and collective art styles in different countries and
periods, and that the artist uses the art form of his own culture and adds
something personal. In more individualistic periods and cultures
heightened originality of expression is valued, while in more collectivised
civilizations perfection of expression of traditional styles receives group
acceptance. [67] The artist, he says, is the antithesis of the neurotic. [68]
He believes conflict is inevitable in the life of the artist, but that the
conflict is between his desire to live a full life and to give up a part of the
active experience of life in order to produce his work. [69] His life fluctuates
between these two poles. [70]

Summary of Significant Concepts from these Theories

In summary, the s gnificant ideas from these remarks of Buhler, Guggenheimer, and Rank seem to be: the importance of pleasure in art activity; of great disciplinary effort and intensity of purposes; of the ability to detach oneself from the purely practical to pursue ideas (including visual materials) for themselves alone; and the role of self-labelling and self-training as a creative worker.

Implications for Classroom Practice

In attempting to guide students in becoming more creative persons it seems highly significant that, in addition to attempting to remove possible sources of frustration for the student, the teacher's role should include stimulation of the student toward long-range purposes of self-training. This implies that the student should become proficient in all the skills of collecting and recombining ideas as well as in purely technical abilities used in expression. This of course, should be the central goal of all education - although it has not always been realized in practice.

Sorokin's Theory of A Cluster of Indispensable Factors for Creativity

Pitirim Sorokin hypothesizes a theory of creativity that a number of independent factors considered singly are insufficient to explain creativity but that taken together these components account for a great deal in the creativeness of persons and groups.

Sources of this Theory

The factors mentioned by Sorokin are: suprasensory and supre-rational genius, social need, cross-fertilization of cultural streams, cultural freedom, and luck.[71] Of the first factor, Sorokin says:

> Suprasensory and suprerational genius, resulting either from "fortunate heredity," of which little is known at the moment, or coming from some other, unknown source. Whatever the source, a supre-rational and suprasensory creative genius, different from a mere sensory and rational ability, is an indispensable factor in the discovery of creation of great cultural systems by persons or groups.[72]

Elsewhere Sorokin discusses this third way of knowing as being intuition. He says of it:

> More questionable nowadays is the trust of faith derived from such a source, which is called by diverse names as: "intuition," "inspiration." "revelation," "extrao-sensory perception," "mystic experience," and so on. Does such a source, as distinct from discursive dialectics, or testimony of the organs of senses, exist?

The answer has to be positive. We may not know
exactly the nature of this source of truth. We must
also admit that, like observation in all its forms
(experimental, statistical, clinical) and reasoning,
it does not always guarantee the truth. But any
careful investigator of the history of human experi-
ence, science, philosophy, religion and truly
creative cultural value, can hardly deny the existence
of such a source of truth and its great and positive
contribution to the history of human thought, science,
art philosophy, religion, ethics, technology, and
even to economic values.[73]

Sorokin observes that intuition is different from perception and

sensation and even more so from imagination, memory, discursive

thought and ordinary observation.[74]   He remarks, ". . . intuition has

been the starter of an enormous number of sensory and dialectic dis-

coveries and inventions in all the creative fields of culture. . ."[75]

And further, he observes. ". . . there is hardly any doubt that intuition

is the real source of real knowledge, different from the role of the senses

and of reason."[76]

Of the second indispensable factor in the cluster of ingredients

necessary for creativity Sorokin writes:

The social need for a new system, whether
scientific, technological, military, religious,
ethical, artistic or other [seems indispensable].
Without such a need being felt, a given group or
person does not set out to do the requisite creative

work. The nature of the urgent need also
determines the nature of the great cultural system
that is to be discovered or created by the creative
members of the group. Mountaineers do not try
to discover ingenius means for oceanic navigation.
Groups not menaced militarily do not invent
ingenious military organization and tactics.[77]

Of the way in which cross-fertilization of cultural streams, his

third factor in creativity, operates Sorokin explains:

A given original culture enriches itself by using
the material of another civilization, especially
practical techniques confined to any specific
civilization. These neutral elements do not
affect the specific individuality of any given
civilization and do not threaten to erase or
deface its type. Other, non-neutral elements of
an alien civilization - such as religious, philo-
sophical, social, humanistic, ethical, and artistic
systems - can also be ingested, but only as
fertilizing material that will be patterned according
to the type of the borrowing culture. Any original
civilization is thus a highly selective organism:
it takes only that which fits it and rejects all that
does not harmonize with it.[78]

Cultural freedom, the fourth factor in creativity, is of greater

significance than political freedom, Sorokin feels, since it is freedom

from censorship and regimentation which are the qualities in question and

mere political freedom does not necessarily guarantee the required

nurturing soil.[79]

Concerning the role of luck, the fifth factor, Sorokin writes,
"Luck, a residual factor of an incidental favorable situation or constellation
of circumstances that suggests an idea, like the swaying lamp noted by
Galileo in the cathedral at Pisa, or the apple falling with a thud in the
garden of Isaac Newton [sometimes crystallizes half-formed ideas]."[80]

Sorokin observes that three phases occur in the creation and
invention of new forms of culture: the ideological conception of the system
in the mind of its creator, its execution in some permanent medium, and
its dissemination and acceptance by society.[81]

Sorokin's theory of the cluster of factors indispensable for creativity
is primarily a sociological or an anthropological theory dealing with the
evolution of culture in societies, yet there are germs of psychological
significance in these ideas for the study of creativity in the individual.

Considered according to the composite definition of creativity
being used in this thesis, Sorokin's theory concerns aspects of the nature
of the creative person, the creative environment, and the creative process,
but not the creative product. The abilities of the creative person are

described as being those of a <u>suprasensory and suprarational genius,</u> i.e., <u>possessing great intuitive power,</u> with the supposition that this may be hereditary. The motivation of the creative person is explained as the <u>recognition for the social need of a creative product.</u>

The environment conducive to creativity in this theory consists of an <u>opportunity for cross-fertilization of cultural streams, cultural freedom,</u> i.e., <u>freedom from censorship and regimentation,</u> and a "lucky" <u>combination of accidental factors which crystallize unformed ideas.</u>

The creative process, according to Sorokin's theory, would seem to consist of the <u>presence of intuition or extrasensory perceptions at work</u> as a "starter of discoveries," the principle of <u>selectivity operating in</u> <u>borrowing ideas from other sources or cultures, conception of an idea</u> <u>in the mind of a creator, and its execution in some permanent medium.</u>

Implications For Classroom Practice

Sorokin's theory for several reasons seems to have significance for an investigation of creativity and an attempt to foster conditions in the classroom conducive to it. Although this theory concerns the role of genius at work in the development of a civilization or culture, the fact that it suggests intuition as lying behind almost all knowing and discovery

signifies an implication for the creativeness of all people, not just the

genius. Sorokin's linkage of "intuition" and "inspiration" with "extra-

sensory perception" and "mysticism" rather than with unconscious processes

where material learned previously suddenly comes to consciousness as

explained by many other writers offers another explanation, different

from the "scientific" explanation and more similar to the "supernatural"

theories of creativity. The implication here is that students should

develop a habit of following their "hunches."

The factors of social need, luck, cross-fertilization of cultural

streams, and freedom from censorship and regimentation each in their

own way seem to hold significance for procedures which might enhance

creativity in the classroom. The social need factor suggests the urgency

of capitalizing on deeply felt student motivation, i.e., attempting to help

individual students find projects to be undertaken for which they feel a

deeply personal necessity. The factor of cross-fertilization of cultural

streams suggests the necessity of stimulating creativity through a wide

range of visual materials from both historic and contemporary sources.

Also implied from this concept is the possibility of the legitimacy of one

student consciously borrowing and adapting ideas of fellow classmates.

The necessity of freedom from censorship and regimentation as voiced by

Sorokin supports the argument of a number of other writers to be

reviewed later that psychological freedom is a basic ingredient in the

nurturing environment for creativity. The need of the individual to be

his own censor is stressed. An implication coming from the factor of

luck is taking advantage of the accidental and suggests development of

the habit of looking for interesting visual fragments in natural forms and

accidental arrangements, noting them through sketch, photograph, or

collection of actual objects and keeping them for the day when they may

be used.

Roger's Theory of Positive Creativity

Carl Rogers, the founder of non-directive psychotherapy, in a

tentative theory of creativity, distinguishes positive or constructive,

and negative or destructive, creativity and formulates a number of

attributes and conditions responsible for the operation of these two kinds

of creativity.

Sources of This Theory

Rogers comments:

> Creativity is not, in my judgment, restricted
> to some particular content. I am assuming that
> there is no fundamental difference in the creative

> process as it is evidenced in painting a picture,
> composing a symphony, devising new instruments
> of killing, developing a scientific theory, discovering
> new procedures in human relationships, or creating
> new formings of one's own personality in psycho-
> therapy. [82]

Consequently, Rogers defines the creative process without social

distinctions of "good" and "bad" creativity, group acceptance, or degree

of less or more novelty; but insists that the process result in some kind

of observable product of a novel character which is due to the individuality

of the creator and the materials with which he works. [83]   Rogers says, "My

defintion, then, of the creative process is the emergence in action of a

novel relational product, growing out of the uniqueness of the individual

on the one hand and the materials, events, people, or circumstances of

his life on the other." [84]   The motivation of creativity is felt by

Rogers to lie in the desire of the individual for self realization. He

writes:

> The mainspring of creativity appears to be the same
> tendency which we discover so deeply as the curative
> force in psychotherapy man's tendency to actualize
> himself, to become his potentialities. . . The urge
> to expand, extend, develop, mature - the tendency
> to express and activate all capacities of the organism,
> to the extent that such activation enhances the organism
> or the self. . . It is this tendency which is   the

primary motivation for creativity as the organism
forms new relationships to the environment in its
endeavor most fully to be itself. [85]

Rogers observes that presumably few of us are interested in

facilitating creativity which is socially destructive and asks how it is

possible to distinguish this type of creativity from the positive and

constructive kind. [86] He answers his question by pointing out that neither

an examination of the product nor the motives of the creator furnish

necessary distinguishing criteria but rather the fact of "openness" to

experience on the part of the creative person. The product fails as an

indicator of the social worth of creativity, Rogers argues, since most

significant novel creations are judged to be evil in their own day. He

notes:

> History points up the fact that the more original the
> product, and the more far reaching its implications,
> the more likely it is to be judged by contemporaries
> as evil. The genuine significant creation, whether
> an idea, or work of art, or a scientific discovery,
> is most likely to be seen at first as erroneous, bad,
> or foolish. Later it may be seen as obvious, some-
> thing self-evident to all. Only still later does it
> receive its final evaluation as a creative contribution. [87]

In similar fashion the motives of the creative person are equally mis-

leading in distinguishing the social worth of creativity, Rogers believes,

since its chief motivation is primarily self-actualizing behavior and the

creations for a social purpose so often fail as have various utopias and

prohibition, for example.[88]   But the distinguishing feature is the

question of whether or not the creator is "open" to awareness. Rogers

maintains:

> The differentiation may be put very briefly as
> follows. To the extent that the individual is denying
> to awareness (or repressing, if you prefer the
> term) large areas of his experience, then his
> creative forming may be pathological, or socially
> evil, or both. To the degree that the individual is
> open to all aspects of his experience, and has
> available to his awareness all the varied sensings
> and perceivings which are going on within his
> organism, then the novel products of his inter-
> action with his environment will tend to be con-
> structive both for himself and others.[89]

Rogers bases his tentative theory of the difference between constructive

and destructive creativity on clinical discoveries in psychotherapy of

personality dynamics.[90]

As a consequence of the theoretical basic differentiation between

"good" and "bad" creativity Rogers states three requirements or inner

conditions of constructive creativity: "openness to experience, " "an

internal locus of evaluation, " and "the ability to toy with elements and

concepts. "[91]   The first of these, openness to experience, consists of

. . . Permeability of boundaries in concepts, beliefs, perceptions and

hypotheses. . ." and ". . . tolerance of ambiguity where ambiguity

exists. . . the ability to receive much conflicting information without

forcing closure on the situation."[92]   It is the opposite of rigidity. Of

the second, an internal locus of evaluation, Rogers says:

> Perhaps the most fundamental condition of
> creativity is that the source or locus of
> evaluative judgment is internal. The value of
> his product is, for the creative person,
> established not by praise or criticism of others,
> but by himself. . . If to the person it has the
> "feel" of being "me in action," of being an
> actualization of potentialities in himself which
> heretofore have not existed, then it is satisfying
> and creative, and no outside evaluation can
> change that fact.[93]

The third requirement for inner conditions of constructive creativity, the

ability to toy with elements and concepts, seems to grow out of the other

two. Rogers says of it:

> Associated with the openness and lack of rigidity
> . . . is the ability to play spontaneously with
> ideas, colors, shapes, relationships - to juggle
> elements into impossible juxtaposition, to shape
> wild hypotheses, to make the given problematic,
> to express the ridiculous, to translate from one
> form to another, to transform into improbable
> equivalents. It is from this spontaneous toying
> and exploration that there arises the hunch, the
> creative seeing of life in a new and significant
> way.[94]

Rogers says, "When these three conditions obtain, constructive creativity will occur.[95]

An accurate description of the creative act is impossible, Rogers believes, since ". . . its very nature is indescribable. "[96] But he observes that several of its "concomitants" may be mentioned. These consist of selectivity on the part of the creator, and his feeling of discovery and of aloneness. The first of these, selectivity, consists of evidence of discipline, the attempt to express the essence of an idea in "simplified form, ignoring. . . minute variations. "[97] The feeling of discovery is called by Rogers the "Eureka feeling. "[98] Rogers says of the third, "I do not believe that many significant creative products are formed without this feeling, 'I am alone. No one has ever done just this before. I have ventured into territory where no one has been. Perhaps I am foolish, or wrong, or lost, or abnormal. '"[99] Still another feeling of the creative person is his desire to communicate with a group which will understand him, according to Rogers. He writes, "He does not create in order to communicate, but once having created he desires to share this new aspect of himself-in-relation-to-his-environment with others.[100]

Several conditions which foster constructive creativity are proposed by Rogers. He observes that creativity cannot be forced but may be permitted to emerge by providing nurturing conditions, a climate of psychological safety and freedom. Psychological safety is established by three associated processes, Rogers thinks: "acceptance of the individual as of unconditional worth," "providing a climate in which external evaluation is absent," and "understanding empathically."[101] Psychological freedom consists of complete freedom of symbolic expressions.[102]

The process of acceptance of the individual as of unconditional worth is described by Rogers as:

> Whenever a teacher, parent, therapist, or other
> person with a facilitating function feels basically
> that this individual is of worth in his own right
> and in his own unfolding, no matter what his present
> condition or behavior, he is fostering creativity.
> This attitude can probably be genuine only when
> the teacher, parent, etc., senses the potentialities
> of the individual and thus is able to have an un-
> conditional faith in him, no matter what his present
> state.
>
> The effect on the individual as he apprehends this
> attitude, is to create a climate of safety. He
> gradually learns that he can be whatever he is,
> without sham or facade, since he seems to be re-
> garded as of worth no matter what he does. Hence,

he has less need of rigidity, can discover what
it means to be himself, can try to actualize himself
in new and spontaneous ways. He is, in other
words, moving toward creativity.[103]

The second means whereby psychological safety is provided, the

absence of external evaluation, is described as:

When we cease to form judgments of the other
individual from our own locus of evaluation, we
are fostering creativity. For the individual to
find himself in an atmosphere where he is not
being evaluated, not being measured by some
external standard, is enormously freeing.
Evaluation is always a threat, always creates a
need for defensiveness, always means some
portion must be denied to awareness. If this
product is evaluated as good by external standards,
then I must not admit my own dislike of it. If
what I am doing is bad by external standards, then
I must not be aware of the fact that it seems to be me,
to be a part of myself. But if judgments based on
external standards are not being made, then I can
be more open to my experience, can recognize my
own likings and dislikings, the nature of the materials
and of my reactions to them, more sharply and more
sensitively. I can begin to recognize the locus of
evaluation within myself. Hence, I am moving toward
creativity.[104]

Rogers distinguishes a subtle but tremendously significant difference

between refraining from "evaluating" and from reacting to another

person's creative efforts. The former consists of implying that it is "good"

or "bad" according to some external authority and is believed by him to be

detrimental to psychological safety and creativity. The latter, "reacting"
or saying, "I don't like your idea" or "I like your painting very much"
may be actually freeing to the individual, probably will not damage his
psychological safety, and help to move him toward creativity. [105]

Understanding empathically, the third manner in which psychological
safety may be fostered is the most important of all. Rogers says of it:

> It is this which provides the ultimate in psycholo-
> gical safety, when added to the other two. If I
> say that I "accept" you, but know nothing of you,
> this is a shallow acceptance indeed, and you
> realize that it may change if I actually come to
> know you. But if I understand you empathically,
> see you and what you are feeling and doing from
> your point of view, enter your private world and
> see it as it appears to you and still accept you –
> then this is safety indeed. In this climate you can
> permit your real self to emerge, and to express
> itself in varied and novel formings as it relates
> itself to the world. This is a basic fostering of
> creativity. [106]

The techniques for this fostering of "understanding empathy" is described
elsewhere by Rogers as consisting of reflecting in a sympathetic tone of
voice the feelings expressed by the person being assisted. [107]

Psychological freedom consists of complete freedom for symbolic
expression. Rogers distinguishes symbolic expression from actual
expression in the following manner:

When a teacher, parent, therapist, or other
facilitating person permits the individual a
complete freedom of symbolic expression,
creativity is fostered. This permissiveness
gives the individual complete freedom to think,
to feel, to be, whatever is most inward within
himself. It fosters the openness, and the play-
ful and spontaneous juggling of percepts, concepts,
and meanings, which is a part of creativity.

Note that it is complete freedom of symbolic ex-
pression which is described. To express in behavior
all feelings, impulses and formings may not in all
instances be freeing. Behavior may in some
instances be limited by society, and this is as it
should be. But symbolic expression need not be
limited. Thus to destroy a hated object (wheter one's
mother or a rococco building) by destroying a symbol
of it is freeing. To attack it in reality may create
guilt and narrow the psychological freedom which
is experienced. [108]

The freedom described by Rogers is freedom for responsibility and

fear as well as freedom to be oneself. He says of it:

The permissiveness which is being described is
not softness or indulgence or encouragement. It
is permission to be free, which also means that
one is responsible. The individual is as free to be
afraid of a new venture as to be eager for it, free
to bear the consequences of mistakes as well as of
his achievements. It is this type of freedom,
responsibility to be oneself, which fosters the
development of the secure locus of evaluation
within oneself, and hence tends to bring about the
inner conditions of constructive creativity. [109]

This statement is similar to the freedom described by Erich Fromm who

distinguishes between "freedom from" and "freedom for" and who says:

> The inability to act spontaneously, to express what
> one genuinely feels and thinks, and the resulting
> necessity to present a pseudo self to others and
> oneself, are the root of the feeling of inferiority
> and weakness. Whether or not we are aware of it,
> there is nothing of which we are more ashamed than
> of not being ourselves, and there is nothing that
> gives us greater pride and happiness than to think,
> to feel, and to say what is ours.

> This implies that what matters is the activity as
> such, the process and not the result. In our culture
> the emphasis is just the reverse. We produce not
> for a concrete satisfaction but for the abstract
> purpose of selling our commodity: we feel that we
> can acquire everything material or immaterial by
> buying it, and thus things become ours independently
> of a creative effort of our own in relation to them.
> In the same way we regard our personal qualities and
> the result of our efforts as commodities that can be
> sold for money, prestige and power. The emphasis
> thus shifts from the present satisfaction of creative
> activity to the value of the finished product. Thereby
> man misses the only satisfaction that can give him
> real happiness - the experience of the activity of the
> moment - and chases after a phantom that leaves him
> disappointed as soon as he believes he has caught
> it - the illusory happiness called success.[110]

Fromm points out the fact that creativity and joy in process does not

always lead to the happiness that comes from group acceptance. He

observes:

The position of the artist is vulnerable, though, for
it is really only the succesful artist whose individuality
or spontaneity is respected; if he does not succeed
in selling his art, he remains to his contemporaries
a crank, a "neurotic." The artist in this matter is in
a similar position to that of the revolutionary through-
out history. The successful revolutionary is a states-
man, the unsuccessful one is a criminal.[111]

The concept of aloneness as a characteristic feeling of the creative

person which Rogers described and the idea quoted above from Fromm of

the vulnerability of the creative person to his audience is beautifully if not

hauntingly stated in a passage from Nietzsche:

Wouldst thou go into isolation, my brother?
Wouldst thou seek the way unto thyself?

Thou wouldst to the way of thine affliction

But one day will the solitude weary thee;
one day will they pride yield, and thy courage
avail. Thou wilt one day cry: "I am alone!"

And be on thy guard against the good and just!
They would fain crucify those who devise their own
virtue - they hate the lonesome ones.

With my tears, go into thine isolation, my brother.
I love him who seeketh to create beyond himself,
and thus succumbeth.[112]

Summary of Significant Concepts From This Theory

To summarize Rogers' tentative theory of creativity, the abilities of the person exhibiting constructive creativeness consist of: "openness" to awareness, an internal locus of evaluation, being able to toy with elements and concepts, and the power of selectivity. His motivation comes from a desire for self-realization and self-enhancement. His feelings are those of discovery, aloneness, and the desire to communicate or share his creative endeavor.

The environment conducive to constructive creativity consists of a climate of psychological safety brought about by acceptance of the individual as of unconditional worth, absence of external evaluation, and practice of understanding empathy as well as an atmosphere of psychological freedom due to opportunity for free symbolic expression.

The creative process, according to Rogers' theory, is the same in both constructive and destructive creativity and is impossible to describe.

The creative product, in this theory, has a novel character due to the interaction of the individuality of the creator with the materials or media of expression.

Rogers' theory seems to have significance in the fact that he,

alone, of the authors reviewed here makes a distinction between "good"

and "bad" creativity and proposes some concrete means for fostering

constructive creativity. (Whitehead may possibly be the only exception.)

One of the techniques suggested for insuring more "openness" to experience,

that of providing "understanding empathy," is definitely applicable to class-

room situations. Another, the placement of the locus of evaluation within

the student seems equally significant, although there is some question

whether this will occur automatically by simply refraining from placing

the locus of evaluation in outside authority. The whole question of laissez-

faire educational practice comes into play at this point.

Implications for Classroom Practice

It would seem that one implication for classroom practice might

include methods of guidance whereby ample stimulus material is provided

from which the student might be allowed to set his goals for accomplish-

ment and rate of achievement with frequent requests that he re-evaluate

his goals and progress. This might more nearly place the locus of

evaluation within him and at the same time insure the fact that some

evaluation takes place. Perhaps even here the use of techniques for re-

flecting feeling expressed by students might provide the safeguard against over-strain engendered by too-insistent concern for constant student self-evaluation.

The creative person apparently can handle freedom even though and in spite of the fact that it may involve freedom to be afraid. Whether the student with little practice in creativity can handle fear as well as the more experienced person with a greater backlog of success to his credit is highly problematic. It would seem otherwise, that the non-art major in particular should be helped to find as much success as possible to alleviate fear of beginning. In this case efforts should be made to help him find significant ideas for expression, means of visualizing them, technical information for their execution, leading questions for their evaluation, and ready enthusiasm for their approval. It is doubtful whether reflecting the student's feeling of fear of beginning helps him sufficiently to make the effort and quite possible that presentation of simplified alternatives might be more useful. In any case, refraining from negative criticism and from doing all his thinking for him are important contributions from Rogers' theory for classroom practice in fostering creativity.

Another implication growing out of Rogers' theory comes from his suggestion that one of the necessary pre-requisites for a creative per-

formance is the ability to toy with elements and concepts. This idea suggests the necessity of providing experiences in the early phases of a student's exposure to creative activities in fluid media so that ideas may be readily captured without the necessity of too much forethought.

The medium itself under the influence of different tools and ways of handling them may suggest ideas of a fairly spontaneous nature in working with the former types of activities which an inexperienced student could not foresee in the latter less fluid materials which require planning ahead. In similar fashion, the use of cut-out shapes, string, and bits of colored paper from magazine advertisements which may be pushed about then juggled while an idea for a painting is being crystallized furnishes opportunity for refraining from a too-ready tendency to closure on the part of inexperienced students who frequently tend to execute incomplete and poverty-stricken ideas out of inertia, lack of ability to visualize, and fear. Constructions in three-dimensions should likewise probably be attempted in early situations from the assembly of pre-formed shapes such as rectangular and cylindrical boxes, oddly-formed bits of wood, and bent scrap wire rather than from flat sheets, rods, sticks, and un-formed wire since partially formed material may be juggled more readily

and tends to suggest more ideas and a three-dimensional structural sense

than completely unformed material which requires more complex

visualization and planning.

Whitehead's Theory of Creative Duration

According to Alfred North Whitehead, in creativity what is wanted

is an appreciation of the infinite variety of vivid values achieved by an

organism in its proper environment. When one understands all about the

sun and all about the atmosphere and all about the rotation of the earth,

one may still miss the radiance of the sunset. There is no substitute for

the direct perception of the concrete fact with a high light thrown on what

is relevant to its preciousness. Whitehead continues to note:

> What I mean is art (and aesthetic education). It is,
> however, art in such a general sense of the term that
> I hardly like to call it by that name. Art is a special
> example. What we want is to draw out habits of
> aesthetic apprehension. According to the meta-
> physical doctrine which I have been developing, to
> do so is to increase the depth of individuality. The
> analysis of reality indicates the two factors, activity
> emerging into individualized esthetic value. Also
> the emergent value is the measure of the individualiza-
> tion of the activity. We must foster the creative
> initiative towards the maintenance of objective values.
> You will not obtain the apprehension without the
> initiative, or the initiative without the apprehension.
> As soon as you get towards the concrete, you cannot
> exclude action. [113]

Sources of This Theory

Descended from a line of clergymen, Whitehead emphasized the aesthetic and spiritual rather than the secular aspects of the world. He opposed all phases of dualistic thinking such as mind and matter, God and the world, subject and object, realism and idealism, science and religion, and so on. He aimed at reconciling the discordant components of existence. The whole world, he declared, is a process of enduring, harmonious interaction. He looked for essential unity in the apparent diversity of things; this search for unity, being crucial for creativity.

Whitehead's, like Dewey's, is a philosophy of synthesis in which a natural effort is made to combine insights from the most diverse sciences, to reconcile the testimony of common sense and ordinary sense-perception with the most recondite conceptions of phsical theory, and to show how all the dualisms of seventeenth-century science and of nineteenth-century value theory can be overcome by the construction of an adequate meta-physics. But Dewey's and Whitehead's sources are very different. The early Dewey was deeply under the spell of Hegel; as a young man White-head "nearly knew by heart parts of Kant's <u>Critique of Pure Reason,</u>" but he adds: "I have never been able to read Hegel: I initiated my attempt by

studying some remarks of his own on mathematics which struck me as complete nonsense."[114] Also, insofar as the concepts of the natural sciences have been influential, Dewey (like Bergson) has assimilated the atmosphere of a Darwinian biology, whereas Whitehead[115] learned the development of mathematical physics. Finally, while the spirit behind almost everything which Dewey has written is the practical motivation of the social engineer, Whitehead's work breathes the quiet speculative passion of the abstract mathematician.

But this author would not wish to press these differences to the point where they obscure the fundamental similarity. What Dewey has himself spoken of as "a demand for unification that was doubtless an intense emotional craving" is characteristic of them both. In Dewey it produced an all embracing concept of experience. In Whitehead it has produced what is perhaps the culminating unification of the entire Western tradition.

Aesthetics studies the quaint development by which form issues into feeling, by which the most austere complexities of structure within the work of art produce a contagion of bare emotion. In each case it is an original opposition which sets the problem, and it is an unusual philosophy in whose dialectic it is dissolved. But it is the peculiar quality of White-

head that seemingly antagonistic perspectives can be overcome. This is the consequences of a belief that philosophy expresses the infinity of the universe and that it can exclude nothing.

This is why the "philosophy of organism" (which is what Whitehead calls his mature metaphysics) so quixotically suggests the synthesis of incompatibles. It is Bergson's sympathy with a universe of dynamic process presented within the mold of Russell's scientific analysis. It is the vivid emotional world of the lyric poet presented according to the axioms, postulates, and primitive notions of symbolic logic. It is the psychologized cosmos of James's "drops of pure experience" assimilated to the mentality of projective geometry. It is sentience within an extensive continuum, the massive structures of feeling, the novel creations produced by the ingression of forms. Whitehead believes that things become definite when forms "ingress" or "enter into" the process of the world. These are the preoccupations of Whitehead's philosophy.

Three comprehensive metaphysical constructions, three cosmologies, have dominated Western philosophy: The Physics of Aristotle, the Timaeus of Plato, and the system of Democritus transmitted by Epicurus and finally adumbrated in Lucretius' epic.[115] The first assumes the qualitative hierarchy of substances composed of form and matter; the

second proposes the ingression of ideal forms into a receptable of be-

coming through the agency of a divine artisan; the third postulates atoms

and the void, the former moving regularly but without teleology in finite

measurable arcs. If one assumes the exhaustiveness of this classification,

then it is apparent that the cosmology of Whitehead sides with Plato as

against Aristotle and Democritus. The notion of a medium connecting

the eternity of being with the process of becoming is common to both

accounts; in Whitehead it is "creativity;" in Plato "The Receptacle." But

there is another consequence of this identification also. The assumptions

of Democritus became the posultates of Newtonian physics. It is therefore

possible for Whitehead to affirm that the modern wave-theory of the atom

sustains Plato rather than Democritus, while the Newtonian physics

sustains Democritus against Plato. "Newton," says Whitehead, "Would

have been surprised at the modern quantum theory and at the dissolution

of quanta into vibrations; Plato would have expected it."[116] .

For Whitehead pattern is important, but "the final real entity is

an organizing activity fusing ingredients into a unity, so that this unity

is the reality." This individual entity has a life-history which is a part

within the life-history of some larger, deeper, and more complete pattern

of the world. The larger pattern dominates the individual, and the individual

in turn makes the larger pattern different from what it would otherwise be. Thus Whitehead's picture of the world envisages both atomicity and continuity, and it avoids the dangers of both the Hegelian and the Leibnizian alternatives. It skirts the dangers of both a world of individuals so hermetically sealed and autonomous that they are practically relationless, and of a world of unity so wholistic and so organically interrelated that real individuality is swallowed up in the midst of totality.

But there is a problem. Prehensions are the threads of process. They are the puffs of experience constituting actual occasions. Where in the evanescence of this flux lies endurance? An Aristotelian substance may be successively qualified by diverse adjectives but it endures. A Leibnizian nomad undergoes internal development but it retains its self-identity. A Newtonian particle may shift its successive locations in space, but it is the same particle. But where in the shifting succession of "Occasions of experience" lies the permanence which we have learned to attribute to the "object" of an lolder physics? The answer lies in understanding how the pattern of ingression of eternal objects is sustained by the flow of time. Enduring things are the outcome of a temporal process. For example, a molecule is a pattern exhibited in an event of two minutes

or of any subdivision of that two minutes. The enduring pattern is wholly derived from the various temporal sections of the event, and it expresses a certain unity of character uniting the underlying individualized activities. "There is then an enduring object with a certain unity for itself and for the rest of nature. Let us use the term physical endurance to express endurance of this type. Then physical endurance is the process of continuously inheriting a certain identity of character transmitted throughout a historical route of events."[117]

Whitehead's philosophy is indeed "a vision of the whole," and this author has tried to indicate the principal aspects under which this philosophy of process reveals itself. These are: (1) a theory of time in which time enters into the essence of materiality, (2) a theory of relatedness in which the world enters into the constitution of each actuality, and (3) a theory of inheritance whereby endurance is explained as conformal inheritance of pattern. Essential temporality, total relatedness, and conformal inheritance are the chief qualities of Whitehead's philosophy of process. They are the means whereby he can outline the metaphysical requirements of the Connected Universe.

It is impossible to deal exhaustively with the richness and complexity of Whitehead's terminology. But the mere citation of his

Category of the Ultimate, and a few selections from his Categories of

Explanation, will give some indication of the philosophic atmosphere of

Process and Reality. It will show not only the emphasis upon relatedness

which we already know, but also the slow emergence into major prominence

of the concept of "feeling."

> The Category of the Ultimate: 'Creativity,'
> 'many,' 'one' are the ultimate notions involved
> in the meaning of the synonymous terms 'thing,'
> 'being,' 'entity'. . . 'Creativity'. . . is that
> ultimate principle by which the many, which are
> the universe disjunctively, become the one actual
> occasion, which is the universe conjunctively. It
> lies in the nature of things that the many enter
> into complex unity. . . Creativity is the principle
> of novelty. . . The ultimate metaphysical principle
> is the advance from disjunction to conjunction,
> creating a novel entity other than the entities given
> in disjunction.. . . Thus the 'production of novel
> togetherness' is the ultimate notion embodied in the
> term 'concrescence'.

> Process: The actual world is a process and. . . the
> process is the becoming of actual entities. Thus
> actual entities are creatures,. . . How an actual
> entity becomes constitutes what that actual entity
> is. . . Its being is constituted by its becoming.
> This is the principle of process. . .

> Prehension: The first analysis of an actual entity,
> into its most concrete elements, discloses it to be a
> concrescence of prehensions, which have originated
> in its process of becoming. . . Every prehension
> consists of three factors: (a) the 'subject' which is

prehending, namely, the actual entity in which
that prehension is a concrete element; (b) the
'datum' which is prehended; (c) the 'subjective form'
which is how that subject prehends that datum. . .
there are two species of prehensions: (a) 'positive
prehensions' which are termed 'feelings' and
(b) 'negative prehensions' which are said to 'eliminate
from feeling'. . . There are many species of sub-
jective forms such as emotions, valuations, purposes,
adversions, consciousness, etc.. . Whatever is a
datum for a feeling has a unity as felt. . .

Eternal Objects: The fundamental types of entities
are actual entities and eternal objects, and. . . the
other types of entities only express how all entities
of the two fundamental types are in community with
each other in the actual world. . . The functioning of
one actual entity in the self-creation of another actual
entity is the 'objectification' of the former for the
latter actual entity. The functioning of an eternal
object in the self-creation of an actual entity is the
'ingression' of the eternal object in the actual entity.
The final phase in the process of concrescence,
constituting an actual entity is one complex, fully
determinate feeling. This final phase is termed the
'satisfaction'. It is fully determinate (a) as to its
genesis, (b) as to its objective character for the
transcendent creativity, and (c) as to its prehension -
positive or negative - of every item in its universe.[118]

The late Wittgenstein had seen that the positivistic logical interest

was too narrow, and that non-cognitive functions of language merited the

closest attention, but even he did not require the invasion of logic by

emotion. For Whitehead even the judgmental functions of the affirmation,

negation, and entertainment of propositions are emotive: affirmation is
composed of "feelings in the yes-form," negation of "feelings in the no-
form," and entertainment of "feelings in the suspense-form." The truth
of the matter is that for Whitehead the cognitive acts of mentality are
inseparable from the requirements of feeling, and they are therefore
subject to all of the aesthetic criteria to which feelings lend themselves.
Intellectual feelings are a concentration of attention which permits both
increase of importance and the act of criticism, but they are the tool of
physical purposes more primitive than themselves. This is why
"affirmation or negation," "belief," or "truth" are not exclusively
cognitive operations of an older logical tradition.

> But the main function of intellectual feelings is
> neither belief, nor disbelief, nor even sus-
> pension of judgment. The main function of these
> feelings is to heighten the emotional intensity
> accompanying the valuations in the conceptual
> feelings involved, and in the more physical
> purposes which are more primitive than any
> intellectual feelings. . . In so far as these
> logical subjects by reason of other prehensions
> are topics of interest, the proposition becomes
> a lure for the conditioning of creative action. [119]

So we are back once again to creativity. Whether in the case of
physical feelings or intellectual feelings, of conceptual feelings or simple

causal feelings, of perception of the mode of causal efficacy of perception
in the mode of presentational immediacy, we cannot escape the demands
of massiveness and depth, and of intensity by reason of studied contrast.
The subjective aim of every actual entity is in the direction of a balanced
complexity (where complexity means the power of contrasts, and balance
the absence of mutually inhibiting factors). All actual entities seek such a
disposition of emphasis as to maximize the intensities of feeling, and
insofar as there is cosmic coordination of actual entities in their various
processes of becoming, there is an aim toward order in the universe.
This "aim toward order" is nothing but the creation of a "society" of actual
occasions expressing a patterned intensity of feeling arising from the
adjusted contrasts of the individual items. Whitehead sometimes calls
it "God" or "the principle of concretion."

It is an interesting journey when one begins with Newton's laws of
motion and Maxwell's equations and arrives at the conclusion that an
intense experience is an aesthetic fact, and that any actual fact is a fact of
aesthetic or creative experience.[120] But the stages of its progress are
continuous. If the concept of a particle at an instant is abandoned, if the
doctrine of simple location gives way to the doctrine of the connected universe,
then the model of reality is not a mechanism, but an organism. If actual

occasions are organisms, then their process and their realization must occur according to the laws of conformal feeling. And if there is to be an order of conformal feelings reducible to law-like statement, then such a statement will be an expression of aesthetic principle.

This author has tried to suggest what is implicit in Whitehead himself: that our history of ideas is derived from our ideas of history, and that our ideas of history are a function of our comsological outlook. "This notion," says Whitehead,[121] "of historians devoid of aesthetic prejudice, of history devoid of any reliance on metaphysical principles and cosmological generalizations, is a figment of the imagination." This means that for Plato and for Whitehead alike, the history of ideas requires a record of the ingression of forms into the flux of history - into the process of the real world. Platonic history has three tasks: the diagnosis of historical epochs the classification of historical periods, and the comparison of such periods with one another. The first task, the diagnosis of a historical epoch, is completed when the "Platonic idea" of that age is isolated, and this Platonic idea is the pattern of eternal objects ingressing at that point. In this type of analysis the concept of pattern or order is preeminent. "Civilization," says Whitehead,[122] "is constituted out of four elements, (1) Patterns of Behaviour, (2) Patterns of Emotion,

(3) Patterns of Belief, and (4) Technologies. We can at once dismiss Technologies as beyond our topic, though all four constitutive elements interact upon each other. All patterns of behavior are in the long run sustained or modified by patterns of emotion and patterns of belief. . ." The important concept here is pattern. The pattern of a culture, like that of a society of actual entities, is the arrangement of elements which through mutual imminence share a common social order, and which individually reflect the general pattern that dominates the age. Since there are "types of order dominating vast epochs" (whether the mediaeval concept of "coordination" or the nineteenth-century concept of "competition"), these types of order will find their reflection in the multiplicity of sub-ordinate cultural elements. The conclusion of this Platonic emphasis upon pattern is a profound rationalism with respect to the assessment of the role which ideas may play in the drama of cultural history.

"The impact of aesthetic, religious and moral notions, " said Whitehead, "is inescapable. They are the disrupting and the energizing forces of civilization. " Thus the intellectual agencies involved in the modification of historical epochs (such as the school system) are the real subject of Adventures of Ideas. This assumed that certain ideas of high

generality, expressing the nature of things and the final aim which should

guide the conduct of individual men, were at the root of the behavior of each

cultural epoch. "In each age of the world distinguished by high activity there

will be found at its culmination, and among the agencies leading to that

culmination, some profound cosmological outlook, implicitly accepted,

impressing its own type upon the current springs of action."[123] The ages

of Pericles, Alexander the Great, Cicero, and Tiberius were very different,

yet they all agreed on one fundamental idea which lay at the base of their

political theory – the legitimacy of slavery in a society which was unable

to be self-sustaining. On the other hand, the liberal humanitarianism of

eighteenth-century Europe is unintelligible without some understanding of

the religious ideas of the Quakers and the political philosophy of John Locke.

This is almost to say that in ethical ideals are exemplified those consciously

formulated ideas which act as driving forces effecting transitions from

social state to social state, and that metaphysical understanding guides

imagination and justifies purpose. This is what Whitehead would like to

maintain, but his own metaphysics will not permit him to draw the

completely moralized conclusion.

The philosophy of Whitehead, like that of Plato, and incidentally,

Jung, is haunted by principles of division expressed as "ideal opposites":

joy and sorrow, good and evil, clarity and vagueness, conjunction and

disjunction, permanence and flux, the one and the many, freedom and

necessity, greatness and triviality, order and disorder, God and the World.

Ideals group themselves about these opposites, and the world is the victim

of the paradoxes which they present. Beauty demands order, but cannot

exist without the disorder which discords introduce. The clarity of definition

of a foreground demands the vagueness of the background against which it

is presented. The world craves novelty, but is terrified at the loss of

the past. Any one concept requires the plurality of its exemplifications. The

good of actualization requires the evil of limitation. God and the World

"stand over against each other, expressing the final metaphysical truth

that appetitive vision and physical enjoyment have equal claim to priority

in creation. "[124] Between some of these terms there is a natural affinity.

There can be no excellence without some principle of order, and the order

which is discoverable in nature is not the result of brute compulsion, but

represents the effort at the harmonious adjustment of complex detail.

The task of the creative advance is the reconciliation of these

oppositions. "God and the World are the contrasted opposites in terms of

which Creativity achieves its supreme task of transforming disjoined

multiplicity, with its diversities in opposition, into concrescent unity

with its diversities of contrast."[125]   The opposed elements of the

universe stand in the relation of mutual implication. But more important:

existentially, they require one another. Thus the universe is the active

expression of its own variety of oppositions. The analogy with Hegel is,

therefore, not completely apt. The dialectical opposition of thesis and

antithesis which always in Hegel receives its logical resolution in such a

way as to override and therefore nullify the discrepancy,[126] in Whitehead is

completely different. In Hegel, opposition disappears in mid-air by an

act of dialectical magic. Whitehead is too existentially oriented for such

theatrical illusion. His opposites are elements in the nature of things.

They are incorrigibly there.

The ultimate wisdom of Whitehead's philosophy lies, therefore,

where one might expect it to lie in any enterprise motivated by the attempt,

amid a milieu of partial concerns and fragmentary solutions, to gain some

vision of the whole. It is not primarily in seeing that God is the principle

of concretion, or that evil is implicated in the very nature of actuality,

or even that all goodness lies in the imposition of modes of order. Its

ultimate wisdom lies in the perception that the solemnity and the grandeur

of the world arises out of the slow process of unification in which the
diversities of existence are utilized, although they are never lost.[126]

Summary of Significant Concepts From This Theory

In his book, The Aims of Education, Whitehead notes that the
creative process, in particular, involves two very different kinds of
activity. The first is the free and unrestricted flow of thought and fancy,
kind of a romance of the imagination in which ideas are born. The second
aspect involves disciplining the mind to begin elaborating, developing,
consolidating and refining a nascent idea to a mature realization. Thus
creativity, the bringing together of diversity in novel unity, the creation
of order out of chaos, requires not only unencumbered divergence, but
also a disciplined and patient nurturance, ie., hard work. In this vein it
is an interesting note that Beethoven produced no less than twenty versions
of the first movement to his Fifth Symphony before he came up with what
he considered to be an acceptable result. This process of working it
through to its fruition, cultivating it to the point of full consummation,
requires an extraordinary sense of dedication and perseverance.[127]

Alfred North Whitehead thought that "education is the acquisition
of the art of the utilization of knowledge" can now be applied to the context

of the development of potentialities as this development requires that

there be action and that knowledge be utilized within each individual. The

utilization of knowledge in this context implies something far beyond the

goal of merely becoming well informed. In fact "the consequences of a

plethora of half - digested theoretical knowledge are deplorable."[128]

Knowledge in and of itself does not produce the conditions for self-

actualization, meaning and identity, for the identity of each individual has

already been established and that knowledge which is put in to the individual

for the purpose of making someone can only suceed in inhibiting the process

self-actualization. What is in essence being developed here is an attitude

toward the function of knowledge and not the practical implementation of

that attitude. Our established attitude forces knowledge to assume inert

qualities for it cannot be utilized in the actual processes which are taking

place in the individual. As a consequence, we see today much questioning

of the function of knowledge for the wrong reasons, as is evident in the

anti-intellectual movement. Agreed, part of what man is all about is the

expansion of his horizons and a never ending quest for new knowledge.

This knowledge, however, is both inside and outside of himself. Thus at

least some of the challenges facing education today are: the crisis of

individual identity in a complex world, the proper utilization of knowledge,

the problem of what knowledge is relevant and not inert, an acceptable definition of the nature of man, and a proper balance between man's rational and spiritual nature.

Implications for Classroom Practice

The Whiteheadian view of creativity as it relates to education has among other names been called integrative education. Integrative education derives its impetus from two basic postulates. The first was discovered through psychological research into the nature of the individuals construction of his view of the world. This research has pointed out the mind tends to display an organizing activity which results in an attempt to make a unified picture out of all of the separate bits of information and experiences encountered. "This organizing activity is displayed rather consistently in the situations the learner encounters, thus giving evidence that he has a mind set of attitude which causes him to seek to organize material."[129]

The second postulate may only be a reflection of the mind set mentioned above, for it is based on the supposition that there are basic unities and commonalities within all knowledge and processes that we are able to experience and understand. Possibly the best example of this basic theme of unity according to Whitehead, is to be found in the sciences. Near the turn of this century as a result of Darwin's thinking much of the

plethora of seemingly unrelated detail in the biological sciences was related into a basic unified scheme. This unity has been carried much further with the advent of biochemistry and biophysics. The same general kinds of relationships were also discovered through the work and thinking of Planck (Quantum Mechanics) and Einstein (the Theory of Relativity) in the field of physics. We might also extend this consideration to the basic nature of man, as Bahai'ullah has clarified man's nature by tying the characteristics of man to latent attributes and potentialities. Jung's Archetypes may be viewed as other specific realizations of the universal attributes of man.

Extending the discussion of the universal elements of man toward a view of man unified with the universe we are able to approach Whitehead's suggestion that "there is only one subject matter for education, and that is Life in all its manifestations. Instead of a single unity, we offer children - Algebra, from which nothing follows; Geometry, from which nothing follows; Science, from which nothing follows; History, from which nothing follows; a couple of Languages, never mastered; and lastly, most dreary of all, Literature, represented by plays of Shakespeare with philosophical notes and short analyses of plot, and character to be in substance committed to memory. . . The best that can be said of it is

that it is a rapid table of contents which a deity might run over in his mind while he was thinking of creating a world, and has not yet determined how to put it together."130

It would seem that Whitehead is suggesting that we view Life as a continuum of knowledge and experiences, all the parts of which are parts of a greater whole of unity. Science and the rise of a dependence on deductive reasoning have previously been referred to as the major factors which have succeeded in destroying much that formed the basis of our psychological moorings. To state it more directly we see as seemingly irreconcilable and incompatible the following opposites: science and religion, physics and metaphysics, deductive reasoning and aesthetic experience, rational and irrational thought, objective and subjective reasoning, and a-posteriori and a-priori knowledge.

Some of the above mentioned comparisons are irreconcilable by definition, other opposites are so because of the limits of the definitions, thus much of the conflict can be eliminated through the development of better definitions which will result from a deeper understanding of the knowledge involved. Attempts toward this understanding might indeed seem presumptuous, however, without the attempts nothing can be gained.

The basic conflict between science and religion might, in many respects, be viewed as representative of the above catagories. Religion, as defined by the rationalist, is essentially an irrational adherence or conformity to laws and principles because of one's faith. This faith is considered irrational because it does not result from rational thought. Rational thought has lead us to the conclusion that thoughts or expressions of a force completely beyond the conception of man are essentially irrational, for that force is beyond the bounds of rational thought, therefore, the force does not exist and furthermore religion, which claims to be the result of that force, must be the product of man's imagination.

If this is the conclusion of rational thought which is the product of a finite mind then rational thought is but an extension of irrational thought. Extricating the discussion from this circular morass might be accomplished if it was assumed that the definition of faith which results from religion is conscious knowledge based on the assumption that Nature, the Great Being, God, that Consciousness beyond man is logical and that the entire universe, which includes man is an expression of a greater Logic and that it operates within the bounds of laws and principles which are discernible as logical constructs. Religion can then be regarded as the

expressivle in terms of logical and discernible laws.

Emanuel Kant developed the philosophical basis for this approach in his discussion of subjective (aesthetic, spiritual, a-priori) judgment and objective (teleological, scientific, a-posteriori) judgment. The basis of his discussion is briefly and incompletely summarized in the following diagram.

Judgment

Understanding

aesthetic judgment, sub-
jective, a-priori know-
ledge

Reason

Composed
of
parts

teleological judgment,
objective relations, ideas,
a-posteriori knowledge

Knowledge

Sensation

immediate, first hand
experience forms the
basis of knowledge
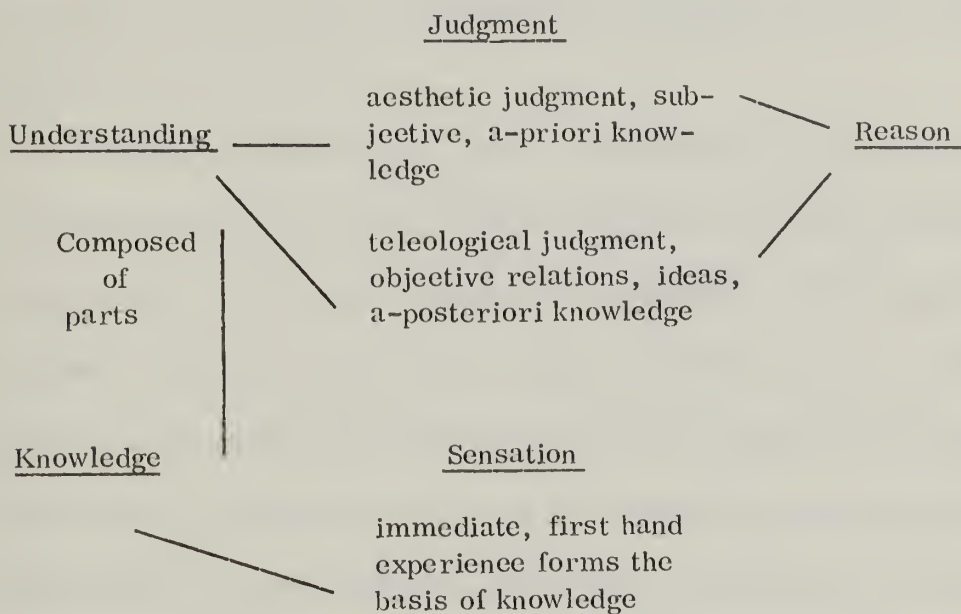
Sensation in itself is composed of a stream of unconnected parts called knowledge which become dependent upon one another by virtue of the law of causation, which produces understanding. Then these parts which are understood are synthesized into a whole or unity through the two forms of judgment which then results in the ultimate unity, namely, Reason.

The idea of the Reason is that "it envisages the nature of the universe as a whole having a unity beyond perceptive experience," which is "capable of guiding the human being in his practical attitudes to life."[131] Subjective and objective judgment or aesthetic and teleological judgments are brought into harmony when it is realized that there is an "inherent unity between feeling, sense or nature on the one hand and reason, intelligence or freedom on the other,"[132] and when it is realized that they are parts leading to the same end.

When we accept that the Reason and ultimate unity of the universe is approached by man through various channels and are not possessed by man, then we are freed to understand the limitations and fettering nature of many of the ill-founded, poorly thought conclusions which we hold as absolutes and supports the basis of the conflict. When we understand this we are also free to see that man cannot exist in a universe which is governed by laws and principles and consider himself apart from this general scheme. Abdul-Baha in the Baha'i writings states: "Much of the discord and disunion of the world is created by these man-made oppositions and contradictions. If religion were in harmony with science and they walked together, much of the hatred and bitterness now bringing misery to the human race would be at an end."[133]

Loren Eisely in <u>The Unexpected Universe</u> writes:

> We are too content with our sensory extensions,
> with the fulfillment of that ice age mind that began
> its journey amidst the cold of vast tundras and
> that pauses only briefly before its leap into space.
> It is no longer enough to see as a man sees - even
> to the ends of the universe. It is not enough to
> hold nuclear energy in one's hand like a spear
> as a man would hold it, or see lightening, or
> times past, or time to come, as a man would see
> it. If we continue to do this, the great brain -
> the human brain - will be only a new version of
> the old trap, and nature is full of traps for the
> beast that cannot learn . . . Let us remember
> that. . . man came because he is at least a
> listener and searcher for some transcended realm
> beyond himself. . . Man, the self fabricator, is
> so by reason of gifts he had no part in devising -
> and so he searches as the single living cell in the
> beginning must have sought the ghostly creature it
> was to serve. [134]

Returning to Whitehead's suggestion that we should make life in all

of its manifestations the subject matter of education, it is evident that

when we view all of the elements of man's experience as parts of a greater

continua, we will have eliminated the basis of conflict and will be dealing

with a balance of elements which contribute to the total human being. This

in part can be accomplished through the elimination of endless disconnected

detail through the recognition or identification of a few related themes

which emphasize and complement the normal integrative activity of the

mind. Reecntly in elementary and seeondary science edueation there has been a gargantuan effort toward the realization of a more unified presentation of material. Much of the previously contained detail was climinated and a set of themes were chosen to be emphasized. However, all of this effort has been an "in-house" activity and little consideration was given to the total integration of science as a diseipline, into the total educational pieture.

Having established the basie rationale of integrative education, it is now appropriate to eompare some of the assumptions of our present system with the potential redefinition of those assumptions in the new eontext.

Edueation has sought to establish differential eriteria for the generalist and speeialist. However, in most institutions partieularly at a secondary level we tend to offer a series of experiences aimed at the speeialist and required of nearly everyone regardless of individual qualities.

We do this because we have inherited an idea, the essenee of which purports that the mind is a dead instrument in need of training and molding. Whitehead explains this in the following manner:

> With good discipline, it is always possible to pump
> into the minds of a class a certain quantity of inert
> knowledge. You take a textbook and make them
> learn it. The child then knows how to solve a quad-
> ratic equation. But what is the point of teaching a
> child to solve a quadratic equation? There is a
> traditional answer to the question. It runs thus:
> The mind is an instrument, you first sharpen it,
> and then use it; the acquisition of the power of
> solving a quadratic equation is part of the process
> of sharpening the mind. . . But for all its half-
> truth, it embodies a radical error which bids fair
> to stifle the genius of the modern world. . . The
> analogy is that the mind is a dead instrument. . .
> I have no hesitation in denouncing it as one of the
> most fatal, erroneous, and dangerous conceptions
> ever introduced into the theory of education. The
> mind is never passive, it is in perpetual activity,
> delicate, receptive, responsive to stimulus."[135]

The potential realization of each individual's style of speciality is

inhibited when we attempt to forge through the application of specific

knowledge, the mind of an individual into a specific shape. If the quadratic

equation relates to larger, more general shcemes of units then it may be

important for everyone. If, on the other hand, it is restricted in its

relation to other things, then it becomes material for the specialist. What

is suggested rather through integrative education is that we attempt to

isolate those commonalities or unifying schemes which are common to all

disciplines and then regard these as important concepts to be experienced
by everyone. We then must offer possibilities for specialist education which
are complementary to individuals, for it is in specializing that the
individual's ultimate sense of personal style is expressed.

Another limiting characteristic of our present system is its
vertical and horizontal organization, which is based on administrative
convenience and scholarly distinctions between the disciplines. I refer here
to the organization of grades through which a student progresses and the
division of knowledge into separate and unrelated subjects. We have begun
to recognize the limitations of the grade system by instituting a system
which allows a more individually suited progression. We have, however,
given very little thought and emphasis to the distinctions made between the
parts of the greater body of knowledge; that is, we still maintain many
distinctions by the way of the disciplines. Whitehead draws an historical
analysis in the following words:

> The fault of the older education was unrhythmic
> concentration on a single undifferentiated subject.
> our modern system, with its insistence on pre-
> liminary general education, and its easy toleration
> of the analysis of knowledge into distinct subjects,
> is an equally unrythmic collection of distracting
> scraps.[136]

> I am pleading that we shall endeavor to weave in
> the learner's mind a harmony of patterns, by
> coordinating the various elements of instruction
> into subordinate cycles each of intrinsic worth for
> the immediate apprehension of the pupil. We must
> garner our crops each in its due season. [137]

It is interesting to note that this observation was written in the

1920's and seems equally valid today. This artificial disconnection of

subjects combined with little attention to a greater harmony of patterns

and a great deal of attention to endless detail makes of knowledge a mass

of isolated facts to be half learned. In fact, as Whitehead states, there is

actually "a paralysis of thought induced in pupils by the aimless accumulation

of precise knowledge, inert and unutilized,"[138] for indeed the knowledge

taught through many of the disciplines is precise and inert because it

cannot be utilized. Whitehead is suggesting that we might concern our-

selves with unifying, at each particular level, the knowledge and processes

that are dealt with. He further suggests that there must be considerable

thought given to the vertical organization of knowledge throughout a

student's experience.

From this general introduction of the organizing activity of the mind

to the unity of knowledge to some of the limitations of our present system,

we can proceed with a discussion of the general qualities of integrative

education, suggesting possible directions and emphases. The development

of a legitimate curriculum or the final actualization of this is an extensive

undertaking, and is beyond the scope and experience of this writer.

In general, integration as a concept:

> Is used to refer to a state and a process. As a
> state it implies the attainment of perfection,
> completion, or wholeness. Integration in this
> sense is a goal toward which every individual and
> social group presumably should strive. As a
> process, however, integration refers to the means
> to achieve this state of perfection. Integration
> as a process may also refer to the maintenance
> of a dynamic equilibrium in a changing environ-
> ment. Finally, integration can also refer to the
> manner in which interdependent parts of a larger
> whole relate or are brought into harmonious
> relation with each other. [139]

Historically, the process of integration has taken one of a combina-

tion of these three types: (a) those developing interrelationships among

existing courses, (b) those involving reorganization of content into more

general courses, and (c) those involving the centering of content about

vital problems of society or of the student.[140] In order to institute any

one of the above types of integration in a curriculum there must be

consideration of these four elements: (a) there must be an agreement on

objectives, (b) there must be selection of a set of experiences likely to achieve these objectives, (c) there must be organization of the experiences to achieve the greatest progress in regard to objectives, (d) finally, there must be evaluation to determine the extent to which previous decisions are well advised.[141]

It is obvious that the work of developing a curriculum which emphasizes integrative educational experiences must be done by committees of men and women who possess many special gifts. Each must have a firm grasp of his respective discipline. This grasp must include a perspective which will allow the sanctity and limits of that discipline to be questioned in order that it be expanded beyond its present limitations. They must also be able to readily admit the extent of their own prejudices and limited understandings. They must come to agreement on the nature of man in general.[142]

Many of the issues discussed here will have to be expanded and given a much more careful consideration. There are also many important aspects that have not been considered which will influence the form and direction of the integrative curriculum. Some of these will come from psychological, sociological and anthropological research. Men and women such as Piaget and his stages of mental growth, and Margaret

Mead and the implications of her social-anthropological work on the nature

of man and his societies, Whitehead and his suggestion that the process

of education follow a rhythm or cycle of romance, precision, and

generalization which he supports as being complementary to the way in

which we learn, and many more must be considered as having a great deal

to contribute. Also much of the work that has been done in each area of

human endeavor will enventually have to be brought into perspective

with the greater whole.

This author is convinced that only after a careful consideration of

the greater unities of all experience will we come to a balance with regard

to all of the potential parts of the whole. The individual human being and

his development must be considered as the primary reason for education's

existence. The statement, "I am," is in many ways today not being said

as a statement, but is rather, being phrased as a question. This can then

be considered to be the basic question of our age.

"I" am many things and "I" must be given the opportunity to become

those things.

CHAPTER FOUR

SOME RECENT STUDIES ON THE RESEARCH FINDINGS OF

CREATIVITY

Introduction

Research studies of various kinds (experimental, questionnaire, and
analysis of biographic and autobiographic materials) have been examined and
are presented in this section of the thesis with significant implications which
they suggest for a philosophy of creativity to serve as a background for a
procedure to enhance creative performance and behavior in the classroom.

These studies have been grouped under five subsections: (1) creativity
studies – testing inherent abilities of creative persons: J. P. Guilford,
W. Lambert Brittain, John E. Drevdahl, J. W. Getzels and P. W. Jackson,
(2) creativity studies – subjective and overt behavior during the creative
process: Manual Barkan and Jerome Hausman; Robert Burkhart and Coretta
Mitchell, (3) implications for creativity – studies of the characteristics of
artistically talented persons: Margaret Tripplett, Catherine Cox, Norman
C. Meier, Carolyn Tiebout and Havelock Ellis, (4) creativity studies – the
stages of creative thought: Rosamond Harding, Eliot Dole Hutchinson,
Catherine Patrick, Jan E. Eindhoven and W. Edgar Vinacke, (5) implications

for creativity - studies of the emotional climate which fosters creative

behavior: Ronald Lippitt, Ralph K. White and Wally Reichenberg-Hackett.

One Word of Caution

Given the existing array of ideas about creativity and the absence

of "theoretical unity," it is not the least surprising that there exists a

number of tests, all purporting to be measures of "creativity," but differing

in a number of ways. Each instrument mirrors the particular set of beliefs

and preconceptions of its developer concerning the nature of creativity.

Sadly, the theoretical rationale for such tests is often not even sufficient to

allow systematic tests of differential predictions.[1]

Another very controversial issue, which is related to theoretical

problems and has probably prevented educators from achieving some closure

in programming for the classroom, is a problem which we will refer to as

dimensionality. (In measurement terms, the issue is more properly referred

to as convergent and discriminant validation.[2] Simply stated, the dimension-

ality issue involves the degree to which measures of creativity or divergent

thinking are empirically distinguishable from other more traditional measures

of cognitive processes such as intelligence and academic achievement. The

development of defensible measures of creativity would seem to depend on

constructing a series of tasks which share substantial variance with each

other, but are at the same time generally independent of other traditional

cognitive measures. The concern for this problem is reflected in the disproportionate amount of research that has been devoted to the creativity-intelligence distinction and our inability to arrive upon a generally acceptable operational definition. (Taylor, 1959 for example, has listed over one hundred definitions which have added to the semantic fog that envelops the study of creativity.) A great deal of the concern for the dimensionality issue, and the lack of resolution of this issue, stem from the problem of measurement and the adequacy of currently available tests of creativity and the divergent-thinking processes.

A number of research studies (Ripple and May, 1962; Thorndike, 1963, and Wallach and Kogan, 1965) have cautioned against the uncritical acceptance of the Getzels and Jackson (1962) hypothesis which suggested that creativity and intelligence were unrelated. In a historical perspective upon the measurement of cognitive processes, Ward (1963) called attention to aspects of Binet's and Wechsler's classic definitions of intelligence, parts of which sould surprisingly similar to many present-day definitions of creativity. Others (Guilford, 1967; Wallach, in press) have made a similar case for the relationship between creativity and the classic definitions of problem-solving. As a result of the lack of a unified, widely-accepted theory of creativity, then educators have been confronted with several difficulties: establishing a useful operational definition, understanding the implications of differences among

tests and test administration procedures, and understanding the relationships of creativity to other human abilities.

The second general problem has been described as the <u>criterion problem</u>. What criteria exist against which the validity of creativity tests may be assessed? Although this problem has not generated as much concern as the creativity-intelligence controversy, its interrelatedness to all other aspects of the study of creativity demands that it be given high priority among areas in which research is needed.

Many researchers have tended, on the one hand, to view creativity entirely as a cognitive process, or, on the other hand, entirely as a complex set of personality traits. The former have tended to ignore the possibility that there may be an affective component to creativity, and the latter have tended to overlook the importance of underlying cognitive abilities in creative problem-solving. It is most likely, however, that a valid assessment procedure would, of necessity, consider both components. In the meantime, we must be very cautious about our willingness to make inferences about "creativity" from measures which are distinctly cognitive, particularly the divergent-thinking-type tests. This does not imply rejection of the usefulness of tests of divergent thinking. It may be true that some of the critics have been too severe (e.g., Covington, 1968; Wallach, 1968). While divergent- thinking measures certainly do not tell the entire story about creativity, it is quite

likely that these measures do assess intellectual abilities which play an important role in creativity. If creativity is viewed as a complex kind of human problem solving (in which case perhaps the term "creative problem solving" would be preferable), divergent thinking may be a necessary, although not a sufficient component.[3]

Some of these studies were made by art educators, others by psychologists. Some are studies of "creativity" in general, some of creativity in art; several relate to differences of personality or performance between artist and non-artist, and a few concern the condition which foster art expression of children. Findings from these studies are presented here for the contribution which they make to an understanding of how the creative performance of the general student might be implemented, and developed.

Testing Inherent Abilities of Creative Persons

J. P. Guilford, W. Lambert Brittain, John E. Drevdahl, J. W. Getzels and P. W. Jackson each assumed the term "creativity" refers to inherent abilities of creative persons. Each likewise assumed that persons might be tested for creativity. However, each of these researchers started out with a different basic assumption concerning the nature of the creative person.

Findings From the Studies

In Guilford's study "creative persons" referred to air cadets and student officers. Their creative behavior consisted of responding to

tests which were designed to measure thinking abilities hypothesized

to be responsible for "creativity." An attempt to isolate some of the

factors which relate to creative thinking as they differ from cognition

and intellect was pioneered by Guilford. With the means of multivariate

methods of factor analysis, Guilford and his associates demonstrated

certain intellectual abilities to be related to creative production.

Among these factors mentioned by Guilford are "fluency of

thinking," "flexibility of thinking," "sensitivity to problems," and

"figural and semantic elaboration."[4] Using students rated highly

creative in the visual arts, Lowenfeld and Beittel also identified

essentially the same factors, or what they termed the five attributes –

fluency, flexibility, redefinition, sensitivity to problems, and originality,

all incidentally, identical to those reported by Guilford.[5] Guilford has

collectively defined these factors as "divergent" thinking, a mode of

productive thinking which tends toward the novel or unknown. It is this

novel output which he considered the essence of creative performance:

As compared to convergent thinking which is oriented toward the known or

"right" solution, divergent thinking occurs where a problem has yet to

be defined or discovered, and where no set way of solving it exists.

Although the data is far from conclusive, the cited research indicates that certain cognitive characteristics, "idiosyncrasies" of the creative person's mental functioning contributes to the originality or difference of the end products of his thinking. This developmental process is characterized by a certain intellectual freedom that is not goal-bound, controlled or channeled, but rather seeks the "unknown" and "confusion." It also points up a greater capacity and tolerance for flexibility, complexity and openness.

Guilford, in emphasizing that in the teaching of creative thinking some important qualifications must be considered; stated that:

> First, there is not just one creative production ability or function; there are twenty-four of them, all more or less independent. This is not just theory; twenty-three of them have been demonstrated by factor analysis. Each person is probably uneven with respect to his skills in those different modes of intellectual functioning. Furthermore, the divergent production functions are not the only ones that make significant contributions to creative output.[6]

This statement is even more true when we broaden our interest of divergent production to problem solving, as we not only have a right to do but an actual obligation to do.

We ean reward a student for wrestling with a problem, even when we are sure he is on the wrong traek. Sinee what is most erueial today, this author believes is new knowledge dealing with the whole man, whose welfare is interlocked with that of his fellows, we ean grade, to a far greater extent than imagined, on the basis of there being no right and no wrong answers.

In Brittain's study "creative persons" referred to art education students judged by the faeulty to be more creative than other art education students. The definition of the ereative person by whieh these students were presumably judged was: [Brittain did not state whether or not the faculty was instrueted to keep this definition in mind.]

> He would have rieh experiences; he would interaet freely with his environment though his life on the surfaee may appear no more "romantic" than any other. He can use his experienees in new situations, is quick to see relationships, and ean assemble many pertinent ideas to focus on a problem. He is flexible in his approach to new ideas, and ean easily handle numerous thoughts at once. He has an abundance of energy which he voluntarily uses to alter displeasing situations and to invent, write, paint, or otherwise produce. He has a eertain sensitivity to his environment, seeing differenees and similarities where others miss them. He can think abstraetly and his thoughts are often unusual or novel; sometimes he seems intuitive and has insight into problems or situations. He is usually a well-adjusted and happy person.[7]

Brittain found the test items which differentiated "creative" from "non-creative persons" to be:

> The grouping together of household objects, solving a problem, assembling small designs to form a large given one, selecting a paper solid from its pattern, putting dissimilar words in logical relationship, making letters from two given lines, arranging geometric shapes according to their similarities, and listing a number of ideas on a topic. [8]

In Drevdahl's study "creative persons" referred to "a high level population – graduate and advanced undergraduate students from several of the science and art departments rated on a seven point scale of creativity by the faculty." [9]   The definition of creativity according to which these students were rated is as follows:

> Creativity is the capacity of persons to produce compositions, products, or ideas of any sort which are essentially new and novel, and previously unknown to the producer. It can be imaginative activity, or thought synthesis, where the product is not a mere summation. It may involve the forming of new patterns and combinations of information derived from past experience, and the transplanting of old relationships to new situations and may involve the generation of new correlates. It must be purposeful or goal directed, not mere idle fantasy – although it need not have immediate practical application or be a perfect and complete

> product. It may take the form of an artistic,
> literary or scientific production or may be of
> a procedural or methodological nature.[10]

Drevdahl, using the tests devised by Guilford and others formulated by

Cattell, found Guilford's factor of originality (the ability to produce un-

common, unusual and clever responses) to be the only distinguishing

item from the Guilford tests to differentiate the creative from the non-

creative group. Drevdahl reported finding, in addition, a low, not

statistically-significant, correlation of the two factors: word fluency and

adaptive flexibility, "the ability to change set or approach to meet new

requirements imposed by changing conditions or problems. . . the

direction of change being dictated by the situation or problem demanding

solution."[11] In addition, he found the creative students to be more with-

drawn and quiet than the non-creative, and the art students to be more

radical and self-sufficient than the science students.[12]

Getzels and Jackson, in a study of high I.Q. adolescents versus

adolescents high in "creativity" (as measured on tests adapted from those

devised by Guilford) found the two groups to be equally superior to other

groups in school achievement but to differ in other ways:[12] (1) teachers

preferred the high I.Q. students over the "creative students,

(2) "creative" students valued a sense of humor, emotional stability, and a wide range of interests more highly than marks, I. Q., pep and energy, character and goal-directedness, (3) "creative" children did not aspire to "success" in adult life as much as high I. Q. children, (4) high I. Q. children hold self- ideas which they feel teachers will approve while highly "creative" children show a negative correlation toward teachers approval. Getzels and Jackson conclude that standard I. Q. tests fail to measure giftedness other than of an academic nature. The implication is that children who measure high on I. Q. tests tend to conform or do "convergent thinking" (find the right answer) while children who measure high in "creative ability" tend not to conform but do "divergent thinking" (find other answers - and perhaps not flatter teacher egos so well).[14]

Getzels and Jackson reported that on the California Psychological Inventory, highly divergent thinking and creative architects emerged as self-confident, aggressive, flexible, self-accepting, who were little concerned with social restraints or other opinions and strongly motivated to achieve primarily in those situations where independent thought and action, rather than conformity, were required.

Other measuring instruments revealed their perceptiveness, intuitiveness, and introversion, having indicated little desire to be included in group activities, which attested again to their introverted nature; they demonstrated "marked social poise, dominance, and a desire to control others when they did interact."[15]   Results from studies in other, though related fields, tend to support these observations.

Jackson and Guba have suggested that teachers with less knowledge of their subject in addition to scoring lower on teaching attitudes, also tend to be more intraceptive, that is, more introspective and analytic about the motives, feelings, and behavior of others. One is led to suspect that teachers who do not have a comprehensive grasp of their subject generalize their uncertainty and anxiety to their teaching attitudes and interpersonal relationships. This syndrome is quite the opposite of that of the high scorers on the achievement test who tended to be less intraceptive and have high scores on the MTAI. These findings suggest that experienced teachers who have more competence in their field have more self-confidence and self-respect. They consequently have the courage to be different and to stand alone, if necessary.[16]

Subjective and Overt Behavior During the Creative Process

Research studies by Manuel Barkan and Jerome Hausman, Robert

Burkhart and Moretta Mitchell have focused on the internal experience

and overt behavior of subjects during the creative process as a means

for the study of creativity. Feelings of involvement or automatism as

noted by Goethe and Nietzsche,[17] were as though the person feels as if some

being outside himself is guiding or directing his expression are extreme

examples of the feelings which research on the whole has tended to

neglect. Until the studies of Barkan and Hausman, Burkhart and

Mitchell appeared summaries of personal statements of creative persons

such as that of Brewster Ghiselin had heretofore represented the only

type of research which had dealt with this phenomenon. [18]

Findings From the Studies

In two pilot studies designed to explore hypotheses for the study

of creative behavior Barkan and Hausman reported the basic assumption

that, "personal involvement is an integral part of creative behavior, and

insight into its manifestations would prove valuable in advancing the

study of creative experience."[19] From the first study the researchers

reported:

The distinction between "private" and "official"
task, as identified in the study of children,
reveals dimensions for viewing creative behavior
in the context of a given task. Suggested is the
hypothesis that only a situation which permits a
person to see and accept a role for himself can
elicit creative behavior for him.[20]

Of the second study Barkan and Hausman wrote:

From the study of creative students, we hypothe-
size that people near either extreme of the
percept-concept bound continuum are not creative.
At the concept-bound extreme, we have an
individual who shuts out data that do not fit his
expectations; at the percept-bound extreme,
we have an individual who remains so open to
possibilities that he delays decision making and
action.

A further hypothesis would then be that a creative
person is sensitive to a broad range of possibilities,
but he is also aware of the necessity for decision
making and action. He is able to tolerate the
ambiguities and uncertainties in weighting alterna-
tives, and is able to focus on an alternative he has
selected for action.[21]

Burkhart reported on the relationship of self-concept of high school

art students to their degree of creativeness as revealed in individuality

of art products. Burkhart based his study of an analysis of "a student's

art attitudes during the time in which he is working, rather than in terms

of a general 'creative' personality structure."[22]   He remarked,

"People undoubtedly vary from activity to activity in the degree to which

they feel and think in a "creative" manner."[23]

By dividing the groups into three levels of degrees of creativeness
(as determined by number and quality of art products when rated by
independent judges) Burkhart was able to compare responses of the
various groups to a check list of adjectives denoting possible feelings
of the students concerning their abilities and their aspirations. Of the
high or creative group Burkhart reported:

> It is interesting to note that according to these
> lists of words involvement is one of the main
> qualities which distinguished the outstanding
> student's experiences from those of other
> students. Another factor flexibility appears
> to characterize the experience of the oustanding
> student and helps to distinguish him from others.
> These two main distinctions may relate to a
> third which is self-discovery or self-seeking
> during the creative process. Students in this group
> evidentally wish to work in an "imaginative,"
> "enthusiastic," "organized," and "thoughtful"
> manner. Their mental and emotional attitude during
> work appears to be a constructive and healthy one
> which emphasizes "involvement," "flexibility" and
> "self-seeking."[24]

Students in the low or least creative group indicate they felt
"stiff" while working.[25] Burkhart commented, "the low group suffers
from a pronounced lack of self confidence in their abilities.[26] The
creative, diverse, liberal, non-authoritarian student studied by Burkhart

came from mother-dominated homes, which, incidentally, he interpreted as being more permissive because of divided parental authority.[27]

It may be interesting to note that Robert Burkhart described his Inquiry Process Grid, a matrix of fifteen areas to help teachers increase the range within which they can present material to children. Going beyond the typical "what" and "when" type of questioning, he presented such strategies as conceptual (what), qualitative (which), procedural (how), suppositional (if/then), and evaluative (why). "Research has continually shown that teachers spend eighty per cent of their time in the areas of perceiving, discriminating, comprehending, analyzing, and influencing. Such important areas as valuing, synthesizing, and doing are often ignored."[28]   By using the Inquiry Process Grid, designed to deal with sensory, affective, and cognitive awareness, both teachers and students can experience greater fluency in ideas, clarity in relationships, flexibility in methods, imagination in viewpoints, and adequacy in rationale.

Coretta Mitchell, studying the relationships between attitudes about art experience and behavior in art activity, selected three behavioral principles for use as criteria for evaluating what the students said and

did in their art activities: (1) involvement, (2) flexibility and, (3) aesthetic forming. Mitchell commented:

> These principles are not conceived as a definition
> of creativity, nor as exclusive components of
> creative behavior. No single principle is taken
> as an index of creative behavior, and no degree
> of manifestation is taken to imply a degree of
> "creativity." Other components of creative
> behavior were considered for inclusion in the
> study, but were eliminated because of difficulties
> encountered in differentiating them from other
> components. [29]

Mitchell reported that no significant relationships existed between students' expressed attitudes about their art experience and their behavior as seen in their art products. However, an important finding was the presence of a positive relationship between flexibility, involvement, and aesthetic forming. [30] Mitchell wrote, "students who rated at given degrees on 'flexibility' tended to rate at the same degrees on 'involvement' and 'aesthetic forming'." [31]

The studies of Barkan and Hausman, of Burkhart and of Mitchell which have been reviewed above make no particular attempt to infer that inner feelings of involvement, flexibility, self-confidence, and self-seeking bear a causal relationship to aesthetic quality in the product but are merely

concomitant phenomena. The establishment of a causal relationship remains for some future research.

Characteristics of Artistically Talented Persons

Evidence concerning characteristics of artists and artistically talented children as well as influences in their lives which helped to produce these qualities comes from the research of Margaret Tripplett, Catherine Cox, Norman C. Meier, Carolyn Tiebout, and Havelock Ellis.

Findings from the Studies

Tipplett found, "an unusual tendency in artists to retain visual images,"[32] and Meier concluded that artists differ from non-artists in "perceptual facility."[33] Tiebout observed that artistically superior children as compared with the artistically inferior show superior performance in "completeness and accuracy of observation. . . in recall of observed material after various time intervals. . . in form and feature discrimination. . . and in uniqueness of imaginal construction of objects and situations from meaningless forms,"[34] all visual abilities concerning either perception or visual imagery, commented that "persistence and concentration of energies in carrying out work is a characteristics of the potential artist."[35] Cox found "persistence of motive [among artists] lower than other eminent men but higher than the common average."[36] Meier concluded artists differ from

non-artists in "energy output and preservation in its discharge."[37]

These same investigators agreed in their findings that artists tend to possess average or better than average intelligence. Tripplett noted that "none had less than average intelligence."[38] Cox concluded that artists studied had "intelligence quotients lower than other eminent men but higher than the common average."[39]

Both Cox and Meier commented on aesthetic powers of artists as differentiating characteristics. Cox found artists "exceed eminent men as well as the common average in degree of aesthetic feeling."[40] Meier concluded artists and children who have art ability possess "aesthetic intelligence"[41] and aesthetic judgment."[42]

Conclusions from the research of both Meier and Ellis point to heredity as a factor in art ability. Meier concluded "manual skill or craftsman ability"[43] is one of the characteristics of artists and is due to "constitutional stock inheritance."[44] Ellis noted a predominance of "craftsman heredity"[45] in the group of painters studied.

Other characteristics of artists as found in the research of Cox include the fact that they exceed eminent men as well as the common average in: "originality of ideas, the degree to which they work with distant objects in view, belief in their own powers, and a desire to excell."[46]

In another study, Birch[47] discussed reproductive thinking (divergent thinking) and non-productive or transfer of training (convergent thinking) as it effects learning. According to Birch, productive thinking is not merely the process of arriving at a solution through the direct application of previous learning. In productive thinking past experience is repatterned and restructured to meet current demands, and is thus the counterpart of reasoning, as Meier has defined that term.[48]

Birch continued to state that the background of past learning represents an essential repertoire of behavior which must be available for restructuring when new situational demands develop. On the other hand, productive thinking is impossible if the individual is chained to the past.

Tripplett found a number of additional characteristics of artists. She observed, "emotional instability marks few of the artists under consideration."[49] Rather, "extra-ordinary powers of concentration

and perseverance, even in the fact of obstacles, are more common." [50]

Artists tend to make "careful observations," [51] and to take "great

pleasure in drawing." [52] She found they "passed early from the haptic

or schematic stage to a visual type of representation" [53] and they tended

to be "devoted to music, poetry, literature, and theater."[54]

Additional characteristics of artists indicating specific influences

in their early lives were revealed in Tripplett's study. She reported,

"intense interest in nature and other visual surroundings characterizes

the early years of most artists," [55] and the presence of an unusual

excitement caused by seeing the work of some particular artist. [56]

Other influences in the lives of artists which Tripplett found were:

1. Travel

2. Opportunities of seeing pictures, especially
   original works.

3. The influence of people: Parents, relatives,
   or family friends who were professionals or
   amateurs in one of the arts and contemporaries
   of similar artistic interests.

4. Contact with ideas above and beyond the common-
   place.

5. Sympathetic encouragement by parents or other
   relatives. Financial aid from parents for art
   study plus self-employment or part-time work.

6. Study either in art schools or with an artist.[57]

Concerning the education of the artists studied Tripplett reported that:

1. Some found mature styles through rebellion against methods and techniques first learned – others developed through growth based on their study.

2. Few were wholly self-taught, but the process of self-education was found to be an important factor in their development.

3. One third had a college education; more than half the remainder had a high school education. Very few had a meager education.[58]

The Stages of Creative Thought

Theoretical formulations of the "stages of creative thought" are to be found in statements by Herman von Helmholtz, Henri Poincare, and Graham Wallas. Rosamond Harding, Eliot Dole Hutchinson, Catherine Patrick, Jan E. Eindhoven and W. Edgar Vinacks have conducted research pertaining to the presence and nature of these stages.

Although geniuses in various fields of human affairs have always been recognized and usually highly valued; it was not until Galton's studies of men of genius (1869) that the eyes of natural science were turned upon

them. Galton did not seriously attempt to understand the mental operations by which distinguished leaders produce their novel ideas, but rather he tried to understand the hereditary determination of creative performances. His study became a classic, but he failed to reach uncontestable conclusions.

While psychologists were doing very little to attempt to understand creative people and creative production, others, not willing to wait for enlightenment from that source, proceeded to do something about the matter. They recorded instances of discoveries in science, literary productions, and other examples of output from recognized creative geniuses. Samples of this kind of investigation may be seen in the books of Wallas (1926, 1945), Hadamard (1945), and Ghiselin (1952). Rossman (1931) made a more systematic study of inventors, utilizing a questionnaire approach.

A few, but very few, investigators took seriously the creative steps proposed by Wallas - preparation, incubation, illumination, and elaboration. One of them was the psychologist Patrick (1935, 1937, 1938, 1941), who attempted to determine by experiments, mostly within the psychological laboratory, whether the Wallas processes could be identified, whether they run their courses in the given order, and what roles each of

them play in a complete creative event. She found the process concepts

relevant, but that the steps show many departures from the 1-2-3-4 order

given by Wallas. The latter conclusion has been supported by similar

findings of Eindhoven and Vinacke (1952).

Sources of Theories

Theories of the stages of creative thought stem from remarks made

by Helmholtz, the physiologist and physicist, of the process whereby his

creative ideas came and from the mathematician, Poincare. These ideas

were codified and named by Wallas as the stages of creative thought

operating in scientific and artistic creative thought alike. At a dinner held

in honor of his seventieth birthday in 1896 Helmholtz in speaking of the

emergence of his creative ideas said:

> I must say that those fields of work have become
> ever more agreeable to me in which one need not
> depend on lucky accidents and "happy thoughts."
> But as I have found myself pretty often in the un-
> comfortable position of having to wait for happy
> thoughts, the experience I have gained on the
> question, when and where they come to me, may
> perhaps be useful to others. Often enough they
> crept quietly into my thinking without my suspecting
> their importance at first; and then it was often
> impossible later on to recall under what circum-
> stances they had come; they were simply there
> and that was all I could say. But in other cases

they arrived suddenly, without any effort on my
part, like an inspiration. So far as my experience
goes, they never came to a fatigued brain and
never at the writing desk. It was always necessary,
first of all that I should have turned my problem
over on all sides to such an extent that I had all
its angles and complexities "in my head" and could
run through them freely without writing. To
bring the matter to that point is usually impossible
without long preliminary labor. Then, after the
fatigue resulting from this labor had passed away,
there must come an hour of complete physical
freshness and quiet well-being, before the good
ideas arrived. Often they were there in the
morning when I awoke, just according to Goethe's
oft-cited verses, and as Gauss also once noted.
But they liked specially to make their appearance
while I was taking an easy walk over wooded hills
in sunny weather. The smallest amount of alcohol
seemed to frighten them away. [59]

In 1908 Poincare published notes on the circumstances of his

mathematical discoveries. He observed:

The part played by unconscious work in mathe-
matical discovery seems to me indisputable. . .
Often when a man is working at a difficult question,
he accomplishes nothing the first time he sets to
work. Then he takes more or less of a rest, and
sits down at his table. During the first half hour
he still finds nothing, and then all at once the
decisive idea presents itself to his mind. We
might say that the conscious work proved more
fruitful because it was interrupted and the rest
restored force and freshness to the mind. But
it is more probable that the rest was occupied
with unconscious work. . . There is another

remark to be made regarding the conditions of
this unconscious . work, which is, that it is not
possible, or in any case not fruitful, unless it is
first preceded and then followed by a period of
conscious work. These sudden inspirations are
never produced. . . except after some days of
voluntary efforts which appeared absolutely
fruitless. . . The necessity for the second period
of conscious work can be even more readily
understood. It is necessary to work out the
results of the inspiration. . . but above all,
it is necessary to verify them. [60]

Wallas, in 1926, named the three stages of creative thought noted

by Helmholtz and the fourth suggested by Poincare as <u>Preparation</u>,

<u>Incubation</u> and <u>Verification.</u> He writes:

> Helmholtz. . . gives us three stages in the
> formation of a new thought. The first in time
> I shall call Preparation, the stage during which
> the problem was "investigated". . . in all
> directions; the second is the stage during which
> he was not consciously thinking about the problem,
> which I shall call Incubation; the third, consisting
> of the appearance of the "happy idea" together with
> the psychological events which immediately
> preceded and accompanied that appearance, I shall
> call Illumination.
>
> And I shall add a fourth stage, of Verification,
> which Helmholtz does not. . . mention. Henri
> Poincare. . . in the book <u>Science and Method.</u> . .
> describes in vivid detail the successive stages
> of two of his great mathematical discoveries.[61]

In this passage Wallas does not specifically state that the naming of the fourth stage comes from Poincare's passage quoted above, but the association of it is clearly there by his allusion to Poincare's working methods. Five pages later he returns to the idea, saying:

> The fourth stage, of Verification, closely
> resembles the first stage, of Preparation.
> It is normally, as Poincare point out, fully
> conscious, and men have worked out much
> of the same series of mathematical and
> logical rules for controlling Verification by
> conscious effort as those which are used in
> the control of Preparation.[62]

The Incubation stage, Wallas says, covers two different things: the negative fact that during this stage no voluntary or conscious thought is given to a particular problem and the positive fact that during this period a series of unconscious and involuntary mental processes possibly occur. He suggests that the two approaches to the first fact may be used:

> The period of abstention may be spent either
> in conscious mental work. The first kind of
> Incubation economizes time, and is therefore
> often the better. We can often get more result
> in the same time by beginning several problems
> in succession, and voluntarily leaving them
> unfinished while we turn to others, than by
> finishing our work on each problem at one
> sitting.[63]

This approach appears to be used by a number of visual artists, notably

Picasso who works on one canvas in the morning and another in the

afternoon. But Wallas hastens to add that in the more difficult forms of

creative thought such as the making of a scientific discovery, the writing

of a poem or the formulation of an important political decision, the mind

should be kept quite free so that its full energy may be devoted to the free

working of unconscious and partly conscious processes.[64]

Wallas attributes the flash of Illumination to association chains

which rise and fall at the unconscious or fringe conscious level. He

remarks, "I find it convenient to use the term "intimation" for that

moment in the Illumination stage when our fringe-consciousness of an

association-train is in the state of rising consciousness which indicates that

the fully conscious flash of success is coming.[65]

Wallas conceives of the stages of Incubation and Illumination as

being largely unconscious while Preparation and Verification are definitely

conscious stages. He writes:

> If a modern psychologists compares Imagination
> with Reason, he will do so in order to indicate
> different stages and purposes in associative
> thought, emphasizing by the work Imagination,
> the stage of Illumination, and that awareness of
> the less-conscious fringe of thought which I have

called Intimation, combined with the purpose of
artistic creation; and by the word Reason em-
phasizing the stages which I have called
Preparation and Verification, and the Purpose
of arriving at conclusions on which it is safe
to act.[66]

That the four stages in creative thought hold for artistic creation as well

as scientific creativeness in Wallas' opinion is evident from the following

stagement: "even when success in thought means the creation of something

felt to be beautiful and true rather than the solution of a prescribed problem,

the four stages of Preparation, Incubation, Illumination, and the Verification

of the final result can generally be distinguished from each other.[67]

Wallas recommends the recording of fringe ideas whenever and

wherever they occur as a procedure for the facilitation of creative thoughts.[68]

Findings from the Studies

Harding confirmed these ideas in a research study based on the

examination and analysis of biographical and autobiographical writings

concerning the procedures which creative workers use in the creative

process.[69] She concluded:

The main points in the general procedure after
inspiration has taken place. . . are as follows:-
(i) The ideas occuring when in the glow of in-
spiration are (a) briefly noted down and (b) checked.
(ii) (a) The subject is worked upon immediately,
the thinker being wholly absorbed by it to the
exclusion for the time being of everything else, so
(b) The subject is set aside to develop and is then
worked upon after an interval of time has elapsed.
(c) the first draft of the completed work or half of
it perhaps is put aside to "mature" for a while; then
it is again revised before publication. (iii) Working
at two or more subjects concurrently. (iv) Working
up the imagination to the state of vision and some-
times of audition. (v) Trusting to feeling (or
intuition, instinct). (vi) Procedure when baffled
by a problem; namely, laying the work aside and
turning to something else. This process may be
repeated many times during the course of a long work
of any kind.[70]

The following passage from Harding, though not specifically

labeled as a description of the period of the Preparation, ably illustrates

the extended form which it may take. She writes:

The arresting and compelling power of genius
must arise from knowledge: not so much from
knowledge of facts which are learned from books
as from the knowledge that is acquired from
sympathetic observation; and which leads after
a period of years, to a power which pierces to
the heart of a subject with the swiftness and
sureness of divination.[71]

This passage which extends the period of Preparation to all the previous life history of the individual is reminiscent of Murphy's specification that the creative process is ongoing and of Dewey's and Whitehead, is that it constitutes a construction in time.

Harding divides painters into two groups each with special work methods of their own. The first of these, subjective in character, use nature to express their poetic dreams and practice the working method of a study of nature until saturated with its forms and colors then paint from memory. The second type, she says, is more objective and uses methods comparable to those of men of science accurately observing and describing objects in an attempt to explore some new aspect and to paint it with utmost faithfulness.[72]

The conditions most conducive to creativity, according to Harding, consist of freedom and peace of mind, that is, freedom from interruptions which disturb and break the creative mood; of hours conducive to freshness and peace of mind such as morning and evening hours; and of relaxing occasions where idle thoughts can drift through the mind such as lying in bed, walking, and riding in a carriage or train.[73]

Hutchinson's study, based on a questionnaire sent to various types of creative workers, revealed a number of findings similar to those of Harding and to the hypotheses of Wallas.[74] Hutchinson's terminology differs somewhat from that of Wallas although the meanings implied are similar. The stages proposed by Hutchinson are: (a) the stage of preparation, (b) the stage of frustration, of renunciation or recession, (c) the period of insight, and (d) the stage of verification.[75]

The first of these stages is described by Hutchinson as:

> The Stage of preparation or orientation, entailing perhaps years of effort and a lifetime's acquisition of technical skills, all centered upon some problem situation which defines itself as it is pursued, if it is not already explicit.
>
> Large reaches of past experience are called upon; and, as the difficulty of the problem is progressively realized the more logical and systematic methods of solution give way to what is ordinarily called trial-and-error activity, that is, false starts on the basis of inadequate hypotheses or eventually sheer random effort.[76]

The course of adjustment is largely unpredictable, Hutchinson says, partly because past experience cannot be readily isolated and also because of lack of clarity in whether the response is being made to a specific part of the situation, to a relational aspect or to the situation as a whole.

This delay in solution to the problem and various errors which creep into

it cause dissatisfaction and eventual cessation of work on the project which

leads to the second stage, that of frustration.[77]

The stage of frustration, renunciation or recession occurs as a

defence of emotional balance, Hutchinson says, yet in spite of having

ceased to actively work on the insoluble problem rising emotional tone,

restlessness and feelings of inferiority are frequently present as well as

mild psychoneurotic symptoms.[78]   As a counteraction to this state

of tension Hutchinson suggests:

> The necessary relaxation may be deliberately
> planned, practically is enforced because of the
> thinker's nearness to exhaustion. During the
> interval involuntary recall of the work is
> frequent. At any rate it is usually some sudden
> stimulus from this whole field of irrelevance,
> coming into periods of slight mental pre-
> occupation or active muscular exercise, and
> often after periods of rest, which terminates
> the period of psychic tension and precipitates
> the period or moment of insight.[79]

The period of insight is usually unpredictable in time, Hutchinson

observes, but thoroughly determined by the forces of circumstance. He

believes insight to consist of more than the simple reorganization of the

perceptual field as suggested by Gestalt psychologists. Rather, he says,

It is often accompanied by a flood of ideas,
alternative suggestions for solutions appearing
in quick succession, many of which are difficult
to capture owing to the crowded rapidity of
their appearance.

Noteworthy in this experience are the almost
hallucinatory vividness of the ideas appearing
in connection with special sense departments -
visual, auditory, kinesthetic - and the emotional
release involving feelings of exaltation, adequacy,
finality. The period of integrative, restorative,
negating the symptoms of neurotic maladjustment
engendered by the preceding period. The individual
thus sets up a new level of effectiveness and a new
possibility of reaction. Reactions before impossible
now become commonplace; skills before unmastered
now function readily. [80]

Hutchinson, like Wallas, breaks the stage of insight into two component

parts: the intimation that insight is soon to come, a kind of premonition,

and the occasion when insight actually emerges. The latter, he feels, is

usually due to some accidental circumstance which causes the association

which is either the missing link in the required chain of thought or a

catalyzer which calls it to mind. [81]   Since we are basically dealing with

the psychology of temporary frustration, he says, all activities which

tend to relieve this condition will be most fruitful in promoting insight. [82]

Some of the methods he suggests for this purpose are: reading emotional

literature, listening to music, resting and relaxing, engaging in light

physical activity of a more or less repetitive and automatic character, and

by slight mental abstraction and dissociation. [83]

In the stage of verification, according to Hutchinson, elaboration

and evaluation take place. He observes that this period is often character-

ized by secondary and supporting insights. [84] Hutchinson feels that

study of the problem under consideration in art, particularly its main

lines and masses, is vital to its solution. If this has been done the

intuitive method is more likely to reveal comprehensive insights and

relationships. [85]

Of the difference between the uncreative and the creative person

Hutchinson says:

> The uncreative person repeats his mistakes over
> and over, gaining nothing by his experience, relating
> no step to the next. The creative individual, on the
> other hand, owing to the abundance of hypotheses
> which his mind constantly develops and which forms
> the framework for the organization of his thought,
> translates his first errors into tested progression,
> largely by inhibiting useless and repetitive moves
> when they appear and by substituting secondary
> activities in their place. Time, the essential
> element in any integration of mind is thus secured. [86]

Hutchinson attributes the integrative functioning of the mind which

occurs in creative thought and results in insight after spaced work periods

and relxaing alternative preoccupations to a physiological phenomenon of increased neural organization as yet little understood by scientists. He writes:

> On the physiological side we have to admit that
> science is inadequately supplied with information
> except of a general sort. Psychologists have long
> known that, when properly spaced, periods of
> learning are more effective than when continuous. . .
> here we see novelty in ideas appearing after
> intermittent attack upon the problem. Back of
> these facts stands a physiological process which
> is not yet completely understood. I suggest that
> we take the fact of increasing neural organization
> and growth as a phenomenon and deal with it as such
> until we know more about it. It is almost impossible
> to picture what happens in the cortical centers when
> the release of hitherto developed tension. . . frees
> energy. . . not only to make new connections, or
> to innervate a whole new set of responses, but also
> to irradiate into every phase of experience – sensory,
> motor, and emotional. But the fact that in sudden
> insight all these types of experience occur argues for
> the existence of the phenomenon. [87]

In an experimental study of the stages of creative thought and of differences between work procedures of artists and non-artists Patrick statistically verified the existence of the stages of creative thought described as Preparation, Incubation, Illumination, and Verification. [88] The artists in Patrick's study consisted of painters whose work had been

shown in various major museums and of foreign countries. The non-artists

were psychology students, secretaries, teachers, economists, biologists,

nurses, engineers, lawyers, librarians and homemakers - person who

had never done art work except possibly as school assignments. Patrick

asked the subjects to illustrate a poem and answer certain questions

pertaining to thought process which occurred during the work period. [89]

Patrick hypothesized the time required to produce the illustration might

be divided into four equal quarters and that whatever occurred within

those time blocks might constitute evidence for the four stages of creative

thought postulated by Graham Wallas. [90]   The experimenter also

hypothesized evidence of a period of Preparation might be revealed through

changes, of a period of Illumination by the blocking in of general shapes

of objects, of a period of Verification by the number of instances of

revision such as shading an object to clarify it, the addition of detail, or

the critical surveying of the picture as a whole. Of Incubation, which

Wallas identified as the second stage in creative thought, Patrick wrote:

> The presence of incubation was shown if an idea
> occurred early in the report, recurred one or
> more times, the subject meanwhile talking of
> other things, and at last appeared as the chief
> topic of the picture. . . Since this evidence of

incubation is present in over four-fifths of the
cases of both groups, we conclude that incubation
is one of the stages of this type of thought. It
does not differentiate the artists from the non-
artists, but is apparently characteristic of the
process of creative thinking. [91]

Patrick concluded there was experimental evidence for the existence of

each of the other stages in similar fashion. She wrote:

Three-fourths of the thought changes for both
groups occur in the first quarter, which is
evidence of the period of preparation, when
associations are shifting. . . Over two-thirds
of the objects were drawn for the first time
in the second and third quarters, with over
40 per cent in the second quarter, which is
evidence for the period of illumination. . . [92]
Over three-fourths of the instances of revision
occurred in the third and fourth quarters, with
over 40 per cent in the last quarter. [93]

Patrick found the four stages to occur in definite order although they

sometimes overlapped. She said:

First comes preparation, when the subject is
assembling or receiving new ideas.

Incubation follows preparation, although it may
accompany it.

Illumination follows incubation.

The idea, which is obtained in illumination,
must be elaborated and revised during the last
stage of verification.

These four stages, which can be distinguished
in creative thought, may overlap. Incubation
often occurs along with preparation, and revision
may begin during the period of illumination. In
the stage of preparation, while the subject is still
receiving new ideas, one idea may be incubated
and recur from time to time. Also revision of
objects may start before all of them are sketched.[94]

Patrick reported the four stages to be found in the case of non-

artists as well as of artists. She observed, "The reports of the controls

also reveal the four stages of thought."[95]

From questionnaires which the artists completed concerning their

usual work procedures Patrick found the period of incubation to vary

widely from person to person and also to differ in the same person from

situation to situation, varying from several days to several years.[96]

Seventy-six per cent reported that some parts of a picture came more

spontaneously than others.[97] Eighty-two per cent sketched in a warm

emotional mood while 18 per cent worked in a detached objective manner.[98]

Seventy-two per cent reported they did not have regular hours for work.[99]

In addition to finding the four stages of creative thought to be

present in the working methods of artists and non-artists Patrick found

other similarities between these two groups. These similarities were:

time taken to draw pictures, number of minutes spent in each stage,

beginning at the left side of the paper, producing balanced pictures,

locating the 'center of interest' on the right. One half of each group drew

the background first and one half the foreground. [100]

Differences between the groups consisted primarily of techniques

and ability to select and emphasize. Patrick commented:

> The fact that the artists tend to be dominated
> more by the conventions of art is brought out
> by the data of this experiment. They follow
> the techniques of art more closely as seen in
> their more frequent use of perspective, shading,
> shadows, balance, and the development of
> forms. The artist builds up the "center of
> interest" more, has better composition, and
> fewer vacant and poorly integrated areas. He
> selects and eliminates a variety of detail as the
> control does not.
>
> The artists interpreted the poem differently than
> the controls and had a different range of associa-
> tions, as seen in the objects which they drew. . .
> the artists attempted to portray the subjective
> element, as a mood, more often. . . As a whole,
> it can be said that the controls depict the practical
> features of a everyday life. . . while the artists
> deal more with the less practical.
>
> The fact that the artists have a wider imagination
> is also brought out by the fact that they tend to go
> further from the picture than the controls. . . The
> work of the artist has more significance and meaning
> and possesses a unity which is lacking in that of the
> non-artist. [101]

This lack of significance in the work of the non-artist may be due, in part, to his lack of ability to express ideas. Patrick reported that 26 per cent of the non-artists discarded ideas which they were unable to portray while only eight per cent of the artists did. [102]

Eindhoven and Vinacke have criticized Patrick's study of the stages of creative thought for its artificiality in imposing a limited time under laboratory conditions and for formulating conclusions based on advanced notions about creativity. [103] Their study attempted to remedy these faults by allowing subjects to visit the laboratory as many as four different times at their own volition. Other features of this study, which was aimed at securing samples of creation under as spontaneous conditions as possible were: lack of time limitations, choice from several media, non-directive instructions, allowance for individual differences, and allowance for the termination of the work at any time. [104] In addition, behavior of subjects was analyzed in terms of the task rather than according to pre-determined notions about stages of creative thought. [105]

Eindhoven and Vinacke found the creative process to have certain general characteristics regardless of whether the subject is an artist or a non-artist. [106] It appears to require a considerable period of time

during which there is a rather gradual evolution of the finished product. [107]

These investigators found that people differ in the "completeness with which conceptualization of the picture is attained in forethought. . . Some complete the idea in minute detail before sketching; others clarify ideas during sketching." [108]

Artists were found to differ from non-artists in having more control over their creative process. [109] They are more likely to evolve their products gradually than do non-artists. [110] Eindhoven and Vinacke reported, "The artist seems to experiment in early stages and little by little concentrate on certain features which are selected and reorganized for the final product." [111]

Eindhoven and Vinacke did not find four clearly isolatable "stages of creative thought." They reported:

> The 'stages' are not stages at all, but processes
> which occur during creation. They blend and go
> along concurrently. In the thought (preparation)
> before the sketch, forethought of the sketch
> (illumination) may long have been complete or
> developing. Each sketch in a series is the
> realization of 'sublimal uprushes' into con-
> sciousness (illumination); but if in the process
> of being made or reviewed later material has been
> internalized or learned (preparation) either from
> production or appreciation, this same sketch will
> have served in a 'preparatory' capacity while

manifesting an 'illumination'. Verifications,
besides thoughts (incubation), streams con-
currently with internalization (preparation)
in determining the inadequacies of a sketch held
off for analysis and criticism prior to being
reworked.

Thus it is far more meaningful and in better
agreement with the facts to regard these alleged
'stages' of creativity as aspects, or processes,
of the dynamic pattern into which they are inter-
woven. [112]

The Emotional Climate Which Fosters Creative Behavior

From studies by Ronald Lippitt and Ralph K. White and by Wally
Reichenberg-Hackett come implications for the emotional climate which
fosters creative behavior.

Findings From the Studies

In a study of the "social atmospheres" of children's clubs Lippitt
and White found a relationship between a democratic climate of group
leadership and creative performance by children working in arts and
crafts. The study concerned behavior of boys when subjected to
"authoritarian," "laissez-faire," and "democratic" leadership practices
as they worked with varied craft activities.

Authoritarian leadership was defined as an atmosphere in which all policy was determined by the adult leader of the group. Techniques and activities were dictated by the leader one at a time so that understanding of future action remained uncertain and behavior became dependent. Praise and criticism in this climate was largely of a "personal" nature; work companions were chosen and dictated by the leader; and he tended to remain aloof from the group except when demonstrating.

In this experiment, laissez-faire leadership consisted of complete freedom for the group or individuals to make decisions with a minimum of leader participation. The leader simply supplied materials and indicated he would furnish information of a technical nature when asked. He made no attempt to appraise or regulate the course of events as the work progressed.

Democratic leadership was defined as consisting of policy making by the group through discussion and decision and as encouragement and assistance by the leader. In this atmosphere a free discussion of the long-range plans made for understanding of future action and alternative choices might be made from procedures of a technical nature suggested by the leader. In this way independent action was encouraged. Members

of the group were free to work with whomever they chose, and division

of tasks might be made by the boys as they saw fit. In this climate the

leader assumed a role of objectivity and "fact-mindedness" in his praise

and criticism. He tried to convey a feeling that he was one of the group

without doing too much of the work.

The experimenters commented on the subtlety of difference between

laissez-faire and democratic leadership remarking:

> It should be especially noticed that a very active
> readiness to give guiding suggestions at precisely
> those moments when they are appropriate and
> appreciated and to point out the operating procedure
> which lies behind the efficient action, was in practice
> the chief difference between the democratic and
> laissez-faire leaders. . . The effective use of
> guiding suggestions seems to depend on timing.
> The democratic leader had to have a keen sense of
> awareness of the shifting momentary needs and
> interest of the boys so that he could make his
> suggestions at just the moments when they fitted
> into these interests. [113]

Behavior of the boys in the authoritarian group atmosphere tended

to be limited in scope and activity; more dependence and less individuality

were present in responses.[114]   Restricted space of free movement re-

sulted in frustration and "giving up" with frequent dissatisfaction with the

total situation.[115]   Efficiency of those responding with a submissive

reaction as well as those who responded aggressively dropped tremendously when the leader left the room. [116]

The boys behavior under laissez-faire leadership conditions consisted of general restlessness, boredom and rising tension due to three factors making for aggressive behavior: absence of a respected adult, idleness, and frustration. [117]   The experimenters reported:

> The lack of guiding suggestions in laissez-faire
> often resulted in disorganization and failure and
> setbacks in work which were discouraging and
> exasperating. Some outright aggression can be
> directly attributed to such work failures, as well
> as loss of interest in the job that was being done. [118]

In groups working in this atmosphere play-minded conversation including silliness consumed as much time as constructive activity and psychological involvement. [119]   On the whole less work was done and poorer work than in either of the other two atmospheres. [120]

Behavior of the boys working in a democratic atmosphere reflected higher morale than in either autocratic or laissez-faire leadership groups. [121]   In this climate half the time was spent in constructive activity or psychological involvement. [122]   General absorption in work when the leader left the room dropped only slightly [123]   and play-minded conversation including silliness consumed but a small proportion of the

time. [124] The experimenters concluded, "pleasure in successful work

projects promotes friendliness; friendliness results in mutual praise;

praise in turn promotes pleasure in work."[125]

The factors making for success in the democratic work climate

attributable to leader behavior identified by Lippitt and White in this

study were: 'guiding suggestions,' 'praise and approval,' 'jovial confident'

behaviors that extend a child's freedom and mastery of his environment. [126]

They reported that under democratic leadership each boy felt more free

to be himself and individuality was more marked than in the autocratic

groups. [127] Of the relationship of democratic leadership to creative

thinking the experimenters wrote:

> There was finally an impression on the part of
> the experimenters that both work and play
> showed a higher level of originality or creative
> thinking in the democracies than under either of
> the other types of leadership. There was a larger
> amount of creative thinking about the work in
> progress than in autocracy, and it was more
> sustained and practical than in laissez-faire. [128]

Thus we find that this study pinpoints the amount and kind of freedom

most conducive to creative action. It is seen to be a special kind of

freedom - really a highly controlled and disciplined inner freedom; not

freedom in the sense of license. This study corroborates the ideas of

Erich Fromm that freedom for (or responsible freedom) rather than freedom

from (or irresponsibility) is the kind of freedom [129] which is conducive

to promoting creativity.

Wally Reichenberg-Hackett in a study of the effect of affective states

on drawing expression demonstrated that a gratifying experience and

positively toned emotion influenced good enough drawing scores and

produced marked changes in spontaneity and vitalization of graphic

expression. [130]   Thus a positive self concept seemed to result in an

increase in accuracy of perception, in ability to apply knowledge and skill

acquired in previous learning situations and in dealing with a task requiring

mental organization. In this study four groups of children, consisting of

a control group and three experimental groups, were given the Goodenough

Draw-A-Man test and after a ten minute interval a retest. During the ten

minute interval each of the groups received different treatment. The

control group was given a Stanford-Binet test, the first experimental group

(Puzzle-box group) was given a 'gratifying experience' which consisted

of successfully opening by their own efforts a puzzle box to secure a reward

of toys and candy. This group was praised and encouraged by the experi-

menter throughout the experiment. The second experimental group

(object group) was given toys and candy during the ten minute interval.

The experimenter behaved in a pleasant, permissive and companionable

fashion toward this group. The third experimental group (Strewe group)

was given the Structure Cloud Picture test without either approval or

criticism and with a minimum of comment during the ten minute interval.

Goodenough drawings produced before and after the interval by

children in each of the groups were scored for quantitative and qualitative

features and behaviors noted. Criteria for qualitative features of drawings

consisted of evidence of passive or active posture; inclusion of additional

objects, background, and social situations with evidence of personal

interaction; purpose evident in movement; and apparent expenditure of

energy. Reichenberg-Hackett commented:

> We found it necessary to include a category of
> 'artistic expressiveness' for subtle differences,
> difficult to describe. It was a criterion not
> applicable to all our cases, but much needed
> with a few. We accepted the child's standard,
> judged his drawings by comparing them. Our
> criteria were fuller utilization of the given
> opportunity, artistically more pleasing or
> socially more acceptable features of the
> drawing. [131]

Criteria for behavioral observations consisted of: work method, degree

of speed, care, persistence, self-confidence, need for encouragement,
evidence of fatigue, spontaneous remarks of the child concerning drawing
ability, mood and feeling tone evident. The latter was rated on a five point
scale moving from negative to positive and consisted of: "resentful,"
"bored," "non-commital," "interested," "interested with distinct evidence
of pleasure." [132]

Mean changes in I. Q. points as indicated on the Goodenough scores
for the retest were: Control group -7, Puzzle box group +5, Object
group -2, and Streve group -2. Reichenberg-Hackett remarked, "In each
case where the score was more than two points (in the I. Q. rating above
prior rating) of the 'puzzle box group' the behavior record showed that the
child had manifested marked interest in the experience and expressed
appreciation, enthusiasm and confidence." [133]

Speaking of the puzzle box group Reichenberg-Hackett observed,
"Increase in spontaneity was evident not only in drawings but also in
behavior records of children. Social relations toward the experimenter
were more relaxed, warmer and friendlier after the gratifying experience." [134]

Drawings reproduced in the report of this experiment show marked
changes in "developmental level" in the "before" and "after" phases of the

experiment. In a number of instances very primitive undifferentiated drawings were produced in the first phase and followed by much larger, more detailed and expressive drawings on the retest. In all instances much more movement was shown in second drawings of the puzzle box group than in first drawings. Reichenberg-Hackett concluded:

> Our results show that positively toned affective states influenced the work of the children in our 'puzzle box group' in the direction of higher achievement as indicated by higher scores on the Goodenough scale. . . We feel that the difference in point scores is significant in demonstrating that children functioned on a higher M.A. level, producing beyond their previously established capacity. [135]

Thus we find from this study corroboration of the facts revealed in the studies of Lippitt, White and Burkhart that self concept and pride in accomplishment, which a person feels personal responsibility for, releases energies which might be termed creative.

Some Concerns Involved With Current Research on Creativity

Perhaps the most glaring deficit in the research on creativity has been the absence both of replicative studies, as well as follow-up investigations. The one-shot research study is typical.

Conceptual and semantic ambiguities continue to make communication a problem in reporting. The reader, seeking a clear picture of populations, or wishing to relate findings from one investigation to another, experiences particular difficulty when encountering such terms as "creative thinker," "divergent thinkers," and "original thinker," insufficiently or inadequately defined.

A host of studies deal with relatively small samples, thereby increasing the probability of error and biased results.

Adequate rationale for the subjects selected is also often missing. It is not clear, for instance, whether children or adolescents are chosen in the interest of contributing toward a developmental theory of creativity or merely because of convenience and availability.

Precision is also sometimes lacking in reporting results. Some researchers have a tendency to be anecdotal (e.g., Torrance, 1962) which, while making for pleasant reading, tends to obscure the findings.

A spate of researchers continue to rely on factor analysis (Vernon, 1964), multiple correlations, and other powerful statistical tools to isolate and identify the creative person, rather than on well-thought-out hypotheses grounded in adequate theoretical rationale.

One might also view a little critically the intentional or accidental overevaluation of creative abilities, or perhaps, more accurately, the devaluation of other abilities. The implication seems to be that creativity is the cardinal seed of existence and, if someone does not achieve creatively, he is of no particular value.

Furthermore, the extolling of creativity to the determinant of mental discipline and the mastery of subject matter is inimical to creativity, and may defeat the ultimate purpose of this research (Kneller, 1965).

Studies of creativity in adults have been primarily limited to men, and the manifestation of this dimension in women remains insufficiently elucidated. Helson's (1961, 1966, 1967, 1968) work, one of the few but major contributions in this area, indicates that different factors may be involved in its operation and emergence in women.

The implication of greatest significance regarding the psychological constitution of the creative individual is that a change in the dynamics of creativity research seems warranted.

If the results of future investigations are to become more meaning-ful contributions to the cumulative literature on creativity the data suggest

that the assessment of creative potential cannot merely rely on singular

intellectual traits, factor-analytically derived, but must also include

cognitive styles and personality variables rooted in theoretical concepts.

CHAPTER FIVE

SOME IMPLICATIONS FOR CREATIVITY FROM VARIOUS THEORIES AND
RESEARCH STUDIES IN PERCEPTION, IMAGERY AND IMAGINATION

Introduction

Perception - or the taking in of sense material; visual memory - the retention of experience in visual images; imagination - the recasting of fragments from memory in the visualization of what might be expressed and the form it might take - all precede the immediacy of creative expression.

Arthur Schopenhauer explains these factors in the process by which creativity occurs: perception and imagination. He writes:

> A perceptive apprehension of things has always
> been the generative process in which every
> genuine work of art, every immortal thought
> received the spark of life. . . From conceptions,
> on the other hand arise the works of mere talent.[1]

He continues by remarking that imagination is an indispensable tool of the genius "in order to complete, arrange, give the finishing touches to, retain, and repeat itself at pleasure" for significant pictures of life sensed by the artist and demanded by his work.[2]

Perception and Creativity

Perception is the process by which we organize
information or meaning about that which we
sense (see, hear, smell, touch, taste). Just
the word "rose", produces many ideas (soft,
fragrant, petalled) which are the flower's
meaning. We are continually perceiving our-
selves, others, and the world. Sometimes our
perceptions are accurate (the baby is hungry)
and sometimes they are not (the baby refuses
the bottle and we discover he is ill). Because
we are all in the business of helping others toward
maximal growth and development of their
potentialities, our perceptions of other people's
needs, feelings, etc., must be especially accurate.
As we become aware of these factors which affect
perception, we can "sharpen" our own perceptual
skills and, in turn, be better able to help children
become more perceptually competent.[3]

The relationship between perception and creativity may be described

as an openness more in degree than in kind. Perceptual openness, con-

ceptualized as a greater awareness of and receptiveness to not only the

outer world but also the inner self, is another distinctive cognitive mode

attributed to the creative. Some empirical evidence has accrued supporting

its existence in his constitution, difficulties of operationalization not-

withstanding.

Applying the Myers-Briggs Type Indicator, MacKinnon[4] determined

that a preference for this perceptual mode differentiated more creative from

less creative architects. And Gough (1961) reported this same preference as discriminating between the high- and low-creative research scientists. Mendelsohn and Griswold (1964, 1966) also provided substantiating evidence. Dichotomizing psychology undergraduates as high or low creative on the basis of the Remote Associates Test, they observed that only the high creatives used peripheral cues effectively in solving anagram problems. The creatives, they suggested, deployed their attention more widely, were more aware and receptive, and retained more prior stimulus experiences in usable form, tending not to screen out the irrelevant. A serious limitation of these investigations, however, is their use of the Remote Association Test to identify the creatives. As Jackson and Messick (1965) pointed out, the items in this test have one recognized response and hence have limited value as indicants of originality. Furthermore, the theoretical basis on which this test has been constructed - the concept of the habit hierarchy and the interpretation of creativity in terms of traditional associative and mediation processes - was not supported in a recent study by Jacobson, Elenewski, Lordahl, and Lieroff (1968).

Within the psychoanalytic frame of reference, Barron[5] reported a study which may be construed as evidence of the existence of this cognitive style. Original persons, designated by a high composite score based on a

variety of measures of originality, rejected suppression as a mechanism for the control of impulse. Since suppression would limit awareness and openness to both the internal and external stimuli, its rejection would make one more "open."

Propst (1962) attempted to demonstrate this mode of perception within the Rogerian framework employing an instrument developed to measure openness to internal experience through an introspection task. She found a positive relationship between this measure of openness and a combined score of originality from a sample of 60 male undergraduates. Some evidence is provided regarding the validity of the new instrument, yet it is apparent that, as any introspective method, it is subject to all the misperceptions and self-deceptions of self-report.

Although these data are far from conclusive, the cited research indicates that certain cognitive characteristics, idiosyncratic of the creative person's mental functioning, contribute to the originality or difference of the end products of his thinking, characterized by a certain intellectual freedom that is not goal bound, controlled or channeled, but rather seeks the "unknown" and "confusion." It also points up a greater capacity and tolerance for flexibility, complexity, and openness.

Theoretical literature from Gestalt psychologists: Max Wertheimer,
Wolfgang Kohler, and Kurt Koffka and studies of visual perceptual develop-
ment by Lauretta Bender and by Larry Hemmendinger are examined as a
basis for recommendations for the enhancement of perceptual abilities and
their relationship to creativity.

Gestalt Theories of Perception and the Creative Process

For a review of perception theory we turn to the literature of Gestalt
psychology, the movement which began in Berlin with the investigation of the
phiphenomenon, or apparent movement, by Max Wertheimer, Wolfgang
Kohler, and Kurt Koffka in 1912. On the whole, Gestalt theory has more to
say about the appreciation of art than about the creation of arts, though Koffka
has made definite statements on the latter. While Gestalt theory primarily
concerns perception, a process involved in the creative process, even here
much of the material is largely extraneous to phases of creativity in the
experience of some types of persons because it concerns perceptions of
constancies, what James J. Gibson calls the "visual world" rather than the
"visual field."[6] The former is that type of perception which is the only type
most persons use and which is the kind we all use in the ordinary activities
of life. This is a world of perception in which movement occurs through
locomotion and from which the effects of this movement are largely eliminated

in visual constancies. In this kind of vision sizes, shapes, and colors remain

constant despite variations in the retinal images with which they correspond

and parallel lines do not seem to converge in perspective. While of the

second type of vision, the "visual field" Gibson says:

> It is less familiar than the visual world and it
> cannot be observed except with some kind of
> special effort. The fact that it differs from the
> familiar visual world is the source of a great
> deal of confusion and misunderstanding about
> vision. It is the experience on which the doctrine
> of visual sensations is based. It is strictly an
> introspective or analytic phenomenon. One gets
> it only by trying to see the visual world in per-
> spective and to see its colors as a painter does.[7]

Thus a great deal of the investigation of perception conducted by Gestalt

psychologists and a large portion of the theory of this school concerns the

type of vision which is experienced while moving about without particular

attention to visual details. But it has great significance for teaching since a

great many persons see almost wholly in visual constancies.

Bruno Petermann, in a survey of the genealogy of Gestalt Concepts,

divides Gestalt theories of vision into two categories which he calls (1) the

"dynamic" theories of vision referring to the investigation of phenomena of

visual constancies and (2) the "static" theories of vision which concern the

perception of whole-to-part structures and of figure-ground relationships

in isolated designs.[8] Petermann's use of the word "dynamic" is somewhat

confusing in view of the fact that both types of investigations involve what the

Gestalt theorists call dynamic or changing states of equilibrium. Yet in

spite of this semantic difficulty he points up significant differences in the

various phases of Gestalt theory and research. The first type, Petermann's

"dynamic" theories of vision, concerns the world from which the artist

frequently chooses material for painting and other visual expression and his

vision in appraising three dimensional art expression such as architecture

and sculpture where he moves about and constructs an impression in his

mind's eye. The second type, Petermann's static theories of vision, concerns

the kind of perception which occurs in observing the work of art small enough

to be encompassed by one fixation of the eyes whether it be by the artist while

his work is in progress or by the spectator after it is finished.

The first type, visual constancy, is explained by Gestalt psychologists

as being immediately given in the perception of Gestalt patterns through the

interaction of properties of the total field both external and internal rather

than made up of sensations, images and prior experiences fused together in

a mosaic as the traditional psychologists of Wundt's school and the

Structuralists believed. [9]

Wertheimer in his law of Pragnanz refers particularly to the

second type of vision, part-to-whole or figure-ground. Koffka explains

this principle of Wertheimer's. He writes, "Psychological organization
will always be as 'good' as the prevailing conditions allow. . . 'good'
embraces such properties as regularity, symmetry, simplicity and others."[10]
This principle concerns spontaneous grouping in sensory fields. By this
is meant the fact that equal and similar items tend to form units and to
be separated from less similar items and simple and regular wholes as
well as closed areas are perceived more readily and more generally than
irregular and open wholes.[11] Proximity, continuity, similarity, and
inclusiveness of forms tend to account for this psychological organization.[12]
The principles are readily seen to be those in operation in the composition
of a work of art and account for effects of unity.

Turning more specifically to the subject of creativity in Gestalt
theory we find reference by Wertheimer to problem solving in creative
thinking which has been previously noted[13] and implicit statements in
the writings of Koffka.

Wertheimer's concept of creative thinking, it may be recalled,
consists of looking at situations freely and open-mindedly, viewing the
whole, and trying to realize structural relations between the problem and
the situation. This type of thinking is said by Wertheimer to lead more

frequently to insight than piecemeal mechanized thinking which is blinded by habit. [14]   The phenomenon of insight as described in Gestalt literature seems to bear a close resemblance to what is called "inspiration" by other writers. Heidbreder says of it, "Insight is a patterning of the perceptual field in such a way that the significant relations are apparent; it is the formation of a Gestalt in which the relevant factors fall into place with respect to the whole."[15]

Koffka says the motivation of the artist is frequently extraneous to the realm of art since it may consist of a desire for financial gain, for rivalry or ambition. He observes that although any one of these factors may start the artist and keep him going they cannot "direct" him. Instead, he feels the artist's work is "guided by the requiredness of his intended creation."[16]   Artistic creation, he says, has two poles: one being the demand issued by the task which the artist sets himself and the other the artist's own capacity or technical ability for complying with these demands."[17]   Koffka adds, "the artist does not create only because he had a commission, but often primarily in order to define, to externalize, to eternalize a section of his own world and his place within it."[18]

He observes, "the artist when he strives to create a new piece of reality. . . will produce a world that includes in some way or other his

own Ego."[19] Koffka feels that different Ego-world relationships result in

different types of art expression; more emphasis on the Ego causes

Romanticism, while more stress on the world produces Classicism.[20]

He points out the fact that strong unification of the self and objects in the

world result in "physiognomic characters," such expressive features as

sadness, joyfulness and the like - a factor widely prevalent in art which is

antithetical to science and little understood by it.[21] Koffka notes that

neither the artist nor the psychologist knows how these physiognomic

characters are created.[22]

The role of perception in art appreciation and in the creation of art

are both felt by Koffka to be highly significant. He explains:

> While the artist creates a permanent object, he is
> a spectator himself; as a spectator he judges his
> own work, as a spectator he is guided in his
> progress, as a spectator he decides whether his
> work is finished or not. For the vision which
> preceded his work is not yet art; something has
> to be created which takes this vision out of the
> realm of the merely divined and desired into a
> realm of objectivity, comparable to the objectivity
> of a chair - though not identical with it. . . this
> vision is transitory, it changes with the hour of the
> day, with the drift of the clouds, aye with the mood
> of the onlooker; and now he throws paints on canvas
> so that a picture emerges that stabilizes this vision.
> The distribution of color is directed by the effect the
> color has on the painter; all through the creative

> process the artist must be a spectator; the process
> of creation, as every process of action, is circular,
> or spiral.
>
> From what we have said so far it is obvious that the
> psychology of perception will be of very great
> importance for the psychology of art: for not only
> does it investigate the establishment of the art
> objects in the spectators who are to enjoy them, but,
> as has just been pointed out, perception of his own
> work guides the artist throughout his act of creation.[23]

The wholeness principle as the chief cornerstone of Gestalt theory

(and Whiteheadian philosophy) is exemplified in Koffka's statement, "in

a masterpiece of painting no line, no form, no color, can anywhere be

changed without detracting from the quality of the picture."[24] It is the

characteristics of the work of art dependent especially upon its structure

that elicits emotional responses in the spectator, Koffka feels.[25]

Yet perception of a phenomenal object depends upon internal conditions

in the spectator as well as upon external conditions in the stimulus

object.[26]   Energy at the disposal of the nervous system is variable.

Freshness and fatigue as transitory inner conditions of the psychophysical

process produce high and low degrees of vigilance for nervous activities

which occur in the perceptual process.[28]   Nervous activity may be

reduced in injury, narcosis, toxemia and other abnormal states so that

interdependence of the various parts of the nervous system is more or less

diminished.[29]   Koffka observes, "when the organism is active, at a high

degree of vigilance. . . it will produce good articulation; when it is passive,

in a state of low vigilance, it will produce uniformity."[30]

　　Thus Koffka goes beyond Wertheimers principle of the "good gestalt"

and specifies the effect of the internal organizing forces in perception as

well as the external forces. He observes, "With weak external organizing

forces the internal ones are strong enough to produce considerable

dislocations which lead to more stable shapes."[31]   This explains the

principle of projection when forms are visualized in the loosely configura-

ted Rorsehach ink blots, in the vague pictures of the Thematic Apper-

eeption Test, in cloud forms, faces in the fire and possibly in the "un-

folding" of a work of art in paint or clay – though Koffka does not

specifically point this fact out other than by his general reference to the

Ego–world relationship previously noted.

　　The tendency toward patterning in sensual perception is explained

by Kohler to lie in the principle of psychophysical isomorphism. He

writes, "experienced order in space is always structurally identical

with a functional order in the distribution of underlying brain processes."[32]

Kepes in The Language of Vision has applied Wertheimer's principles

of proximity, similarity or equality, continuance, and closure which

account for the "good gestalt" to the dynamics of composition governing

the formal characteristics of a work of art. He states that in the field

of visual experience the proximity of optical units is the simplest condition

for the crystallization of unified visual "wholes."[32] The priority of

proximity may yield, however, to other organizational factors, Kepes

notes, such as the factor of common qualities.[33] He writes, "every

linear unit has kinetic inertia. It tends to be continued in the same

direction and with the same movement."[34] But the most compelling

of all the forces is that of closure. Kepes says, "the factor of closure

can be more significant than either nearness or similarity."[35]

Arnheim[36] in a rather recent work has made similar analysis

of Gestalt principles governing the perception of works of art, particularly

from the standpoint of their compositional structure. In a chapter on

growth in art Arnheim reviews the various stages of perceptual develop-

ment of children as expressed in their drawings by restating the views of

Britsch and of Schaefer-Simmern.[37] This concept of "the unfolding

of artistic ability" is frequently referred to by various writers as being

a Gestalt theory of creativity.[38]   Essentially the theory consists of

the hypothesis that the child in his normal development goes through stages

of perceptual-motor development in which he first produces discriminations

of a circular form, then of the horizontal axis followed by the vertical

direction and only somewhat later is he able to discriminate and reproduce

diagonal forms.

In its original formulation, as conceived by Britsch, the theory

assumed that factors of biological maturation are at work and development

of expression takes place more or less automatically as maturity occurs –

hence the word "unfolding." Arnheim minimizes the purely biological

foundation of the theory, recognizing the fact that stimulating factors also

play their part so that growth does not "unfold" of its own accord. Yet

he acknowledges his indebtedness to Britsch for the idea of gradual

differentiation. He writes:

> Being an art educator, Britsch did not avail himself
> of the psychology of perception, but his findings
> support and are supported by the newer trends in
> that field. Like many pioneers, Britsch seems to
> have carried his revolutionary ideas to the opposite
> extreme. As far as can be determined from the
> writings that have been published under his name,
> there is little room in his analysis for the influence
> of the perceived object upon pictorial form. To him
> the development of form was a self-contained mental
> process of unfolding, similar to the growth of a plant.

This very one-sidedness makes his presentation
all the more impressive; and as I try to describe
some phases of formal development as an inter-
play of perceptual and representational concepts,
I acknowledge that I am proceeding from the base
laid by Britsch.[39]

Arnheim explains that the principle at work is that of gradual

differentiation of parts and their relationships from a simpler former

whole. He says:

We are dealing here with a first example of what I
shall call the law of differentiation. According to
this law, a perceptual feature will be rendered in
the simplest possible way as long as it is not yet
differentiated. The circle is the simplest possible
shape available in the pictorial medium. Until
shape becomes differentiated, the circle does not
stand for roundness, but for any shape at all and
none in particular. . . At any stage of human thinking
the law of simplicity will make a conceived shape
remain as undifferentiated as the object for which the
shape stands will permit it.[40]

Characteristic of Gestalt thinking, Arnheim observes, "the development

of pictorial form relies on basic properties of the nervous system, whose

functioning is not greatly modified by cultural and individual differences.[41]

Further elaboration of the stages of differentiation in this more or less

universal phenomenon are described by Arnheim. He explains:

A child will not proceed to the rendering of
oblique relationships before he has fully mastered

the vertical-horizontal stage, unless premature
complexity is imposed upon his work by art
teachers or other authorities. On the other hand,
it can easily be observed that children grope for
higher stages of differentiation because they are
dissatisfied with the limitations of the lower ones.
For while they will keep the human figure within
the vertical-horizontal scheme, untroubled by the
fact that this allows no distinction between a running
person and one standing at rest. Later the ambiguity
of his work becomes unsatisfactory to him. He
wishes to make a distinction in his picture where there
is one in the objects he is portraying. Motion in
particular, is of such vital importance to a child that
he derives great pleasure from being able to make
things run or move. Thus differentiation is greatly
enhanced by the child's urge to overcome ambiguous
representation. One by one these ambiguities occur
to him as they enter the range of his growing visual
comprehension.[42]

Arnheim summarizes his theory of growth in visual perception and

expression:

Thus the process of growth gives further evidence
of the tendency to simplicity. . . Step by step, the
maturing mind requires greater complexity, but the
higher stage can be reached only by way of the lower
ones. The mastering of a given stage creates need
and readiness for the next. The mind proceeds at
the rate at which it can comprehend, and at any
point of the rising path it is handling a medium that
seems fitting and natural. Willful interference with
this process creates disturbance.[43]

Psychologists have most commonly studied art productions to

determine personality characteristics, Arnheim says, whereas the real

purpose of art is something quite different. The statement of that real

purpose is a description of the creative process and its reason for being:

> The formal features already discussed are derived
> from the cognitive functions of mind: the sensory
> perception of the outer world, the elaboration of
> experience in visual and intellectual thinking, and
> the conservation of experience and thought in memory.
> Considered from this angle, pictorial work is a tool
> for the task of identifying, understanding, and dealing
> with things, investigating relationships, and creating
> order of increasing complexity. [44]

Elsewhere Arnheim suggests a method for eliciting expressiveness

in art production founded on Gestalt theory. He says:

> There is an old-fashioned, but not extinct, way of
> teaching students to draw from the model by asking
> them to establish the exact length and direction of
> contour lines, the relative position of points, the
> shape of masses. In other words, students are to
> concentrate on the geometric-technical qualities
> of what they see. In its modern version, this method
> consists in urging the young artist to think of the
> model, or of a freely invented design, as a con-
> figuration of masses, planes, directions. Again,
> interest is focussed on geometric-technical
> qualities.
>
> This method of teaching follows the principles of
> scientific interpretation rather than those of
> spontaneous vision. There are, however, other
> teachers who will proceed differently. With a
> model sitting on the floor in a hunched-up position,
> they will not begin by making the students notice that
> the whole figure can be inscribed in a triangle. Rather

will they ask about the expression of the figure and
be told, for instance, that the person on the floor
looks tense, tied together, full of potential energy.
They will suggest, then, that the student render
this quality. In doing so, the student will watch
proporitions and directions, but not as geometrical
properties in themselves. Rather will these formal
properties be perceived as being functionally
dependent on the primarily observed expression, and
the correctness and incorrectness of each stroke
will be judged on the basis of whether or not it
captures the dynamic "mood" of the subject. [45]

The traditional method, Arnheim suggests, is founded on the belief that

we perceive a number of visual data separately: shades of color, degrees

of brightness, shapes in rapid movement, along with associations of

former experience. In this theory expression is considered to be a

secondary response. The second method is founded on Gestalt explana-

tions of perception, that the expressiveness of the pose of the model is

perceived before the various geometrical properties of which it is made

up. [46]

Another teaching method based on Gestalt principles is that of

Sherman. [47]   His objective, however, is to elicit unified vision in

drawing, or the ability to see wholes, rather than to produce expressive

works. Using a tachistoscope to project slides of simple abstract form,

Sherman arranged for his students to draw rapidly in the dark from split-second impressions while listening to a musical accompaniment. He found improvement in the ability to recognize spatial relationships and produce unified drawings by this method. A high correlation of the ability to see wholes, produce unified drawings and visual acuity based on inherent physiological structure and the effect of practice in looking habits seems to exist according to Sherman's data.[48]   But he cautions his readers not to misinterpret these abilities to see wholly and draw with unity as being synonymous with creativity. For creative ability in the visual arts, Sherman says, "depends on psychological, kinaesthetic, tactile, and other abilities as well as visual abilities."[49]

The Visual Haptic Continuum in Creativity

The nature of creative expression has been found to be closely related to certain personal characteristics and to one's habitual mode of perception. Certain of these characteristics possibly induced a man such as Casmir Malevich to turn from a concern with the world we see with our eyes to a profound concern with the non-representational world. He had the desire to represent concretely, through painting, the reality of the

intangible world of emotions and inner feelings - to be "the maker of the
new signs of his inner movement."[50]   He relied on the union of his
materials and his body sensations as a mode of expression to projeet this
inner world.

The Impressionists were also influeneed by a set of eharaeteristies.
However, they were more involved with the "world through the eye" and
sought to bring the external world eloser to themselves through the use of
light and optieal impressions.

Viktor Lowenfeld (1939)[51]   has defined and elassified those
eharaeteristies whieh lend themselves to varied forms of ereative
expression.   From these elassifieations we have attempted to devise a
series of tests for measuring the existenee and dominanee of these
tendeneies.   The two basie personality types formed from these eharaeter-
isties with whieh we were eoneerned were the tendeney toward visual-
aptitude (as in the impressionists) and the tendeney toward haptie aptitude.

Through his research in this field Viktor Lowenfeld has defined
the two as follows: Visual mindedness is bound with the natural disposition
to depend on &n optieal pereeption of the world, or, as said earlier "the
world through the eye." On the other hand, an individual inelined toward

a haptic aptitude relies primarily on tactile impressions - the sense of touch and subjective experiences and lays stress on an introspective approach to existence.

A tendency toward visual-mindedness does not mean, however, that the individual relies totally on optical perception but that the use of the eyes is most predominant in perceiving the world. The sense of sight is the primary sense; the others are secondary and often neglected. Haptic mindedness is more closely related with interest in feelings and sensations within the individual rather than with objects sighted in the outside world. Therefore, the haptic type refers more to subjective feelings - body feelings, muscular sensations or kinetic experience. In Malevich's words "the inner movement."

Previous studies by Lowenfeld (1957)[52] further define the characteristics of these two types. The visual-minded type or the individual who is primarily involved in what is perceived by the external senses is shown to have:

    a. A general reliance on the eyes for perceiving the world;

    b. A tendency to be objective;

    c. The inclination to be a spectator rather than a participant; involving himself through observation;

    d.   In creative expression, a striving for an exact
reproduction of size and shape, stressing outlines,
detail and perspective. . . an objective observer
of environment;

    e.   A color sense that corresponds to the naturalist
color scheme varying according to light and
atmosphere;

    f.   A strongest reaction to simulation of the sight
organ;

    g.   As an artist a tendency towards impressionism.

The haptic type, being an individual who is involved with bodily

sensations and feelings, is shown coversely to have:

    a.   A dependency on touch and kinetics in perceiving,
relying on sight only as a secondary measure;

    b.   A tendency to be subjective so that his world is
that of expression, feelings and subjective processes;
his expression originates from within;

    c.   The desire for participation and physical involve-
ment; not staying outside of things but projecting
his inner experiences;

    d.   In creative expression the (natural) habit of
expressing significant parts, often to the point
of distortion. Often the self is found to be the
center of artistic expressions;

    e.   In using color, the inclination to use color
conceptually or through a system of color
symbolism;

    f.   As an artist the tendency toward expressionism.[53]

Thus in the haptic minded individual the optical experience recedes in the

background and becomes less important as the mediator of a concept; sight

diminishes as touch increases.

Graphic examples illustrating the distinction between the types

are available in Lowenfeld's countless examples of students' art work.

In examining two separate works on the same theme, "Jacobs Dream,"

it is impossible to identify the above characteristics. The child who

seemed more visually oriented placed considerable emphasis on Jacob's

environment and the images composing his dream (i.e., angels, rainbows,

and bright starry lights). Jacob recedes into the background through his

clothing is quite detailed. In the painting by the haptic type the primary

concern is with Jacob, his facial expression, and his emotional state

during the dream. There is an obvious elimination of landscape, clothing

and dream images, for the entire painting focuses on Jacob's muscular

and emotional reaction to the dream. Only the addition of symbolic

flashings of light suggest the external cause for Jacob's expression.[54]

In view of this dichotomy it is obvious that effective stimulation of

creativity in an individual depends on the employment of the right stimuli

for each type. Due to the nature of his characteristics a visual-minded

individual would react most strongly to the stimulation of the eye while

the haptic type would react to experiences related to the body and self.

Viktor Lowenfeld has verified this in several cases while working

with young people, particularly the blind and weak sighted. 55   He

has demonstrated that an inferior visual awareness cannot always be

attributed to a physical weakness of the eyes but is due to the haptic's

natural practice of disregarding the use of the sight organ.

One of the many cases in which Lowenfeld demonstrates the

validity of his theory involved a pupil of the Institute for the Blind. A

weak sighted Haptic-type worked in clay as if he were blind, not employing

the use of his eyes; he created expressive and distorted heads and

figures. He was encouraged through eye lessons and by teachers to rely

on optics and strive toward a naturalistic representation in his creations.

This was against his expressive haptic nature and he dropped sculpture

altogether.   In this case disharmony between his basic type and his

training caused bewilderment and frustration and destroyed his pleasure

and his belief in his creative powers.

In still another case, a weak sighted individual was frustrated with

his creative expression. He had relied totally on his eyes before

Lowenfeld "freed him" by introducing a haptically-oriented program and

urged the expression of personal experience. The pupil was more pleased

as he was now able to create in a way which corresponded to his nature

and he disregarded optics except to control technical details.

Both cases clearly illustrate the vitalness of an instructor sensitive to personality types. Lowenfeld's investigations have proven that regardless of their degree of sight, some partially blind people immediately applied their eyes closely to anything which attracted their attention, while others used their eyes only when compelled to do so, (i.e., case number one). The first type was visually-oriented; and the second haptically oriented. He later found extreme cases in which individuals with full sight had to be placed with the non-visual blind because of their total reliance on tactual perception, and conversely, cases in which many blind people had to be regarded as visual types. It is therefore valid to assume that there exists a close knit association between the nature of one's creative and the nature of one's personality type which often has little to do with physical optical abilities.

Berthold Lowenfeld,[56] who has become an international authority on the education of the blind, stresses the observation of his brother Viktor; the vital need for applying proper stimuli that are in context with a child's world and nature. He shares his brother's conviction that it is essential to relate the proper stimuli in allowing children to express themselves

creatively. They believe that teachers often deprive children by forcing them to represent their perceptual world in terms of visual representation. This often inhibits and frustrates the haptic-type whose world is not of visual space but emotions and internal sensations, (i.e., recall case #1).

Understanding of the visual-haptic aptitude is significant not only for insight into the artistic expression of the full-sighted, weak-sighted and blind but in areas far removed from art. Berthold Lowenfeld has called for research on the possible relationship of the facts and interpretations of the visual-haptic aptitude particularly in the areas of music and language arts. He says "In order to keep a child's interest in music alive, the teacher must select musical experiences which meet the natural development of her pupil.[57] This indicates that possibly an application of the visual-haptic research might enhance the teacher's sensitivity in the developing of musicality in children. G. Revesz[58] has compiled intensive research in the field of haptics and feels strongly that this area is a "stepchild of psychology" and should be "investigated with the same scientific significance as is accorded with Optics and Acoustics."[59] There is a common belief therefore in the relationship of visual-haptic aptitude in several areas of writing and philosophy, in sex differences, in

choice of occupation, in child development, in personality and physiological differences.

Three studies of children's drawings have thrown light on the visual and haptic skills and their relationship with the areas of growth, intelligence and psychology.

Sir Herbert Read has suggested that a child begins life as wholly subjective (haptic) and only slowly acquires an objective (visual) outlook.[60] According to Read's theory visual or naturalistic representation is . inflicted on the child by the necessity of coping with an external world, by the need to translate the perceptual world in concrete or visualizable terms so that he can deal with it, and by the impulse and pressure to imitate the naturalistic representation which he sees practiced by parents and teachers.

Florence Goodenough (1926),[61] attempted to measure children's intelligence by the extent of naturalism in their drawings but drew conclusions very similar to Read's:

a. Children begin by drawing what they know or feel, rather than what they see;

b. Children exaggerate the size of items which seem interesting to them;

      c.   Up to the age of ten, children draw the human
          figure in preference to any other subject.

This study demonstrates that children are essentially haptically

oriented at an early age. It also brings to light the misconception that a

higher degree of intelligence is directly related to visual mindedness just

as Lowenfeld discounted the theory that inferior visual representation is

due to optical problems.

Carl Jung's general-attitude psychological types, the extrovert

and the introvert, correspond to some degree with the visual and haptic

types. He says the two types often differ radically; "the psychic assimila-

tions of the perceived image."[62] In other words they undergo a very different

subconscious absorption and transformation of what is seen. Here again

there is a relationship of the diverse characteristics of the haptic and

visual individual. The haptically minded person is most concerned with

inner feelings and sensations rather than the objective stimuli which produce

them; and the visual type tends to rely on the eye as the mediator between

reality and the concept - a mental absorption of experience through the sense

of sight.

Haptic and visual types comes forth in a study of the effect of sex

differences on perception. Gardner Murphy[63] suggests there is an indication of more visual-mindedness in women, while men tend to be more haptically-minded and conscious of their bodies, bodily sensations, and kinesthesia - the sensation of movement or strain in the muscles.

Anne Roe [64] suggests that differences in modes of thinking are related to a person's choice of occupation. Her study of the mental processes of sixty-one scientists indicated that they fell in two occupational groups: those whose thoughts involved a great deal of visual imagery (usually biologists and physicists); and those whose thoughts were somehow "imageless" or "kinesthetic" (usually clinical, social, and child psychologists). It is interesting to note the interrelationship of the professions of the kinesthetic group (haptic) with the characteristics of the haptic-type, who is involved with the world of self and subjective feelings.

The existence of creative types in literature has been explored by June Downey, [65] who tentatively divided poets into kinesthetic and optical-kinesthetic types. She suggests that poets such as Edgar Allen Poe and Amy Lowell are optical-kinesthetic as they emphasize observation and objective visual description and discuss "movement seen" rather

than "movement felt." In Amy Lowell's "Patterns" and Poe's "Ulalume"
there are evidences of her view. In both poems the emphasis lies on
this "movement seen" and are quite objective visualizable descriptions
of their external world, though curiously they both involve the death of
a loved one.

> In summer and in winter I shall walk
> Up and down
> In my stiff brocaded gown.
> The squills and daffodils
> Will give place to pillard roses
> And the softness of my body
> Will be guarded from embrace
> By each button hook and place
> For the man who should loose me is dead.
>   From "Patterns." [66]

> The skies they were ashen and sober;
> The leaves they were crisped and sere –
> The leaves they were withering and sere –
> It was night in the lonesome October
> Of my most immemorial year.
>   From "Ulalume" [67]

The mourners of both poems are affected more by the external
world than their own feelings. The poets, as in the visual types tendency,
remain more of a spectator than a participant laying stress to images
that build up an impression of their appearance and surroundings.
Instead of expressing their personal agony and sadness they write as

spectators of a sorrowful event.

On the other hand she observes that a poet such as Vachel Lindsey who she describes as having "A preoccupation with motor rhythm is kinetic." In his poem "The Building of Springfield" he exhibits this "motor rhythm" as well as subjective sensations:

> Songs shall be sung by us in that good day –
> Songs we have written –blood within the rhyme
> Beating, as when old England still was glad,
> The purple, rich Elizabethan time. [68]

In his poem "Abraham Lincoln Walks at Midnight" he dwells as does the haptic type on internal feelings and the projecting of his inner world into the environment, and on "movement felt."

> The sins of all the war lords burn his heart
> He sees the dreadnoughts scouring every main.
> He carries on his shawl wrapped shoulders now
> The bitterness, the folly, and the pain. [69]

Downey concludes that –

The distinction between movement felt and movement seen is very fundamental and may in the future serve as a clue in determination of psychological differences implicated in the conscious and non-conscious processes of creation." The visual-haptic theory is one of the determinants of psychological differences that she anticipates.

An important facet in the study of visual and haptic types is the physiological or biological differences between personality types. The British physiologist W. Gray Walter[70] detected a set of brain rhythms associated with visual stimulation which he called alpha rhythms. In studying the electro-encephalograms - records of the electrical patterns of the brain, he found that persons fell in three groups:

    a.   The M group, persons with no significant alpha rhythms, whose thinking processes were almost entirely directed in terms of visual imagery;

    b.   The P group, persons who had constant alpha rhythms which were hard to block with mental effort and leaned toward ear responses (auditory), muscle sensations (Kinesthetic) or touch (tactile) perceptions rather than visual imagery;

    c.   The R group, persons whose alpha rhythms could be blocked to some extent with mental effort.[71]

The three groups correspond quite significantly in the haptic-visual study; the M group who thought in terms of visual imagery would be visually minded; the P group haptically minded; and the R group which made up the largest group of those tested, a combination of the two.

Paul L. Short[72] found another possible physiological basis for the diversity of visual and haptic types. A group of M (visual) and P (haptic) types were given problems or topics to think about while their breathing was measured. Short's tests showed that M types tended to breathe

regularly, possibly due to the visual types' tendency to be a visionary, a spectator. The P types conversely were found to breathe irregularly, which would correspond with the haptics' tendency to be a kinesthetic participant, involving himself physically when perceiving. Short believes the types are inborn; both he and Walter acknowledged that this alpha rhythm is "associated with differences in personality."[73]

Thus it has been sufficiently established that these types exist – both philosophically and scientifically. Obviously, a knowledge of these types of creative aptitude may lead to a better understanding of the individual for artists, educators, and psychologists. For the greatest progress, success and development of self-esteem, an individuals' education in art as in any thing else should be designed to stimulate his creative psychological type. As Lowenfeld showed in his case studies with the weak sighted, an improper approach to instruction may bring unnecessarily negative results. A lack of sensitivity of an instructor to one's basic type may inhibit and frustrate the individual and suppress his natural expressive character.

An attempt to devise a set of tests which will indicate an individual's visual or haptic tendencies is discussed in Appendix A. This battery of

of tests may be valuable in detecting haptic-visual aptitudes so that one may apply the knowledge to understanding of others and himself.

Studies of Visual Perceptual Development

Studies of the dynamics of development of visual perception by Loretta Bender[74] and by Larry Hemmendinger[75] offer interesting possibilities for insight into visual processes of creativity.

Bender, in a study of developmental patterns in visual sensory-motor processes and regressive visual sensory-motor trends in cases of organic and toxic brain damage, found a number of phenomena which help to clarify visual perceptual responses as previously noted. Using a set of visual gestalten development by Wertheimer, Bender asked numerous children of various age levels to reproduce the figures in order to establish norms for developmental levels of visual-motor performance. The figures were also reproduced by normal adults and by adults suffering from organic and toxic brain damage and mentally-ill patients. Bender found the final gestalt perceived and reproduced to be composed of: (1) the original pattern in space, (2) the "temporal factor of becoming,"[76] and (3) personal sensory-motor factors influenced by impulses and

attitudes toward the problem and by the "biological character of the field, "[77]

i.e., developmental maturity and presence or absence of pathology.[78]

Bender discovered the circular form to be the basis of all visual

perception. She wrote:

> An enclosed loop is the basis of all perceived
> form. There is also a tendency to perseverate any
> one learned (even if self-discovered) pattern
> whenever adaptable to other perceived figures,
> or, behavior pattern in response to any figure that
> is offered.[79]

Developmental norms in visual sensory-motor processes reported

by Bender are:

1. Two year level - little units of whirls or loops
   perseverated in "horizontal plane in dextrad
   direction."[80] These always show radiation
   and the tendency to curve rather than follow
   in parallel rows.
2. Three year level - some tendency for gestalt.
   Reproduction of rectangular forms either near
   each other or inside one another.
3. Above 3 years - a tendency to accentuate the
   horizontal base line, to control perseveration,
   to produce wavy lines instead of broken ones
   for the representation of straight lines, and
   some effort to cross lines.
4. Five year level - a tendency to reduce primitive
   loops to points and to make straighter lines
   and better recognized gestalten.[81]

Bender commented, "It will be noted that any slanting or oblique relationships are not depicted at. . . the 4 years 8 months maturation level."[82]   Oblique forms are among the last to be achieved and represent higher forms of integration.

Bender noted that children in viewing a complicated picture see parts and not the whole picture.[83]   Young children in reproducing this figure fail to notice the oblique direction involved and the fact that dots are points. They tend to reproduce this figure as a series of horizontal loops, thus [84]

Experiments with adults under reduced time factors, such as when viewing slides placed in a tachistoscope, reveal the same primitive level of perceptual distortion.[85]   Bender concluded:

> It seems that the use of a short time exposure
> of the forms by the tachistoscope leads to the
> experiencing of more primitive forms which
> suggests that the temporal factor is important
> in total experience, and that the active relation-
> ship which exists between the observer and the
> stimulus, and which creates the visual motor
> gestalt or experience requires an actual time unit
> for the creation, and that this temporal factor
> moreover results in a different type of gestalt
> experience. If the time is insufficient, the
> pattern experienced is similar to that observed by
> a small child. It seems, therefore, that one
> important factor in the maturation of visual

> patterns is the integration of the temporal factor
> into the whole situation and that this is not
> separable from the total pattern without resulting
> in a more primitive reaction. [86]

Due to the presence of a temporal factor in integrating material in visual perception practice or experience makes a tremendous difference in what different individuals actually see. Bender observed: "in general it may be said that the greater the expanse of the experience that has preceded the immediate act, the more intricate is the temporal factor integrated into the totally experienced pattern." [87]

Integrated differentiated perception is not only lost in reduced temporal contacts with visual stimuli, but may also be weakened through inattention or through lowered physiological vigilance. Bender concluded:

> At all levels all of the original principles are in
> evidence and tendencies to revert back to them
> are always present. Thus, there is always the
> tendency for dots to become loops, for straight
> lines to curve a little, for parallel lines to
> radiate toward or away from each other. Above
> all, there is always the tendency for sensory-motor
> patterns to revert back to the more primitive
> principles and to express movement in some way. [88]

In her study Bender found numerous cases of adults who had reverted to more primitive developmental levels. These were persons

suffering from disintegrative cerebral lesions due to organic or toxic

causes. She remarked:

> These studies of disturbance in perceptual motor
> gestalten in organic brain disease indicate that the
> gestalt principles are never fixed, but are the
> integrative response of the personality-as-a-whole
> in any given situation; in disintegrating cerebral
> lesions they tend to revert to more primitive levels,
> and, as the brain recovers from its insult they
> tend to follow the laws of developmental maturation
> in returning to the higher integrative responses.[89]

Bender found disorientation as well as primtivization in schizo-

phrenia and in other diseases or states where confusional features are

present. Of catatonic schizophrenic responses she observed:

> In the case of schizophrenia the reversion is not
> a simple one back to any one recognized level of
> development. The general principles of the gestalt
> patterns express the original intellectual level of
> the individual. There are, however, evidences of
> dissociation even in individual figures with partial
> reversions to some single principle. It may be
> expressed. . . as a change in rate or direction of
> movement in a part or whole of the pattern. Thus
> there may be a disorientation or spatial separation
> of a part of the figure by a movement in the radial
> direction on the horizontal plane, or by a rotary or
> vertical movement to an angle of 45 degrees. This
> may take place in some part of the picture, thus
> tending to exaggerate the principles of the gestalt
> entirely or disregarding such a principle; or it may
> involve the whole of the figure. There are tendencies
> to revert to other more primitive principles by

perseveration; carrying over from one figure to
the next; changing dots to loops; framentation,
representing dotted lines as wavy lines; micropsia;
and accentuation of the horizontal plane, avoiding
crossed and angulated forms; as well as failure
to integrate the whole configuration, or to properly
relate some or more parts of the whole. It may
be said by way of summary of these observations
that, in these catatonic schizophrenics we note the
principles of reversion back to primitive principles
and dissociation, or splitting of the visual motor
patterns in a way that is contrary to the inherent
principles. [90]

The significance of Bender's study to an investigation of creativity

and its process, seems to lie in the understanding which it reveals

concerning the development and integration of the visual perceptual process.

Facts revealed in this study constitute a key for unravelling understanding

and appreciation of individual differences in visual perception and visual

graphic projections or expressions.

That an individual at a given maturity level is perseverating in a

stereotyped manner of vision and expression would indicate lack of

creativity; that he is differentiating and integrating would presume presence

of growth and creativity. The temporal factor and the experience factor

as prerequisites for integrated perception seem to be especially important

for creativity within education. These facts seem to imply the necessity

of adequate time for experiencing, attitudes of being deeply involved, and

for fluid materials such as tempera paint or clay where changing perceptions

may be readily captured in expression in order to achieve that focusing of

energy which is apparently required for the highest level of integration in

experiencing what we see and communicating it to others in a visual manner.

Bender's study seems to constitute a refutation of the frequently

quoted nineteenth century idea that insanity leads to greater creativity,

unless creativity is defined as including primitivization and dissociation.

For those defining "creative" as "novel," "unique," or "recombination of

ideas in new ways" this conclusion would not hold. Pictorial productions

of schizophrenics are perhaps more novel and unique than those of any

other "artists," yet according to investigators of the problem they lack

aesthetic quality and integration.[91] But for anyone defining "creative"

as growth in discrimination constantly incorporated and integrated into the

personality and which is reflected in an expressive product that, of itself,

speaks of the intensity its author felt for the idea, feeling, vision at the

moment of its forming this study has great significance.

Hemmendinger's study of perceptual development in vision found

a definite relationship of age to the tendency to see either details or wholes. [92] Hemmendinger found three year old children to be whole perceivers noticing few details and their perception to be both undifferentiated and immature. Four and five year old children reacted less in terms of wholes and more often noticed and commented on parts. Six year olds reacted to tiny details which were not integrated into wholes but were seen as separate and alone. Seven and eight year old children continued to see parts with a tendency among the older children to integrate an increasingly larger number of details. At age nine Hemmendinger found a further decrease in reactions to parts and a greater tendency to notice integrated wholes.[93] He discovered adult perception to be "more differentiated than that of the youngest children and more integrated and organized than that of the oldest children."[94]

Hemmendinger concluded, "in the progression of development the sequence is from a global, diffuse, undifferentiated stage through a differentiated and discrete stage (analytic), to a level of hierarchically integrated and articulated performance and functioning (synthetic)."[95]

The value of this study to the present inquiry seems to center on the relationship which the development of visual perception evidently bears

to visual expression in the art products of amateur adults as well as of children. Here in the absence of experimental research we can only make hypotheses, yet these hypotheses being founded on innumerable observations of art educators and on personal experience of the writer indicate the possibility of verification experimentally. The fact that adults who have not grown up with art reflect many phenomena of visual art expression characteristic of children in various developmental stages undoubtedly may be explained by their failure to progress to a higher stage of perceptual functioning. Symbolism in art expression of four, five, and six year old children and of a similar kind found in that of many amateur adults undoubtedly results from what might be called the undifferentiated stage in perception, or what shall henceforth be termed by this author as stage one-level of perception. Such phenomena as use of the base line, fold-over, and x-ray devices in drawings as noted by Lowenfeld[96] and others by both children and some adult amateurs in visual expression are evidentally the result of a more mature or stage two level of perception which is differentiated, detail conscious but lacking in unity. Adult amateurs who are able to produce visual expression in realistic form are evidentally using differentiated-unified or, shall we say, stage three level of perception.

The significance of this analysis concerns its implications for an understanding of goals and attitudes of amateur adult art and non-art students. A large majority of the adult amateurs in this author's experience are functioning in stage two perceptually, yet their aspirations lie in stage three perception. As well as producing visual expression characterized by lack of realism persons operating at this level seem frequently to be unconsciously governed by Gestalt principles of organizing visual form so that a high degree of aesthetic quality results. Students functioning at this stage are as unaware of these qualities as they are of perceptual relationships which make for realism in recorded images. Teacher goals, then, consist of helping students recognize the aesthetic or creative values inherent in stage-two expression. Student goals are concerned with achievement of stage three perception. Recognition of these two divergent goals and bringing them together into one enlarged and amplified goal which results in realization is the task of any teacher-student group which aspires to achieving creativity. For creativity is here defined as acceptance and pleasure in exploring, discovering, and using visual images and other creative or art media, leading to new incorporations of understandings, developing skills, and to reorganizations of goals.

<u>Imagery and Creativity</u>

Introduction

Statements from theory and research of Structuralist writers such as: Edward Bradford Titchener, George Herbert Betts, and Cheves West Perky on the nature and role of imagery in thinking processes and in creative expression and observations of more recent authors, E. R. Jaensch, W. Edgar Vinacke, Rosamond Harding, and Viktor Lowenfeld, are presented for their contribution toward an understanding of the nature of imagery and its relationship to creativity.[97]

Source of Studies

Burchard in his survey of research on creativity remarks that the Titchenerian introspectionists explained creativity in terms of unusual vividness, flexibility and organization.[98] Vinacke classifies the school of psychological thought which investigated the contents of consciousness, and of which he names Titchener as the outstanding member of the Structuralist school.[99] The experimental investigation of imagery, however, began with Fechner in 1860 and gained momentum in the researches of Galton two decades later.[100] (See Appendix B for additional information on early research in this field.)

Galton confined his investigation of mental imagery to the visual

sphere and found great differences among the general population in

ability to visualize with distinctness and sharpness. He asked his subjects

to visualize their breakfast table and describe its contents in terms of

the clarity and brightness of imagery associated with it, quality of color,

and amount of wholeness present.[101]   Persons possessing vivid imagery

were able to visualize contents of their breakfast tables in images as

brilliant and distinct as in the actual scene; while those whose imagery

was mediocre recalled objects fairly clearly but not so brightly as in

reality - seeing either single objects or small groups rather than the

whole table, and persons of low visualizing ability saw only dim and

indistinct images.[102]   Scientific men, Galton found, have little or no

visual imagery while women and children frequently think in terms of

highly vivid and clear images.[103]

Galton stated his belief that a high ability in visual imagery was

useful to "inventive mechanicians" but was not necessarily imperative

for artistic ability in painting.[104]   He remarks, "Sharp sight and clear

visual imagery do not necessarily accompany each other."[105]

Visual images, he believed, tended to become more pronounced in states

of conseiousness between waking and sleep (theta brain rhythm) than at
other times and may be brought on by fasting and lack of sleep.[106]

Galton found a certain type of visualizing faculty where images
are literally "seen" to be present among various members of the same
family and he eoncluded from this fact that visualizing ability is an inherited
faculty.[107]   On the other hand, he believed the more common type of
visual imagery may be developed by education, chiefly by multiplying
associations.[108]

Titehener hypothesized four types of mind: the visual, the auditory,
the tactual, and the mixed type. He believed the mind of the inventor to be
primarily visual and that of the orator and composer essentially auditory.[109]
He distinguished between active and passive imagination, the latter
consisting of memory and the former of what he called "creative
imagination," a state preceded by active attention.[110]   He writes:

> Whenever there is 'creation', whether it be in
> painting or sculpture, in music or in literature,
> in the mechanic arts or in science, the creation
> is the image-product of a long term of active
> attention. . . The word 'creation' points to a
> eharacteristic difference between imagination
> and memory. Memory, whether it is visual or
> not, is always bound down to the representation
> of actual past events. The representation may
> not be eorreet: we may have forgotten parts of

the event, and features may have been added to our
idea of it, by association, none the less the reference
to the past is implicit in the very notion of memory,
and the mark of familiarity inclines us to trust what
memory tells us. Imagination on the other hand, has
a certain freedom about it; we need not imagine a
past experience, but may put things together 'out of
our own heads' and not as they have ever occurred. [111]

Having differentiated creative imagination from memory, Titchener

continues by showing the evolution of the former out of the latter. He says:

Having your total images. . . broken up into
detached part-images, you can imagine contaurs
and satyrs, and mermaids. And when you go from
passive to active imagination, – when you are working
over a mass of material for some artistic purpose –
the part images that you select naturally fall into
connections of their own; the result is something
new, something which does not copy experience.

Notice, however, the limits of imaginative creation.
(1) The law of imaginative connection is the law of
memory and association over again; there is no new
'power' or 'faculty' of putting images together.
(2) The images themselves are the images used in
memory-idea and the imagination-idea. You cannot
imagine a colour, over and above the colours that you
know: The most you can do is to think of the known
colours as mixed in unfamiliar ways. All that happens
in imagination is that part-images are associated,
with or without effort, to make a total image which
does not correspond, as total image, to any definite
event of previous experience. [112]

Betts in a series of experiments conducted in 1909 on the imagery of psychology students and professors found a confirmation of Galton's conclusions that there is a decrease of imagery with both age and with abstract thinking. [113]   However, he found few persons absolutely lacking in the power of voluntary imagery. [114]   Visual images, according to Betts, do not appear more frequentlyor with greater intensity than other types of imagery such as auditory, gustatory, cutaneous, kinaesthetic, organic and olfactory. [115]   Of Titchener's hypotheses that there are four types of mind - the visual, the auditory, the kinaesthetic and a mixed type - he found no evidence.   He concludes:

> The wide and rather even distribution of the
> power of imagery among the different types seems
> to leave no foundation for such classifications as
> "eye-minded", "ear-minded", "muscle-minded",
> etc., if by these terms we mean mental traits which
> come to us through original nature, or the mind's
> fundamental constitution, by which we are compelled
> to think in these terms exclusively or even chiefly
> because of a lack of other material. There is no
> doubt that most minds do select certain forms of
> imagery, and use these much more than other types;
> on the other hand there is little doubt that by practice
> the various types could be kept approximately on a
> level in our thinking, as they are in voluntary imagery. [116]

Whereas Titchener had stated that images of imagination are simply regrouped and reorganized memory images Perky in a series of experiments published in 1910 found two distinct types of images. The first of these types he calls "images of memory." These he found to be "images of recognized and particular things, figuring in a particular spatial context, on a particular occasion, and with definite personal reference." [117] He found that in a great majority of cases these memory images of sight, sound and smell involved gross movements of eyes, larynx and nostrils. [118] The second type of image discovered through Perky's introspective methods was termed by him an "image of imagination." These images were recognized by his experimental subjects but not as particular and individual objects. [119] These images showed no evidence of movement. [120] Perky summarizes his findings:

> A detailed comparison of visual images of
> memory and of imagination brings out the
> following differences: memory involves eye-
> movement and general kinaesthesis, imagination
> involves steady fixation and lack of general
> kinaesthesis; memory images are scrappy, filmy,
> and give no after-images, while images of
> imagination are substantial, complete, and
> sometimes give after-images; the mood of
> memory is that of familiarity or recognition,
> intrinsically pleasant, the mood of imagination

is that of unfamiliarity or novelty, intrinsically
unpleasant; memory implies imitative movement
and the correlated organic sensation, imagination
implies kinaesthetic and organic empathy; memory
images arise more slowly, are more changeable in
course, and last less long than images of imagination;
memory implies roving attention and a mass of
associative material, while imagination ·involves
concentrated and quasi-hypnotic attention with
inhibition of associations.

We thus reach the general conclusion that the materials
of imagination are closely akin to those of perception.
Popular psychology looks up memory as a photographic
record of past experience, and regards imagination
as working with kaleidoscopic, instable undependable
materials. Precisely the reverse appears to be
true. The image of memory is stable and fixed in
meaning. in reference; but it is exceedingly instable
as conscious content. The image of imagination is
the photographic record, a stable formation that
stands still to be looked at. The state of affairs seems,
indeed, after the event, natural enough. It is just
because the memory image is instable, liable to all
sorts of interchange, suppression, short-cutting,
substitution, telescoping, that it is psychologically
available for memory; that a mass of past experience
can be packed into small representative compass, and
it is just because the image of imagination is stable
and unchanging that it is psychologically available for
the artistic purpose, for constructive embodiment.
If an image could not decay, we should have but
little memory; if an image could not persist, we
should have but poor imagination. 121

The discrepancy between Titchener's and Perky's views of the

differences between memory images and images of imagination and their

various relationships to art creation seem to stem partly from semantic

differences and partly from differences in understanding of what constitutes

art creation. Apparently Perky has identified two types of immediately

recalled visual image, one ego-involved and the other impersonal (the

latter he calls "an image of imagination"); while Titchener means by an

image of imagination not a "seen" visual image at all but rather a

composite concept made up of fragmented memories. Titchener seems

to place value on art which goes beyond the literal, while Perky regards

representative art more highly. [122]

More Recent Theories and Research Concerning the Nature of Imagery and Its Relationship To Creativity

E. R. Jaensch objects to conclusions regarding the nature and

frequency of imagery based exclusively on subjects drawn from psycho-

logical laboratories. He writes, "subjects should not always be taken

from philosophical classrooms or psychological institutes, but

occasionally from an academy of fine arts, or a group of people with

artistic leanings and pursuits, to mention a group that is as widely

different from the first as possible." [123]

In a series of investigations on eidetic children and adults, i.e.,
persons who literally "see" recalled visual images, Jaensch found that
eidetic images occur in several varieties. He notes, "we may imagine
a line drawn between the 'end points', pure physiological after-images,
and outwardly projected, literally visible, memory images. The points
on this line would then represent different types of eidetic images, some-
times approaching after-images, sometimes memory images. [124]
Jaensch observes that eidetic imagery is characteristic of a normal stage
of development in childhood and persists with some persons into adulthood. [125]
He believes the function of these images is to assist in perception and in
early childhood such imagery forms the basis of learning, while in later
life a latent tendency toward the eidetic faculty assists the perceptual
process. [126]   On the basis of his experiments Jaensch concludes that
eidetic imagery is both constitutionally and functionally determined. [127]

The constitutional basis of eidetic imagery is explained by Jaensch
in terms of his discoveries concerning persons possessed of differing
types of eidetic imagery. He observes, "If a large number of young
eidetic subjects is examined two types clearly differentiate themselves
among cases of approximately equal strength: those who have E. Is. [eidetic
images] that are close to A. Is. [after-images], and those whose E. Is.

follow the laws of memory images more closely." [128]   The first type is

called by Jaensch the "tetanoid type", the second the "basedowoid type." [129]

Persons of the tetanoid type, while within the normal range, are

similar in constitution to those persons who when possessed of exaggerated

symptoms are diagnosed as suffering from tetany (hypothyreosis), or

thyroid deficiency.   The tetanoid type may be modified with calcium feeding.

The eidetic imagery of persons of the tetanoid type is always of a two-

dimensional nature, purely spontaneous and unable to be controlled by the

individual, felt as foreign bodies and consequently unpleasant and in-

convenient. [130]   Jaensch says, "The mental organism of individuals with

A. E. - like E. Is. is in extreme cases fitted together out of pieces, as

it were, like a machine." [131]

Persons of the basedowoid type, also within the normal range, are

similar in constitution to those whose exaggerated symptoms of a pathological

nature are classified as suffering from Basedow's disease or Graves

disease, a condition due to oversecretion of the thyroid gland, or hyper-

thyroidism. [132]   Jaensch explains that the thyroid gland is often slightly

enlarged in this type; they possess large, moist, luminous eyes, heightened

vegetative sensitivity, easily affected vasomotor processes and pulse with

a tendency to arythmic respiration (changes in the frequency of the pulse during respiration), a strong tendency to perspire. Individuals of this type, he observes are predominantly gracefully built, and have soft silky skin with a low resistance to electric currents.[133]   Calcium feeding has no effect on the eidetic imagery of this type.[134]   Jaensch says, "in this type the mental functions interpenetrate, as it were."[135] He further describes their nature:

> The E. Is. are now no longer regarded as foreign,
> something that forces itself upon the personality
> from the outside, but as something belonging to the
> throw off, but as a gift, often as an intimate, loved
> possession that one wants to retain. While the E. Is.
> that were described above, are, like A. Is. dis-
> sociated from the mental personality, there E. Is.,
> like the contents of the imaginal life, are closely
> bound up with it. . . they, too, are always literally
> visible to the eyes. Like memory images, their
> colors always correspond to those of the real
> objects or test pictures. They never appear in
> complementary colours, and if the test object
> was three-dimensional, the E. Is., too, are
> three-dimensional. They are flexible and
> changeable as memory images, willingly and
> smoothly following every change in the flow of
> ideas.[136]

The determiners discussed up to this point of different types of eidetic images are believed to be constitutional in nature, but Jaensch

seems to indicate that some form of the phenomenon is almost universally

present at one stage of our development and its continuance is functionally

determined. He observes that the disposition for eidetic images is

widely prevalent up to puberty though varying from locality to locality

and from school to school. He writes:

> Far more fundamental, apparently, is its
> dependence on the type of education, in
> particular on the difference between the
> so-called Lernschule in the old sense and
> the Arbeitschule in the new. The latter takes
> far more account of the idiosyncrasies of the
> child, in particular its natural attention to
> the world of the senses.[137]

The relationship of eidetic imagery to creativity in art is

summarized by Jaensch in the following passage:

> When these characteristics, which are so
> prevalent in childhood, are used and kept
> alive, one finds an extraordinarily high
> percentage, in fact the majority of children,
> achieving results in drawing, painting, and
> the plastic arts that are acknowledged to have
> artistic value by all who have seen them.[138]

He continues and includes justification for enhanced creativity in art

programs in the school:

> Once the creative powers are freed in one
> direction, which in this particular case, has

been shown by our investigations to be wholly
peculiar to the world of youth; once the shackles
of school passivity are broken at one point, a kind
of inner liberation, the awakening of a higher
activity, generally sets in. Above all, to the
eidetic phase of development, as well as to the
mentality of the artist, there belongs a peculiar
structure of the mental powers, particularly
of thinking; and the arousing and vivifying of these
powers benefit all the subjects taught, even the
most rigorously logical.[139]

Vinacke defines the various types of imagery: after-images,

memory images, eidetic images, images of hallucinations, imagination

images, hypnagogic images, and hypnopompic images. He says:

> The afterimage is in reality not a true image but
> an aftersensation, resulting from the persistence
> of activity in the sense organ after the physical
> energy has been removed.
>
> Memory images are. . . the recall, in more or
> less exact form, of a previous experience or sensa-
> tion. . . The image is characteristically much
> less clear and detailed than the original sensation.
>
> Eidetic images are extremely vivid memory images,
> more frequently found in children than in adults.
> So closely do the images resemble perceptions that
> a person may point to an object as if it were really
> there. However, unlike images of hallucinations, the
> individual does not mistake an eidetic image for
> reality.

Imagination images are also memory images, but instead of representing the recall of former experiences, thus cooresponding in details to the original perception, they are typically combinations of previous experiences. Often they are quite unusual.

Finally, we may mention hypnogogic images and hypnopompic images, which occur in the former instance during the drowsy state between waking and sleeping and in the latter between sleeping and waking. They are memory images of a vivid nature, which are frequently numerous and varied. [140]

The distinction between eidetic images, hallucinations and illusions is explained in the following manner:

An illusion is a mistaken perception but neverthe-less a response to an actual (physical) stimulus. A hallucination is an imaginery (or false) perception, i. e., not a response to an actual (physical) stimulus. An eidetic image is a primary recall of a prior per-ception. Whereas illusions and eidetic images are essentially normal phenomena, a hallucination is essentially abnormal, usually associated with mental or emotional disorders. [141]

Vinacke observes that very little is known about conditions which increase or decrease the frequency and richness of imagery, a problem, he says, which has significance in creativity. He comments in similar fashion on the lack of objective knowledge concerning individual differences in imagery and factors to which such differences may be related. [142]

Rosamond Harding, in the study referred to earlier,[143]

discusses the role of imagery in the conception and execution of a work

of art. She says of images in general:

> Within the mind are many images. Images of
> objects in all kinds of positions and recordings
> of sounds, tastes and smells. The, so to speak,
> photographic apparatus and recording mechanism of
> the brain seems to be extraordinarily accurate. If
> one concentrates on some object in the dark,
> sometimes a mental image can be revived; and those
> images are often remarkably detailed and accurate. [144]

She continues with particular relation to the conception and execution

of a work of art:

> All sorts of combinations and modifications of
> existing mental images may occur while the
> artist is creating, and as the changes occur
> other ideas or images are suggested. . . I
> should like to suggest that the governing factor
> which controls the revival of ideas is the tenor
> of the mood; that the mood attracts ideas of all
> kinds which fit the conception. It has the power
> of building up from images already stored within
> the mind other new images which are relevant
> and that it exercises a welding power to fashion
> them to suit the artist's purpose; and that it
> performs this action automatically. We see this
> mechanism in dreams: how certain images are
> revived as symbols. The inconsequence of dreams
> is due to the fact that there is no controlling
> conception or framework. The dream is a reverie
> completely uncontrolled, whereas the artist's waking
> dream is controlled by his conception and the mood
> which it engendered. [145]

Viktor Lowenfeld distinguishes two psychological types whose approaches to creativity in the visual arts are decidedly antithetical to each other both in their perceptive reactions and in their mental imagery. He calls these types the "haptic" and the "visual." As mentioned earlier, visual minded persons tend to preserve visual memory images to a somewhat extensive degree but work especially well from perceptual visual stimulation; draw, paint, or model what they see; and either visualize or perceive wholes first, later pulling out details by analytic methods.[146]

Haptic minded persons, on the other hand, depend on tactile and kinaesthetic imagery.[147]   Lowenfeld observes, "the main intermediary of the haptic type of individual is the body-self - muscular sensations, kinaesthetic experiences, touch impressions, and all experiences which place the self in value relationship to the outside world."[148] Lowenfeld explains that the haptic minded individual produces art expression from subjective experiences of the self and tends to use synthetic methods, i.e., building up total impressions out of partial impressions.[149]   These persons, he feels, are hampered by what they see and cannot be reached by visual stimuli because they are

frustrated in the presence of visual material.[150]   Lowenfeld explains,

"most people fall between these types. Investigations have proved,

however, that few individuals have equal amounts of visual and haptic

predisposition. Seventy-five per cent have an appreciable tendency

toward one or the other."[151]   In a test of 2128 subjects Lowenfeld found

42 per cent visual, 23 per cent haptic, and 30 per cent uncertain.[152]

The differences in the two creative types, according to Lowenfeld, are

"psychological, independent of physiological factors," by which he

apparently means that the phenomena occur in blind persons as well as

in individuals possessing normal vision.[153]

A number of studies involving imagery, while not concerned with

persons in the visual arts, have interesting side relationships to the

general area of creativity and may serve as background for future

research in the art field. Frances V. Markey reviewed the literature

on imagery and imagination up to 1935 and concluded that wide differences

of basic concept existed, "imagination" varying meaning from "reconstruc-

tion of sense material by the use of imagery to views of creativity as a

mysterious force or instinct which transcends description."[154]

Charles H. Griffiths found a great deal of individual differences in type and kind of imagery used, visual imagery to predominate among subjects, a positive correlation between visual and auditory imagery, and indistinct imagery among some visual-minded persons. [155] Rosemary Gordon found a relationship between persons whose imagery is <u>controlled</u> to have less stereotyped images than those who have <u>autonomous</u> images. [156]   She found those subjects with controlled imagery to differ significantly from subjects with autonomous imagery in ability to perform on a test of "reversal of perspectives. [157]

Several recent studies of imagery have focused on objective measurement of brain waves through use of the electroencephalograph or EEG as mentioned earlier. P. E. Barratt showed reduction of amplitude to be related to the solution of mental problems which did not involve visual imagery. [158]

Anne Roe, in a study of imagery of research scientists, found biologists and experimental physicists to be primarily visualists while theoretical physicists, psychologists and anthropologists were primarily verbalists. Roe reported visualists used significantly more whole (W per cent) responses and fewer details (Dd's) than did verbalists. She

commented on the need for adequate techniques upon which to categorize

subjects in research concerning the relation of imagery to perceptual

characteristics – to open this problem to direct investigation and shed

light on "creative thinking."[159] W. B. Michael, W. S. Zimmerman and

J. P. Guilford related imagery as studied by Galton to the "space factor"

as measured in present factor analytic studies.[160] If these abilities

are identical, or even similar, the "space factor" found by L. L.

Thurstone and others as reported by Robert Burkhart may be evidence

of imagery abilities. Burkhart reported the Koh's Block Design Test

to be high in ability to measure the spatial factor and to contain a number

of other factors characteristic of creative ability.[161]

CHAPTER SIX

SOME CONCLUSIONS CONCERNING A PHILOSOPHY OF CREATIVITY

Introduction

The concept of creativity which this author believes to be his own,

emerged from a detailed examination of theoretical literature and research

concerning the field of creativity as presented in this chapter. This concept

consists of a definition of creativity as comprising the creative person possessed

of certain abilities, feelings and motivation, in an environment which

consists of both inner and outer conditions, engages in a creative process

(of an extended duration in time), to produce a product that is aesthetic

in quality and expressive of both the uniqueness of the person and his

feelings about his subject matter. The definition implies growth over a

period of time. Following the definition, theoretical literature and

research are examined for amplification of, or more detailed information

concerning, the various sub-phases of this dynamic phenomenon-process:

i.e., the abilities of the creative person, his motivation and the like.

To understand creativity, we must learn to see, to perceive, not merely look; and we must become aware of what we see and perceive. We must learn to feel, to respond emotionally. and we must be aware of such responses, not just vaguely motivated. To understand creativity we must learn to think visually, not just verbally; and we need to learn to respond empathetically (and, when possible, to respond physically) to works of art with which we come in contact. To understand the mearning of a creative experience, one must, among other things, personally engage in such an experience. To begin to understand the mearning of a creative work, one must at some point be confronted by the actual work. Vicarious art experiences, reproductions, or varbal descriptions of works of art are poor substitutes. Two basic characteristics, uniqueness and quality, underlie the creative experience and the works of art which are products of such experience. Each of these, of itself, is a desirable element of ordinary human experience; but both must be operative in an creative experience. The uniqueness in a creative experience is more or less synonymous with newness, originality, or creativeness. The quality of a creative experience refers to its aesthetic significance, to the result of man's finest and most successful efforts in such fields as painting, sculpture, and architecture.[1]

The character of Uniqueness in Creativity

Complete uniqueness or total originality in the production of a creative work or in the experience gained in contemplating works of art is probably impossible to attain. Concerning this, Kris has said:

> Art is not produced in an empty space. . . no
> artist independent of predecessors and models. . .
> he no less than the scientist and philosopher is
> part of a specific tradition and works in a
> structured area of problems.[2]

The uniqueness in a creative experience, and the work of art or the understanding which grows out of such an experience, might be described as the feeling of freshness and oneness - a feeling which is to some extent new or original and quite different, though perhaps never wholly so, from other feelings one has had. One can experience uniqueness through the variation of a single line, a shape, a color or a texture which may have appeared in slightly different form in an earlier work or in the work of another creative individual.

The most important elements in a creative experience would appear to be those which tend to separate or differentiate it from experiences which are ordinary, meaningless, or negative. For this author these elements include:

Selectiveness: Isolating that which is essential and significant.

Transcendence: Going beyond what is - or appears to be - seen, heard, felt, believed.

Truthfulness: Striving for honesty, sincerity, and artistic worth.

Profoundness: Seeking insight without loss of breadth; penetrating

beneath surface qualities.

Intensity: Sharpening focus on essentials, desiring involvement

in what is seen or felt.

Gracefulness: Seeking freedom from awkwardness, shrillness,

or overinsistence, preferring sublety and inter-

pretation to mere portrayal, desiring to be free

of strain, aesthetically beautiful, moving even

poignant.

Emphasis: Stressing aspects which appear aesthetically important.

Balance: Countering one aspect with another, although seldom on

an equivalent basis.

Proportion: Giving unequal but well-related emphasis to various

elements.

Rhythm: Sensing, reacting, and expressing in periodic sequences.

Consistency: Striving for relatedness without succumbing to

excessive organization or over-attention to detail.

Comprehensiveness: Giving attention to coverage without

compulsive thoroughness.

<u>Unity</u>: Seeking order and harmony without loss of variety.[3]

In presenting a list of characteristics which are believed to contribute to creativity, we have purposely begun with two which are popularly, and probably wrongly, believed to be the sole determinants of an individual's potential in this area.

<u>Heredity</u>: As Guilford and others have indicated, heredity is believed, though not known, to be an important factor in the creative experience, more so at the uppermost reaches of significance than at the preliminary levels through which most individuals have to progress.

<u>Talent</u>: Expressive talent and aesthetic insight, both of which are elements of the creative experience and may, in part, be inherited, are believed to be characteristic of our most renowned artists.

<u>Aesthetic awareness</u>: The creative individual is usually sensitive to aesthetic qualities in all forms of expression. He is easily, often, and deeply motivated by a wide variety of stimuli. His aesthetic "percepters" are always in action.

<u>Perceptiveness</u>: The person capable of a high level of creativity has a keen visual awareness: he sees things rather than merely looks at them. He sees them in detail; he senses their meanings and evaluates them.

Inventiveness: Although his procedures may vary from those of the scientific inventor, the artistically creative individual is similar in many ways to innovators in other walks of life. He is forward-looking, ahead of his time, free from stereotyped patterns of thought and action, willing to take risks, and highly original.

Flexibility: The ability to adjust his reaction to given stimuli is characteristic of the creative individual.

Fluency: Initial concepts are easily and rapidly enlarged, elaborated, or deepened and successive steps in the working process are quickly sensed and expressed by the creative person.

Intelligence: In its broadest meaning, intelligence contributes to (and indeed may be used to describe collectively) the characteristics which are believed to contribut to significance in the creative experience.

Independence: A high degree of individualism (non-conformism at its best) and a sense of "conscientious revolt" appear essential to the significance in the creative experience.

Integrity: Although he is often regarded skeptically by laymen, the creative person is probably one of the most honest of people. To him, sincerity in his concepts, working process and products, are of paramount importance.

<u>Gregariousness</u>: Although a high degree of creativity is not usually manifested as a personal characteristic until adolescence, it is possible that the person who possesses it might display, even as a child, the clannish qualities exemplified by most artists.

<u>Involvement</u>: In matters connected with his endeavors, the creative person nearly always is deeply involved.

<u>High output.</u> A high level of productivity on the part of a creative person greatly enhances the opportunity for significant creative experiences and resultant works of excellence to emerge.[4]

In a recent summary of research on teaching the visual arts, Hausman cited three studies which are also pertinent to the foregoing lists of characteristics which are believed to contribute to creativity: Beittel and Lowenfeld (1959) compared a listing of attributes identified in their own study with factors identified by Guilford (1950, 1954). Terms such as flexibility, closure, originality, sensitivity, and fluency were common to both of the lists.

Maslow (1957, 1959) has projected what happens to cognition when it is involved in creative experience: the personality fuses into a fully functioning, idiosyncratic whole. He postulates that a person involved in creative activity experiences in a unified manner - a manner in which

diehotomies, polarities, eontradietions, and eonflicts tend to fuse.
Through sueh involvement, pereeption becomes rieher and more sensitive. . .
As such, eognition aequires a speeial flavor of wonder, of awe, and of
humility before one's ereative powers.

Mooney (1953). . . identified four "dimensions" for describing and
aeeounting for ereativity: (1) openness to the reeeption and extension of
experience, (2) foeusing of experience: movement toward differentiation
and realization of self; (3) disciplined management and aesthetie forming,
and (4) deriving signifieance from experienee.

The developmental proeess in ereativity[5]

The following deseription represents a general eonsensus of the nature
of the developmental proeess of ereativity.

Initial eoneeption. The initial phase of ereativity varies greatly
among individuals. Most persons first eoneeive of an idea and then develop
it in an aft form. Their initial eonception appears to range from sudden
flashes of insight or inspiration to (aeeording to Guilford) a gradual perception
of related ideological and/or pietorial elements.

Conceptual refinement. The creative individual often refleets upon his
conception. eonsiders variations, and evaluates their aesthetie and ideological
worth.

Selection of medium and mode of expression. Once the conception
has been crystallized (or, in the case of persons who appear to experience
both phases simultaneously, during the conception/refinement period), the
creative person selects the medium and the mode of expression he feels are
best suited to the implemntation of his idea.

Production of the work. The amount of inspiration, thought, and
reflection which precedes the actual production of a work of art appears to
range from none (according to artists who claim this process evolves
simultaneously with production) to very much. But in nearly all cases creative
people continue refining their initial concept throughout the period of production.

Creative persons strive to bring their works to a state of "rightness"
which, for the moment at least, is reasonably satisfying to them. But it is
not at all unusual for them to rework a piece which ˙they had earlier felt to be
"right."[6]

Conception of additional works. We have seen that neither the conception
of creative works nor their production is an isolated, orderly process. Similarly
the conception of additional works seldom follows immediately upon the comple-
tion of a given work. New works are frequently, often begun, and sometimes
even completed, during the production of a work which has been started earlier.

Early Childhood Experiences

The fact that children are capable of creative experiences prior to the age of one has been proven by some rather striking drawings, paintings, and models produced by nine-month old children. Early childhood creative experiences are essentially free and uninhibited; they seem directly related to emotional and physical conditions. The child of one to three or four years of age does not draw or paint what he sees in the manner of an artist sketching a scene. Indeed, he may at times barely be conscious that he has expressed his feelings in the tangible form of art. As he gets older, his scribbled or free-form works indicate awareness of subject-matter elements. But, it is believed, he still creates from within, graphically expressing his total concepts of things rather than making a direct portrayal of their appearance.[7]

Unfortunately, most children receive the wrong kind of guidance at the crucial time and their resultant inability to cope satisfactorily with the conflict between what they feel, see, and come to know is frequently fatal to creative and aesthetic growth.

Recent experiments in the education for creativity of children indicate that sound aesthetic judgment may be an inherent human characteristic which, with adequate guidance, makes it possible for all people to develop a meaningful

and lasting understanding of the creative process.

A creative work is a unique and superb product of human expression. But creativity is usually, and herpahs most appropriately thought of in its tangible forms - painting, sculpture, and architecture - rather than in its intangible forms - concepts or experiences, natural phenomena, or man made objects of medioere aesthetic quality.

The reorganization of our visual habits, so that we perceive not isolated "things" in "space," but structure, order, and the relatedness of events in space-time is perhaps the most profound kind of revolution possible - a revolution that is long overdue not only in art, but in all our experience.[8]

Though creativity cannot specifically be defined, certain generalizations eoncerning its nature are useful in bringing the learner to the threshold of creative understanding and aesthetieally significant expression. By developing familiarity with the characteristics of uniqueness of qualitative excellence - in both the creation and the study of works of art - the learner will be able, through subsequent personal initiative, to understand the meanings of various art forms and to express himself creatively at an inereasingly higher level of aesthetic significance. He will thus be able to benefit more fully from creativities' many values.

Our particular trouble, in this "air conditioned nightmare" which we call a civilization, is that we have lost the very notion of cultivating the senses, until butterfingered and tongue-tied, half-blind and deaf to all nervous vibrations, we stumble through life unaware of its most appealing aspects, lost to its intensest joys and communions.

Although the fundamental aesthetic qualities of the arts have re-mained more or less constant throughout the ages, artists today are possibly more conscious of the potential human values of their work than their predecessors were. No doubt the critical nature of modern individual and social life has caused the artist to desire, more strongly than before, a widespread implementation of life-giving, civilizing, and beautifying values inherent in works of art. [9]   The way to a genuine appreciation of art is through education. Not the violent simplification of art, but the training of the capacity for aesthetic judgment is the means by which the constant monopolizing of art by a small minority can be prevented.   It will never be possible for everyone to enjoy and appreciate it in equal measure, but the share of the broader masses in it can be increased and deepened. The preconditions of a slackening of the cultural monopoly are above all economic and social. We can do no other than fight for the creation of these preconditions.

Creative education, as we know it today, was non-existent before the
nineteenth century. Whatever art knowledge individuals might have gained
was acquired indirectly through the occasional viewing of engraved re-
productions, through the even rarer contacts with original paintings and
sculpture, through the apprentice training of persons who had demon-
strated artistic talent and found sympathetic masters, and, of course,
through the environment which was on a generally higher aesthetic
plane than the billboard-cluttered, architecturally styleless setting in which
we find ourselves today.

One of the most recent, and perhaps most promising, emphasis in
educational philosophy has been termed aesthetically oriented creative
teaching.[10] It developed as a result of dissatisfaction with earlier practices
in which the study of creativity and the attainment of significant aesthetic
quality in creative expression were neglected. Proponents of aesthetically
oriented creative teaching want their pupils to develop an understanding of
the arts of all periods and to strive for the attainment of the highest possible
level of quality in their own creative works. One proponent of this philosophic
view in art education says:

> The theoretical justification for education in serious
> art lies in the claim that it trains the feeling side of
> life just as other studies train the intellectual side and
> still others perfect bodily skills, and that it does so in
> a way that goes beyond the educative effects of popular
> art.[11]

In addition, it is believed that creative education provides an internationally communicable visual documentation of contemporary culture, and aids in the visual interpetation of societies of the past.

It is assumed, then, that the general purpose of education is to foster the growth of what is individual in each human being, at the same time harmonizing the individuality thus induced with the organic unity of the social group to which the individual belongs.[12] It is further believed that supplemental creative educational experiences should be provided by classroom teachers, teachers of other special subjects, parents, and the environments in which we live.

(1) All persons should receive a thorough education in the creative process, beginning in nursery school or kindergarten and ctoninuing throughout secondary school, college and adult life.

(2) An education in creative works should include a wide variety of opportunities for personal creative expression; an intensive study of the works of major painters, sculptors, architects, craftsmen, and esigners; and related studies of important works in literature, music, and other academic fields.

(3) All persons are capable of developing proficiency in one or more forms of creative expression and they can be helped to develop

an understanding of the arts; but such ability and knowledge cannot be acquired in capsule form, by means of do-it-yourself kits or short courses in art appreciation, or from poorly qualified teachers.

(4) Major and lasting contributions to individual welfare, community and national life, and international relations can be made through a widespread and intensive study of an participation in the arts. For this reason, governmental aid to and support of the arts is imperative.

(5) At all educational levels, including the primary grades, art should be taught by a specialist who has had four or more years of preparation, who understands the complex delicacy of the creative process in art and is able to nourish its growth, who is well-prepared in art history, and who can foster the development of aesthetic value judgments on all types of fine and applied art objects.

(6) Personal creative expression is best fostered through aesthetically oriented creative art teaching and, conversely, personal art expression is hampered by teaching methods which exclude aesthetic considerations and rely upon copying or other stereotyped procedures.

(7) A knowledge of art is best fostered through broad studies of periods and styles; through depth studies of major works within particular periods and styles; through emphasis upon the aesthetic qualities which

underlie and inter-relate the arts, rather than memorization of names, dates and places; through personal creative work in media related to the period and styles being studied; and through carefully planned correlation of art studies with other subjects.

(8) A modest collection of original art works, frequent field trips, and extensive collection of color slides and reproductions, art films, and a complete stock of art supplies are essential to the implementation of a program of art education.[13]

This present chapter serves as a summary or composite of the more detailed aspects of these sub-phases of creativity as found in Chapters Three, Four and Five.

Summary of Findings: An Overview of the Creative Process

It is believed by this investigator that, although we do not know at this time the relative proportion which heredity on the one hand and experience on the other contribute in the development of creativity in the individual, both play a part - consequently all individuals might be helped to become more creative.

It may be inferred that the essential abilities of the creative person are both cause and effect of the creative process. For example, the ability of the creative person to produce <u>new</u> and <u>original</u> works is found to be closely related to his feelings of <u>aloneness</u> and <u>discovery</u> and to his motivation (habitual) driving feelings of <u>being personally responsible for his actions or self-labeling and self-training</u>. <u>Emotion acting as a magnet in the creative process in selection and organization of materials,</u> is a closely related concept in the Creative Process to the foregoing concepts and all of these conspire together to produce such qualities in the product as its <u>novel character</u> and its <u>reflection of the individuality of the creator</u>.

In similar fashion the ability of the creative person to produce new and original works may be traced to the dynamics of the creative process, especially to the phases of the creative process concerned with the regouping of images in imagination where emotionally charged personal taste reorders recalled (and altered) perceptions.

Figure I on page 269 is another ordering of essential concepts gleaned from the analysis of literature and research presented earlier. In this figure the abilities of the creative person are shown as being closely related to certain attitudes and habits. Motivation, the driving force of the individual, is shown as being at the central core of the personality, with abilities in the next innermost ring, surrounded by feelings and attitudes, and finally by habits. From this diagram it may be seen that by changing habit patterns and eventually feelings, abilities of the person might be altered.

Conclusions Regarding the Abilities of the Creative Person

From an examination of the literature presented earlier it was discovered that the characteristics of the creative person consist of the following abilities: to be sensitive and open to experience; to be perceptive; to have curiosity and seek new experience and expression; to be selective; to be original in ideas and expression; to follow emotional, intuitive
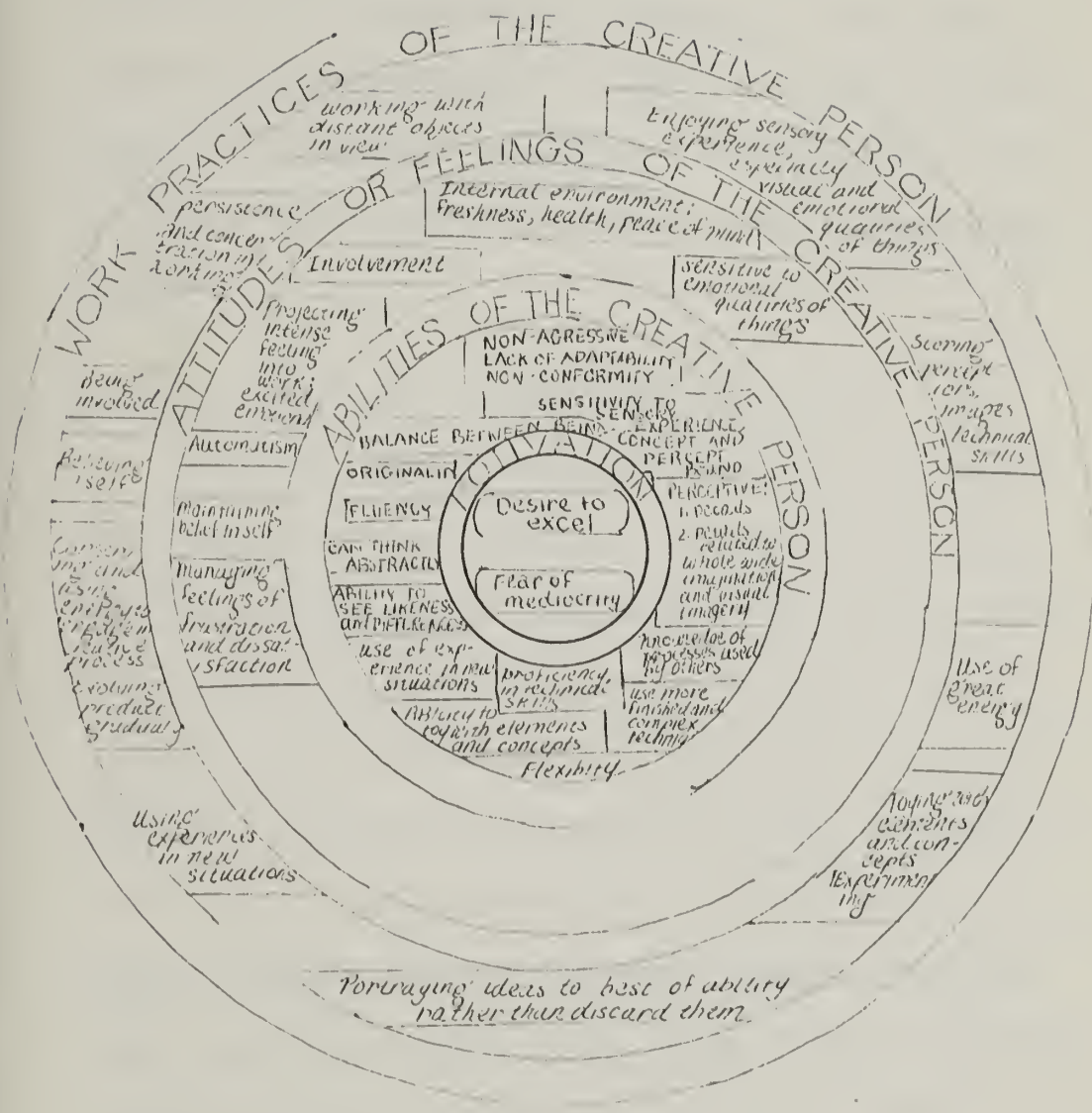
FIGURE I

CONCLUSIONS CONCERNING THE NATURE
OF THE CREATIVE PERSON

reactions; to have an internal locus of evaluations; to have a habit of
engaging in creative expression; to be fluent and have many ideas; to be
flexible; to be intelligent; to be retentive; to have perseverance; to have
disciplinary effort; to have technical skill; to be able to make aesthetic
judgments.

Conclusions Regarding the Feelings of the Creative Person

While fewer characteristic feelings than abilities of the creative
person emerged from this analysis, it is believed that they are equally
if not more, significant for an understanding of creativity since feelings
often crystallize into drive in motivation and determine the action of
individuals over periods of time with consequent effect on personality
structure and thus determine to some extent the abilities of individuals.
The feelings of the creative person which the analysis revealed are:
delight and pleasure in sensory experience; excitement about subject
matter; involvement; orientation toward poetic, emotional, non-rational,
imaginative aspects of living as well as those of a more logical and prosaic
nature; aloneness and discovery; confidence; and aesthetic experience as
a result of the other feelings.

Conclusions Regarding the Motivation of the Creative Person

Motivation is held by the author to be closely related to feelings. It involves driving forces, many of which are emotional in character although not necessarily all of them are. Motivation is the deep-seated, driving force at the core of the personality which represents feelings which have become habituated. From the analysis of literature assembled here it appears that the motivation of the creative person is likely to consist of: a desire to excel (self realization); intensity of purpose; habitual delight and pleasure in sensory experience; habitual personal responsibility for self-fulfillment; self-labelling and self-training as a creative person; and curiosity: being guided by the requiredness of the intended creation.

Conclusions Regarding the Inner Environment Which Contributes to Creativity

Environment is thought of as consisting of forces both within and outside the individual which contribute to his actions. As such, the feelings and motivations discussed previously are in many ways a part of the inner environment and therefore overlap with the category of environment. The chief qualities of the inner environment which enhances creative perhformance, some of which have already been

mentioned before, were found to be: <u>positively toned affective</u> (emotional)
<u>states; peace of mind; a positive self concept; freshness</u> as opposed to
fatigue; and <u>freedom</u> (psychological freedom: freedom <u>for</u> doing and
freedom <u>from</u> interruptions).

Conclusions Regarding the Outer Environment which Contributes to Creativity

The outer environment which contributes to creative development
of the individual consists of places, time, persons, and events. In the
survey of literature made here these were found to be: <u>the creator has a</u>
<u>large part in determining his own goals; the absence of external evalua-</u>
<u>tions; the importance of self education; study and development of skills;</u>
<u>guiding suggestions; relaxing occasions; hours conducive to freshness;</u>
<u>freedom from interruption and from coercion; approval and praise from</u>
<u>family, friends, society, teachers, and the like; travel; and contact with</u>
<u>ideas above and beyond the commonplace, with art, with artists, and with</u>
<u>friends of similar tastes.</u>

Conclusions Regarding the Creative Process

The analysis of theoretical literature and research concerning
aspects of creativity revealed a number of characteristics of the creative
process as a whole as well as of sub-phases or parts of it. Those character-
istics which this author has grouped together are: <u>accumulation of experiences;</u>

learned experience; a construction in time; a groping toward some dimly
perceived idea; emotion acts as a magnet in the selection and organization
of materials; subconscious maturation; integration resulting in illumina-
tion or insight; simultaneous transformation of inner and outer materials;
the process of creation is circular or spiral; perception of "the world"
and of "the field"; imagination as a process of consciously or unconsciously
rearranging part images in non-literal fashion; the principle of
"selectivity" in borrowing ideas; visualization often preceding a work of
art; systematic study of the whole before beginning work; evolving
products gradually; experimentation in the early stages of the creative
process; and the use of various means to relieve tension such as putting
work aside when baffled, resting, listening to music and the like.

Probably the most appropriate conceptualization of these and
the previous research studies reported is to be found with the framework
of conceptual systems theory (Harvey, Hunt & Schroder, 1961), which
proposes that a person's concepts are ordered according to certain
patterns of organization. The theory assumes that one of the most
important structural characteristics of this organization is its degree of
abstractness or conceptual level. A person at a high level is more likely

to explore situations and to be creative and adaptable when faced with a changing environment. In contrast, the person at a low level manifests thinking which is stereotyped, overlearned and dominated by the rules of authority. Also according to the theory, optimal environmental conditions which allow the highest levels to be reached are characterized by maximum information feedback and learning from it. Harvey et al. (1961) refer to these as interdependent. An environment which forces the person to fit a preconceived mold or to attain a completely externally determined standard would inhibit conceptual development; it is referred to as unilateral. In a validation study of this aspect of the theory, Cross (1966) points out the similarity of the unilateral-interdependent dimension to Schaefer's (1959) autonomy-control dimension, which has frequently emerged as greatly important in factor analysis of parental attitudes. By tolerating different points of view, they permit and encourage divergent thinking and diversity in the child so that he learns different patterns of dealing with the world. Unilateral training precisely restricts this kind of learning.[14]

Apparently, then, under instructional methods which optimize their abilities, creative children enjoy themselves to a greater extent. The claims for such methods go further, however, in that creative

abilities as measured by tests can be enhanced by suitable instruction.
Parnes and Brunelle (1967) in a review of forty studies evaluating
programs for teaching students to improve their sensitivity, fluency,
flexibility, originality and elaboration report that approximately ninety
per cent of the total number indicate that subjects' creative production
levels were significantly increased by deliberate educational programs.[15]

There is considerable historical precedent for thinking of general
creative abilities. Burnham, in 1892, pointed out that it had become
customary to distinguish between reproductive imagination and creative
productive imagination, that the mental abilities involved in remembering
and reproducing information are different from those brought into play
in recombining original impressions to produce new wholes. He saw
creative imagination as limited by reproductive imagination but as
varying in degree rather than in kind; and, according to him, it was the
reproductive imagination or memory that is particularized. Burnham
also maintained that "all children, unless they be idiots, have productive,
creative imaginations in some measure."[16]

Scientific investigators during the early part of the twentieth
century generally championed the concept of a general, non-particularized,

content-free mental creativity. Spearman (1930) asserted that "the power of the human mind to create new content - by transferring relations and thereby generating new correlates - extends its sphere not only to representation of ideas, but also to fully sensuous presentations, such as are given in ordinary seeing, hearing, touching, and the like of every one of us."[17] In the rationale for his test of creative imagination, Simpson (1922) defined creative ability as the initiative that one manifests by his power to break away from the usual sequence of thought. Concerned with identification of the searching, combining, synthetic type of mind, he argued that tests of creative thinking ability should be added to traditional tests of intelligence, which, he maintained, call for reproductive kinds of abilities and do not evaluate "a vital creative energy."[18]

It is concluded that the creative process is both short term and long term in character: short-term creative process being concerned with the production of a particular product, and long term creative process consisting of the total development of a creative person. Some of the characteristics listed previously apply to both short-term and long-term creative process. The fact that it is an accumulation of experience, a learned experience, and a construction in time are examples. In other instances such as the groping toward some dimly perceived idea,

emotion acting as a magnet in the selection and organization of ideas,
subconscious maturation and the like - the qualities refer to short-term
creative process where a particular product is created. Two of the
characteristics, the process of creation being circular or spiral (Koffka),
and the simultaneous transformation of inner and outer materials (Dewey)
are the bridge whereby a series of particular short-term creative
processes are translated into long-term creative process. Thus the
development of a creative person, or long-term creative process is seen
to be another name for the concept which throughout this work has been
termed "creativity."

Conclusions Regarding mthe Creative Product

The analysis of theoretical literature and research revealed the
characteristics of the creative product to consist of: its novel character;
its selective quality, the fact that it is nature transformed into new
relationships; its ability to awaken an emotional response in the observer;
its imaginative quality; its reflection of the individuality of its creator;
its technical skill; and its unified aesthetic quality.

<u>Summary of Conclusions</u>

Most economically, the literature on creativity can be classified into four major orientations: (a) the nature and quality of the product created, (b) the actual expression of creative acts and the continuing process during the "creation," (c) the nature of the individual, and (d) environmental factors and press that tend to initiate and foster creativity.

Definitions of creativity are multiple and there is no universally accepted definition and method for quantitative evaluation of creativity (Torda, 1970). This is to be expected since creativity involves rational and irrational elements. In fact, interaction between the rational and irrational is a unique energizing factor in the act of creation.[19]

Such as it is, the research on creativity to date suggests that more important than the types of materials used to promote creativity is the personality development of the learner. All psychological studies conducted so far on creative people have concurred in their reporting of an admixture of certain "desirable" and Undesirable" traits in creative people as contrasted with non-creative people. Drevdahl and Cattell

(1958) and Cattell (1963) found that writers, artists, and eminent researchers

were significantly more intelligent, adventurous, sensitive, self-sufficient,

and emotionally stable than the general population. At the same time

these creative groups were also seen to be more socially withdrawn,

dominant, aloof, nonconformist, bohemian, and radical than the general

population. Barron (1957) differentiated the 25 least original of 100 Air

Force captains and found the high scorers to be intelligent, widely informed,

concerned with basic problems, clever and imaginative, socially effective,

personally dominant, verbally fluent, and possessed of initiative. The

low scorers were seen as conforming, rigid and stereotyped, uninsightful,

commonplace, apathetic, and dull. Rees and Goldman (1961) separated

68 university students into high, middle, and low creative groups on the

basis of honors and prizes won in their fields. Personality traits were

assessed by use of the Guilford-Zimmerman temperament Survey and the

Minnesota Multiphasic Personality Inventory.[20]

Creativity involves the use and expression of acquired knowledge

and experience, as well as the ability to restructure this, the capacity

to produce many ideas and many original responses. This needs a well

stored mind. The richer and more varied the environment is, the better

the chances are of assimilating experiences and knowledge that will feed

the imagination, facilitate the production of new ideas, promote fresh

combinations of familiar ideas and an imaginative approach to problems.

This preparation begins at an early age, so it follows that if creative

potential is to be fully realized, the years of early and middle childhood

are of great importance. The child should be exposed to many interesting

experiences and exciting materials which serve to stimulate his senses,

inspire his growing powers of expression and appreciation in a great

variety of media. Among these should be found opportunities to experi-

ment with shape, textures and color, encouragement to look, listen, touch,

discover and experience, and activities to play with natural and mechanical

sound patterns. Fresh challenges should await the child as he reaches

successive levels of maturity. The beginnings of programmed experiences

in creative thinking are now on the way. Workbook programs, which

have stages of the creative process built into them, were developed by

Myers, one of Torrances' associates. The teaching machine may be-

come an ally to creative thinking.[21]

Creative ability is expressed in different fields, e.g., science,

politics, art, music, literature, industrial projects, human relations;

the creative scientist seeks the discovery of a new form or pattern in a

multitude of ways. Those engaged in architecture, engineering and construction are concerned with the production of form in a very practical field, while art, music, literature, creative dance are the outcome of liberal aspects. Finally organization, decision making, planning are vast fields challenging the politician, the industrial manager and the social scientist.[22]

The skills needed to express the particular inspiration must be mastered. The flash of insight comes easier in the practiced fields. This does not mean that creativity is limited to driving its inspirations from one restricted area alone. On the contrary, one of the major ways in which original ideas and new approaches come into being, is by combining materials, facts and ideas not previously combined. Cross fertilization is a tremendous source of innovation. In this connection, Sir Frederie Bartlett has remarked in his study on thinking that "outstanding advances in science occur when methods and instruments invented to deal with one set of problems have been taken over into areas with which they had little or nothing to do in their origin."[23]

Creativity is the dynamic process whereby a person becomes more creative through engaging in the creative process. This concept of

creativity implies certain goals or standards toward which the creative person is oriented, although he may not in all instances have reached high levels of attainment in creative abilities. It is the life-time process whereby a series of short-term processes resulting in more and more skillful and novel products gradually cumulatively build attitudes, habits, and abilities which may be termed creative since they lead to skill in performance and involvement in behavior.

Implications for Education

This author begins with the proposition that the education of feelings, the development of sensibility, and the ability to invent forms, to give direction and purpose to significant emotions and ideas, is a prime function of the educative process.

At some time during the course of our social development, we have deliberately or mindlessly made the decision that the acquisition of technical information is more important than the development of our humanity. It is the nature of the primitive mind, and of primitive peoples, to be overwhelmingly concerned with the business of defense and offense, with violent reactions to attack, with counterattack. This is necessary for simple survival in a fierce environment. The underdeveloped mind

is forever preoccupied with problems related to the technology of weapon

making, gadget making. At its higher levels of technological development

a society becomes embroiled with a mechanics devoted to embellishing

existence with gadgets devoted to sensual pleasure of an animal-like sort,

mainly with the evocation of sensual pleasures such as that made possible

by peculiarly designed automobiles, dress, and a vast variety of physical

accoutrements. To our sorrow this wonderful technology has often proven

to be devastatingly brutal. As evidence one need only examine modern

weapons of war.

It has been the historical function of the artist to demonstrate that

the expression of a morality, religious or secular, requires an art form to

give it vitality, direction and purpose. Such an example will be found in the

religious art of almost any time. Art has seldom been an end in itself. In

most cases it has been part of the flow of daily life. The very act of seeing

an art form has often been part of the business of learning, of receiving

emotional impetus, of deriving knowledge, of becoming. The process of

making a creative form has also been a process of "becoming." of growing

in knowledge and understanding, of experiencing some concept or belief with

increasing depth and emotional quality. It is hoped that the provess of involve-

ment with intriguing plastic materials can provide a means for achieving im-

proved understandings of ourselves and each other. If creativity is not conceived as a mere means for producing paintings of sculptures which are ends in themselves, but rather as part of the process of living with increasing purpose and pleasure, with growth and an increasingly qualitative feeling and understanding, then art becomes a primary educational tool. The process of creative activity can become a means for making living more excitingly pleasurable, or giving to living a form and a purpose, giving an aesthetic value to the lives we lead. From this point of view the art object is the sign that this important life-process has taken place.

During our history we have been periodically, concerned with problems of humanism, with the problem of giving expression to compassion, self understanding and our understanding of each other. This process has been the process of creativity. The art form has been intended to establish a means and a structure with words, sounds, body movements, plastic materials. These structures were poems, songs, buildings, sculptures, stories, paintings, dances. In these and other ways perhaps unknown to us today, people communicated a sensibility, hopes for an evolving joy in living. In this way the creative form comes into being as the expression of a morality. The morality deals with the purposefulness of living. Moral value in creative processes do not always exist in the

different creative objects to the same degree. A work of creativity may
be ribald or compassionate, obscene or saintly, devout or mocking,
satirical or worshipful; but throughout each effort there will be various
degrees of concern with people and their fate. I am inclined to believe
that as a creative work matures it develops a moral essence that deepens
and becomes increasingly pervasive.

In education we have always had the choice of placing emphasis on
science or on art, or equally on both. In our time we have chosen the
"facts" of our physical environment as the most suitable material for
study in our schools. Curricula are too often based on processes of
memorization rather than processes of education.

This author suggests that the most useful education consists of an
involvement with the processes of creative activity. But mere involvement
is not enough. The essence of the creative activity will be formed from the
moralities of good social living. Creativity is sufficiently potent to direct
feeling toward destructive ends. If this were the case the creative processes
would serve no better purpose than our absorbed involvement with the
mindlessness of technology. The creative process would have as its
goal the development, in an unending but even evolving process, of
socially meaningful moralities. The binding element would be the

unfolding of an aesthetic. Life would be given a formed and structured

meaning. Each member of a social group would contribute to the health

of the social structure because his uniqueness, his individuality, would

be given opportunity to find expression in aesthetic form. And the unique-

ness of each would contribute to the richness of the whole social fabric.

Learning of the creative processes would consist of a continuous

process of exploring materials and forms, of structuring ideas into the

varied qualities of diverse materials. A process of discovering the

potential of ideas and materials would be the essence of the educative

process, the process of learning and becoming. Technology has had its

chance; it has dominated our education and our lives since almost the

beginnings of conscious time. Technology has become intricate,

sophisticated, almost super-human. And with all this we have wars,

self-perpetuating hatreds, ghettos and ghetto mentalities. The best

solution technology has offered for such social diseases is to provide more

fuel to feed the evils. Creative education does not deny the existence of

a valid technology, but it does emphasize the need for an education based

on the methods of creativity. The role of technology is to provide the tools

needed in the processes of creative activity. The purpose of creativity in

education has been and must continue to be an exploration of the ways these

processes contribute to the processes determining and becoming, the

processes of education.

In most traditional classrooms, too much of the responsibility for the educational process is retained by the teacher, who determines the goals, decides and presents the content to be learned, tests for recall (and occasionally understanding), identifies problems to be solved (usually problems with only one solution rather than real-life problems with many possible solutions), specifies the approach to be followed in arriving at solutions, and evaluates the student's performance against his (not the student's) standards and criteria. The student is included very little in these activities and cannot, therefore, feel much responsibility for them.

John Dewey warned us that any instruction in eatablished knowledge which fails to whet the inquiring spirit and stir up a creative frame of mind is an enslavement. He demanded that the student be emancipated from the choking embrace of doctrinal authority, whether it stemmed from text, government, teacher, or local school board. The first pre-requisite of creative thinking is the unshackled mind, a mind that asks for proof but is never wholly content with that proof. Skepticism needs to be encouraged, defined, and justified. No doctrine or value should be sheltered from criticism. Educators should seek ways to foster appreciation and relish for controversy in ideas; a disinterested quest for truth, in other words, open-minded criticism. The work of an unshackled mind should be brought to bear on what students study, on

its uses, ramifications and implications; it should be applied to both

the student and the adult society. Side by side with the absorption of

the cultural heritage should go an early and profound analysis of that

heritage, an attempt at evaluating those elements that led to values

currently considered "good" and "bad."

In the past in curriculum design, there has been a great emphasis

on objectives dealing with the knowledge and information peculiar to a

specific discipline. There has been relatively little emphasis placed

upon objectives dealing with assisting the learner in the discovery,

acquisition, organization, and application of information; in other words,

creative thinking abilities (learning to learn). The futility of such an

approach is nicely illustrated by an analogy involving the work of

Newell, Shaw, and Simon in the computer simulation of human problem

solving. [24]   These gentlemen designed a program that, when coupled

with a machine, acts to solve problems in logic. Suppose they had

programmed (instructed) the machine only to receive, store, retrieve,

and reproduce information? What would have resulted is not a machine

with a problem solving capability, but a glorified dictionary of logical

statements and relationships which, it might be added, would be very

much akin to the "walking encyclopedia" but non-functional problem

solvers our science, engineering, and technical schools are frequently

accused of turning out in great numbers.

But of course Newell, Shaw, and Simon also "instructed" the machine in many other processes involving the processing, organization, efficient utilization, and application of information. In short, curriculum objectives have been too caught up with the knowledge and information central to the disciplines, and generally have ignored the question of what it is the learner must do to acquire, organize, and apply that information. Probably one of the main reasons for this is that teachers have frequently viewed themselves as content specialists and generally have not acknowledged that the cognitive psychologist and other behavioral scientists have anything worthwhile to contribute in the design of "solid" creative content curricula. This attitude is widespread among secondary and even elementary school teachers, who perceive the transmission of information and knowledge to their students as the first and in most cases the only matter of importance despite the usual lip service paid to the other views.

At the Institute of General and Polytecynic Education in Moscow, one researcher, Razumowsky, has paid more than lip service, and has been experimenting in the development of new and more creative ways of teaching and enhancing creative thinking abilities to students at the high

school level. [25] In theory, he divided student activities in the order of

mastering the subject matter into three steps. First, the student relates

to the material which has been explained to him by the teacher, or re=

produces what he has read in the textbook, or demonstrates the experi-

ment already shown to him. Explanation and repetition are the usual

teaching methods for this step.

In the second step, the student uses the material or knowledge given

by the teacher for solving problems. That is, the principle of the

problem directly indicates what the rule or law is that the student can

use to obtain the solution. This training exercise is the teaching method

used for this second step.

With the third step, the student begins to use his knowledge in

solving problems for which a standard principle is not, in itself,

adequate to provide a solution. In the problem as given, there is neither

direct indication nor hint as to which rule or law must be used. The

student must determine that for himself. This step is very important

in the learning and fostering of divergent thinking, not only because the

student's knowledge becomes deeper but also because his creative

abilities are developed at the same time. [26] Investigations have shown that

creative exercises such as those described produce a marked effect in

developing students' abilities.

When one tries to foster creativity he must have the courage to allow and even encourage unexpected responses and events. Some of these unexpected responses may prove to be more appropriate than the responses which were expected. Consequently, a person must learn how to deal with these surprises when they arise to ensure that there will continue to be incentives to express the unexpected.

The creative person – and this shows both his skill and our ignorance – is truly an artist working at the fringe of knowledge, out at the frontiers. We don't know much about this artistic work of the truly creative person out at the "leading edge of knowledge." He follows the leads wherever they go, he is pathcreating, he and the problems stick together, he opens the way for others, and so on. Since many, if not most persons have had little or no experience in creative pioneering, the processes and strategies called for are generally not well understood. Ghiselin says that if we mean by "madness" something we have never experienced and do not understand, then the creative process when it occurs to a high degree in someone around us may be judged as madness by those who have not yet experienced and do not yet understand such processes.

From several little studies of various people at various ages, the general finding, though there may be some exceptions, is that <u>the more creative an idea you have at any stage of your life, the more likely you are to be in trouble.</u> In the first place, you are likely to be alone, because you are the only one in the world with this idea when you initially get it. If it is highly creative, it won't square with what is currently accepted as common sense, and so you will probably be alone and lonely. And you will tend to be in trouble with people close around you, with existing organizations, procedures, patterns, ruts, etc. And when you have a highly creative idea, it will be a rare phenomenon if you are ever surrounded by much understanding, let alone encouragement and support. Your idea, and you with it, will likely be very much in an "underdog" predicament.

The world is sick - at least, it has many sicknesses. One of the key sicknesses may be a weakness, even an inability of persons in leadership positions to listen to new information and especially to new ideas from those whom they supervise. A healthier organization (as well as a more healthier individual) is more capable of receiving new information and ideas both from within and from outside itself. And the information and ideas that are trying to be heard may include things that will help cure some of the sicknesses in ourselves, in our organizations, and in our world.

The environmental factor is a dynamic one. It is exerted on the person not only here and now, at the time he is seeking to create, but also throughout most of his preceding life. The past and present environmental forces that may affect his innovative behavior include the attitudes of his parents toward even the first questions he asked as a child, the responses of teachers to his performance in school, the interests of playmates, the rewards society has given for his past contributions, and demands put upon him by his employer. These and many, many other environmental forces combine to affect whether and to what degree the act he is now undertaking will be creative.

The entire period prior to secondary school is a highly formative one for students, perhaps the single most important one. The initial school y ears are where the educational environments have their first impacts and though these can be potent, the child is still spending many more of his waking hours outside the school each calendar year than in school. As he grows older, he tends to have more teachers per year, more different students with whom he takes classes, more homework assignments, and more extra-curricular activities, all of which increase both the number of educational factors affecting him and the percentage of his waking hours in which he is under the influence of school. Consequently, he has been programmed for

approximately 12 years at home and in the world, including 6 or more years in school, before he starts his secondary school education. Habits, patterns, and expectations have often crystalized quite firmly and have been "stamped in" through long years of practice.

The initial and lengthy background should not be overlooked, nor should one feel that students at any age cannot change their patterns nor be receptive to new ways of learning and thinking. Since increased emphasis to encourage and cultivate creative processes and behaviors in students has to be started someplace, it may need to be given greater emphasis in certain secondary schools until more of the elementary schools and homes deliberately devoted increased attention to fostering creative talent and creative experiences in their children.

The body of knowledge previously accumulated by students may be both an asset and a liability to them in terms of potential creative performances. Their knowledge may pattern them to think in certain orthodox ways and may tend to produce ruts of thinking from which it may be difficult for them to escape. In addition, they may have been exposed almost entirely to well-defined and documented knowledge, with little exposure to newer, more fuzzy knowledge or to the frontiers of knowledge or the unknowns that lie beyond the current boundaries. Any school or any classroom can capitalize on the

opportunities of exposing them to young new and rapidly expanding areas of

knowledge and by opening up questions about unknowns as challenges for the

future on which the oncoming generation can spend their talents, if they

desire.

Since creativity is a many faceted topic (a many splendored thing)

several different avenues of exploratory development work should be tried

(all of which will as far as possible be attempts to bridge from pertinent

basic researeh findings). Some of the new attempts could be made in

relatively separate areas like the following, with any existing technology

being modified and utilized where pertinent.[27]

1. Developing creative thinking and creative problem
   solving characteristics.

2. Developing creative personality and motivational
   characteristics.

3. Overcoming emotional hindrances and blocks to
   the creative processes.

4. Developing an awareness of what is not yet known
   and how creative ventures could be launched therein.

5. Combining knowledge and creativity, or information and
   creativity - drawing upon cybernetics and information
   theory, including attempts to increase the creativeness
   of the input (receptional) processes and the output
   (expressional) processes.

6. Eliciting creative processes in classroom programs
    (the creativeness of the internal central processes
    of students is a most challenging area).

7. Focusing upon the creativeness of the products of
    students.

8. Developing programmed instruction for creativity.

9. Developing special instructional media for creativity
    (Taylor and Williams, 1966).

10. Modifying existing creativity testing materials to
    make them suitable for situational training and other
    classroom instructional uses.

11. Utilizing related technology (such as inquiry training;
    discovery methods used in the arts and mathematics;
    programs in art education, dance, and writing for
    fostering creativity; and various training programs
    in industry designed to develop creativity).[28]

Because creative thinking capacities cannot be deliberately controlled

in this author's opinion, but only encouraged, they can therefore easily be

inhibited. With this in mind, a few suggestions on what not to do may be in

order. This author considers that the following list of items which appear

in numerous research literature, such as the research of Hallman, should

be avoided whenever possible in the educational system.[29]

First: The pressure to conform is perhaps the major inhibitor of

creative thinking. These pressures may take the form of teacher-chosen

goals and activities, standardized routines and tests, or just simply, an inflexible curriculum.

Second: Authoritarian attitudes and environments repress the divergent and creative potentials of young people. They inhibit learning to be free, learning to be self-directive and self-responsible. Education by authority directs students to learn what others have already discovered, what others believe, and what others have organized. Authoritarian education places emphasis on following directions, doing what one is told, and on solving problems which have fixed and predetermined answers.

Third: Ridicule and similar attitudes destroy feelings of self-worth in students and therefore have a tendency to block off their creative and divergent efforts. Domination of pupils for any reason, threats of any kind; fears which may be engendered for failure to obtain right answers or to know the proper information, dissipate any creative tendencies which may be latent within the student.

Fourth: Those traits which make for rigidity of personality, inhibit the creative and divergent expressions of students. These traits may vary from psychopathic conditions to the unconsciously learned habits which simply annoy others. It might be noted that the inflexible defense mechanisms and compulsive fears are usually on the part of teachers who are the most

common offenders. The facades which we erect in order to shield our true selves and our ego-centered interests dampen the exploratory and often risky ventures which characterize divergent thinking and its creative activities.

Fifth: An over-emphasis on such rewards as grades arouses defensive attitudes on the part of pupils and to that extent threatens inventiveness. Perhaps all forms of evaluation which are external to a given situation, including even at times, laudatory criticism, deter the productive tendency.

Sixth: An excessive quest for certainty stills divergent thinking and the creative urge. This habit is instilled by teachers who demand the right answers, and who insist on what they themselves want in the way of responses, and who demand their own predetermined solutions. These attitudes are then usually extended by students into other affairs and express themselves in the form of demands to know what is right with respect to dress, what clubs to join, and what otherwise, will be socially acceptable.

Seventh: An over-emphasis on success drains off energies from creative processes and focuses them upon outcomes, i.e., upon some status symbol, or on the merely instrumentally valuable goals which might have been achieved. Such over-emphasis blocks creative thinking

because it has the tendency to direct attention away from growth and from continual improvement.

Eighth: Hostility toward the creative personality, either on the part of teachers or peers, may well serve as a learning block. Every divergent and creative act is unique, idiosyncratic, and novel. For this reason alone creative persons tend to be individualistic, non-conforming, and often curiously one-sided. This is not to say, of course, that all off-beat personalities are creative. The divergent attitudes can as easily become a pose and a sham, as well as at times, a rigid defense mechanism. The task of the teacher is to penetrate such shams (with love and under-standing) and to discriminate between them and the genuinely inventive personality.

Finally: An intolerance of the "play" attitude in connection with school work characterizes the environments which stifle creative thinking. Innovation requires freedom to toy with ideas and materials, the encourage-ment to deal with irrelevancies, and permission to dip into fantasy and make-believe. This attitude allows the ideas and other materials under consideration to take on plastic qualities and so lend themselvees to re-arrangements and fusions which mark the creative act. Creativity is, and should be, profound fun.[30]

A nurturing environment both at home and in school is one which gives a free reign and a ready response to the exploration of the child. Pulford and others seem to indicate that the climate for education can be improved by recognizing and overcoming a number of mental blocks that form built-in defense mechanisms against change. Personal insecurity manifested as a lack of confidence and a fear of criticism constitutes one "mental block" on an emotional plane. A second "mental block" is on a cultural plane and includes the desire for the familiar ordered structure, the fear of risk and speculation, and the compulsion to conform.[31]

Incidentally, Pulford's research on conformity has shown the following interesting results:

A. Group pressures inhibit originality.

B. Creative people conform to group pressures but they conform less than uncreative people.

C. Support for deviant opinion reduces conformity.

D. Expert opinion supporting a position increases the conformity with it.

E. People conform more when their actions affect other people than when they themselves are the only ones affected.[32]

F. Status differences within groups increase conformity

and reduce creative effectiveness of group work.

G. People who feel rejected by groups conform more than

people who feel accepted.

When the ability for divergent thinking and creativity is threatened,

it will not be extinguished; it is more likely to be given an anti-social

turn. The frustrated, though able child, is likely to grow up with a

conscious or unconscious resentment against the society that has done

him an irreparable injustice, and his repressed ability or talents may

be diverted from creative and productive direction to retaliation. If and

when this happens, it is likely to be a tragedy for the frustrated individual

and for the repressive society alike. And it will be society, not the individual,

in this author's opinion, that will be blamed for this obstruction of God's or if

you prefer, Nature's purpose.

If our present generation of students is as strongly motivated

toward the solution of these problems as it is often said that they are, it

is time to help them achieve the problem-solving tools by which they may

correct this imbalance that has existed for so long. The young people

should also realize that to resort to violence is a sign of failure to be

creative. Violence does not solve problems; it creates new ones. It

is the last resort of those who have given up in their attempts to solve

problems. It is in the same category with the tantrums of a four year old child. What we need are not only positive, realistic suggestions concerning what to do about the pressing social problems, but also the means to sell the ideas in creative ways. There are only two ways to get others to accept one's ideas, persuasion and coercion. Only one of these routes has lasting and satisfying results for the majority of those concerned. It may be that in the planning for new programs devoted to creativity we have the beginn ing of a happy solution to current social upheavals. (Incidentally, violence cannot always be avoided, since in this author's opinions there are different types of violence, i. e, , the violence of facism as opposed to the violence to combat facism.)

With all such developments, however, the student must be re-minded that the accumulation of information for storage in his memory system is an absolute requirement for creative problem-solving. There is no indication that there will soon be vest-pocket computers available to everyone, and until such a time comes, each person will have to depend upon the computer between his ears for his chief memory store as well as for his stock of programs for processing information. Outstandingly creative people who have expressed themselves on the needs for information seem to agree that a wealth of personal storage is essential. Information

is the substance of intellectual functioning.

It is up to those who teach, to recognize this same need, but to see that the kind of motivation with which the student acquires information is intrinsic; that it arises from the thrill of successful learning. The motivation is not extrinsic, such as appears in the struggle for grades and diplomas or to escape the displeasure of parents. It may be noted, that when the peculiar difficulties in assessing precisely what is happening in a classroom are taken into account, any conclusion about classroom interaction can only be tentative. The most readily quantified aspect of such interaction is the question-asking behavior of teachers. This issue has been explored by Burkhart using a test which required of a sample of teachers in training that they ask divergent questions about an object after they had been offered a definition of divergent thinking. The majority of Burkhart's sample proved unequal to the task and in some cases produced lists of forty or fifty convergent questions. They realized that they were doing so but could not break their set. Such teachers tended to run highly · evaluative classrooms.[33]

What this author believes to be a clear and explicit account of an approach using programmed instruction for training creative/divergent-problem solving ability is presented by Crutchfield. He concentrated his

attention on what he calls a "master thinking skill." This refers to the

creative person's basic ability to plan, organize, mobilize and deploy

his repertory of specific skills in "an optimal attack on a creative problem."[34]

Through exercises the creative individual is able, according to

Crutchfield, to maintain a constant and always precarious balance between

the conflicting and competing demands that arise out of "the inherent

antimonies in the creative process": fluency and evaluation, divergence

and convergence, freedom from compulsive closure and a strong desire

toward closure, passionate committment and cool detachment.[35] To enhance

this ability Crutchfield adopted a "creative-acts-in miniature" approach.

By undertaking a series of meaningful creative problems of some complexity

and being guided step by step through the instructional program to a final

successful solution of each problem, trained children surpassed control

children for every one of the different specific attributes of effective

problem solving which Crutchfield measured: question asking, sensitivity

to discrepancies, generation of many good ideas and utilization of clues,

and also in the "ultimate pay-off," getting an idea that gives an actual

solution. Such approaches are typified by O. K. Moore's "responsive

environment" in which children are propelled by their own curiosity, the

adult or the environment being used only for responding promptly to the

child's efforts to learn.[36]   A much more ambitious experiment has been

created by Karlins and Schroder for the inductive teaching program, a

competerized technique which requires the subject to become an active

manipulator of the informational environment and to utilize the information

in that environment to come to conclusions and make decisions which are

not prejudged by him due to external patterns or sources.[37]

        To sum up then in present day America, or so it looks to me,

the affluent majority is striving desperately to arrest the irrestible tide

of change. It is attempting this impossible task because it is bent on

conserving the social and economic system under which this comfortable

affluence has been acquired. With this unattainable aim in view, American

public opinion today is putting an enormously high premium on social

conformity. This attempt to standardize people's behavior and thought

procession in adult life is as discouraging to creative ability and initiative

as is this educational policy towards the children of those adult parents.

        Incidentally, we don't want to swing the pendulum completely over

to the opposite direction and develop divergers only; instead we want to

help convergers learn to discover a better array of alternatives from

which to converge, so that their decision will encompass a greater order

from the increased elements taken into consideration. Why teach for

creative thinking, except insofar as it leads to better mental health and creative production? In creative decision-making one always asks, "How do you know what should be done until you explore all the conceivable alternatives that might be done?" "Of what use are the many alternatives except that they lead to a better ultimate decision or to a new notch upon one's growth?" "Why, in fact, develop freedom unless it is accompanied by greater responsibility?" What is needed is a "controlled" reaction in the development of human potential just as in the development of Atomic Energy. Imagination must be, in the last result, subservient to the self. Once developed, it must then be disciplined, or one increases the risk of harmful results to the individual and to his society.

Meanwhile, in its present state of development, our society finds it difficult to accept the creative person's non-conformist tendencies. It is too bad that we tend to condemn all "deviants" rather than trying to study each and determine whether he is "real" or a fraud. In law, a man is innocent until he is proven guilty. We consider this principle so important that, when in doubt, we let guilty men roam free rather than risk confining an innocent man. Could we not approach non-conformity likewise by considering it as sincere and real until it is proven otherwise? Could we not tolerate many potential "fakers" rather than risk denying

the true divergent or non-conformists authenticity and individuality?

Referring to this concern, Carl Rogers has stated that our educational

system "cannot afford to develop citizens who are passive, whose knowledge

is settled and closed, whose ways of thinking are rigid, who have no feeling

for the process of discovering new knowledge and new answers."[38]

Julius Stulman felt strongly enough about the inadequacies of the present

educational system to say that:

> Any educational program based on the old traditional
> methods, with their antiquated concepts, would be
> miseducation. . . It is conceivable that the methods
> used in teaching today are not only completely
> inadequate, but injurious.[39]

Stulman's word "conceivable" should be changed to "most probable" if we

agree with John Holt and others, who are of the opinion that "most schools,

in spite of their good intentions, do untold harm to most of our children."[40]

And what are they like who manage to remain in this system as

students for sixteen years or longer? Chickering cites several studies

showing that "those who persist longest in college - compared with their

peers who leave or who interrupt their education - are most authoritarian,

more rigid, less creative and less complex.[41] He added that numerous

studies of attrition show that, "the most creative and complex are those

students who leave." And why do they leave? They get tired of seeing

the teacher in the center of the stage, deciding, directing, controlling, manipulating, entertaining, evaluating, punishing, and coercing while they sit passively doing as they are told. Although the teacher is usually convinced that what he does is good for the student, his lectures and demonstrations are given more to meet his needs than those of the student. Little or no consideration is given to the interests of the student, who is expected to conform to the wishes or demands of the teacher. The teacher may ask for active involvement - thinking, questioning, problem solving, evaluating, creating - but his actions, the methods he uses, and the rewards of the system are for passive activities. Listening and accepting without questioning are stressed more than thinking, memorization more than problem solving, and conformity is valued over creativity.[42]

In most traditional classrooms, too much of the responsibility for the educational process is retained by the teacher, who determines the goals, decides and presents the content to be learned, tests for recall (and occasionally understanding), identifies problems to be solved (usually problems with only one solution rather than real-life problems with many possible solutions), specifies the approach to be followed in solutions, and evaluates the student's performance against his (not the student's) standards and criteria. The student is included very little in these

activities and cannot, therefore, feel much responsibility for them.

As the purveyor of rewards and punishment for social and intellectual skills, the teacher stands in an advantageous position for encouraging creativity, curiosity, independence, self-reliance - in other words, a well rounded, healthy and diverse personality. When the child shows some independent thinking the teacher can praise him, and when the child shows signs that his personal interests are not being satisfied by a proposed assignment, the teacher can modify the assignment enough for that one child or any other, to include his interest. Jonathon Kozal's 1967 book, Death At An Early Age, describes too well what happens to young children at a time in their development when they do not have the emotional or intellectual defenses to cope with such a rigid and non-supportive environment.

Traditional exams disembowel the creative process completely, since they are usually strong on memory processes only and offer little opportunity for divergent thinking production or evaluation. Little wonder that so many teachers complain that students do not think, when, as a matter of fact, teachers do not ask the kinds of questions that require thinking, or give the student time to do so if he does by chance, have the opportunity. It seems that every year teachers teach the exact

same materials to a new group of students; and by graduation nearly all students have been exposed to nearly all the same thing. It's a wonder that such a homogeneous group every comes up with any new ideas.

In the work by Getzels and Jackson it was noted that in their "high creative group" there was less concern with conventional vocational goals (teacher, doctor, engineer) and more interest in so-called off-beat vocations (inventor, artist, disc jockey). Neither were the high creative group overly concerned with whether or not they possessed the character traits admired by teachers or parents. These highly creative students were more self-reliant and independent, and despite the fact that they scored significantly lower (127) in mean I.Q. scores than their so-called brighter classmates (159), they attained the same degree of academic achievement as the high intelligence group.[43] (The implication of the use (misuse) of I.Q. tests may be noted!)

Since the Getzels and Jackson study it has become fashionable to point out that the highly intelligent person is not necessarily the most creative, the later investigations concerned with college grade-point averages have tended to bear this out (Harmin, Taylor, Smith and Ghiselin).[44] However, in the haste for those on the short end of the standard intelligence scale to grab at this sign of redemption, they have

frequently overlooked the fact that although measured intelligence is not a sufficient condition for high level creative output, it does show up again and again as being a necessary ingredient.[45] Some of the implications of these studies on the correlation between creative thinking abilities and education suggests that a major step in encouraging divergency and creativity in the classroom would be the support activities which increase the student's self-confidence and persistence, and the toleration by teachers of student behaviors which are currently seen as "unpleasant."

The quiet, well behaved, bright student may be ideal from the teacher's point of view; since her crammed schedule requires smooth-running efficiency of all topics that are to be adequately covered. The creative child is more apt to want to ask questions or voice his own opinion, thus slowing down the machinery. Sometimes, also, the opinion of the creative/divergent student is voiced in a negative reaction to teacher-imposed tasks; a reaction which may quickly earn him the title of "troublemaker" from the anxious, dogmatic and authoritarian type of teacher. The curiosity of the well-developed divergent-thinking type of child is such that he is more apt to "fool around" and attempt things not outlined in the teachers lesson plan or teaching unit. Also, according to Goodale, because he is less concerned with social conformity he is more

prone toward a different style of dress and manner, and may also be

less motivated to gain the highest marks in the class. [46]

In our traditional system, with its emphasis on academic achieve-
ment, education becomes a selection tool, to select out those who have
difficulty achieving in this narrowly and arbitrarily prescribed sphere
of activity. Only those who can achieve and maintain the standards of
the schools are allowed to succeed, and hence, reap the rewards of
society. The objective of far too many schools, particularly universities,
is to maintain so-called standards of excellence - excellence arbitrarily
defined as achievement on academic tests measuring recall of facts and
principles transmitted through lectures and assigned reading. It is the
student who must conform and meet the "standards of excellence," or
drop by the wayside, if not before he reaches the university, then soon
after. The system is interested in him as an individual only to the extent
that he succeeds within the system. If he cannot succeeed, it is said that
he obviously does not belong and is therefore no longer the school's
responsibility. But our traditional system not only fails to create the
conditions for creative expressions, individuality, questioning, exploring,
and thinking, it more often than not punishes the student for these
behaviors and does its best to create and maintain dependency and

conformity. The purpose of education should be to prepare the student for life, not just to provide him with a superficial exposure to the accumulated knowledge and values of the past or the minimal skills necessary for an acceptable performance in a given trade or profession. There is general agreement among the writers cited that the primary objective of education should be to help each person master the art of learning itself and to provide him with the best possible support in the pursuit of his learning objectives.

With the knowledge and technology explosion and the ever-increasing number and urgency of problems requiring creative solution, the content of education is of necessity changing rapidly and drastically. Most of the information the student receives in school will be obsolete within a few years, if it is not obsolete at the time it is presented. The task of selecting the most important content for a given course and giving adequate coverage of a vast amount of material in the time available is becoming increasingly difficult. The trend in education (but in too few schools) is away from information transmission, and therefore, toward providing the student with the methods, tools, skills, and understanding for continued learning. He must be able to acquire content as needed,

to assess its relevance to his needs, to help find its meaning for him,
and to integrate it into his own system of understanding the universe of
ideas and concepts.

Our schools and colleges, according to John Gardner, "must equip
the individual for a never-ending process of learning; they must gird his
mind and spirit for the constant reshaping and re-examination of himself."
A broad and firm base for a lifetime of learning and growth will equip man
to cope with unforeseen challenges and to survive as a versatile individual
in an unpredictable world."[47]   Individuals so educated will keep the
society itself flexible, adaptive and innovative. The person John Gardner
describes as "self-renewing" is described by Maslow,[48]   Rogers,[49]
and others, as fully-functioning or self-actualizing, one whose potentialities
are being realized - potentialities for growth, achievement, creativity,
happiness, fulfillment, and self-esteem; for effective and growth-producing
relations with others; and for adapting to changing conditions. This is
the person who will be best equipped to solve the world's problems and
create a self-renewing society.

Another important consideration for enhancing creative thinking
abilities of students is the opportunity this type of education may provide
for the students to learn to work together in cooperative, non-competitive,

endeavors. One of the most unfortunate myths in our culture is that competition is healthy and should be promoted in our schools. In spite of the fact that it is in the "great American tradition," most of the competition in our society is destructive. It pits one person against another in a win-lose contest. Winning becomes more important than excellence of product (we sacrifice excellence if it helps us win out over the other guy), and too many of us have learned that we must push the other guy down if it helps us get to the top. This is what we are taught in our society, particularly through our entire educational experience in the traditional system, which judges us on our performance within competition.

According to Neil Sullivan, "The nation is finally aware that the public schools are doing a dismal job of preparing millions of young people - particularly minority students - for life generally, for success in business or industry, or for entrance as students in our institutions of higher learning."[50] He and many other educators are saying that sweeping curriculum changes are needed now, and that the content of curriculum must be made relevant to the needs of today's students. Consequently, our methods of teaching must be drastically altered. If we want to produce skilled problem-solvers (creative thinkers), we should see to it that developing individuals encounter the experiences that will

exercise the functions in all categories. This means attention to curriculum

building so as to provide broad opportunities for different kinds of

intellectual activity, while making the content seem relevant to the

learners. This author has often recommended in the earlier chapters

another step, and this is to acquaint the learner with the nature of his

various intellectual resources as early as he is ready to understand this

information. Such knowledge should not only make exercises more

mea n ingful and effective, but should also offer much opportunity for

generalization of skills within the categories, in other words, for the

transfer of skills learned.

Finally, those educators who accept the challenge to buck the

tides of conformity, rigidity, and fragmentation will be exemplifying

Warren Weaver's image of education as: "An adventure of the human

spirit. . . as an essentially artistic enterprise, stimulated largely by

euriosity, served largely by disciplined imagination, and based largely

on faith in the reasonableness, order and beauty of the universe." [51]

If only a small percentage of teachers and educational administrators face

the crisis of intellectual poverty armed with this spirit of adventure and

the tools of humanized educational institutions, than this crisis may

prove to be one of the greatest educational opportunities of the twentieth

century.

CHAPTER SEVEN

SOME THEORIES AND PROCEDURES TO ENHANCE THE DEVELOPMENT
OF CREATIVITY WITHIN THE CLASSROOM SETTING

Introduction

Typical groups or classes of students, in the opinion of this author,

are represented by a cross-section of diverse hereditary and experiential

backgrounds. The problem in developing procedures which would enhance

their creative performance is not one of making each of these individuals

equal; nor is it one of having all of them attain a particular standard of

achievement, but rather of providing opportunity for growth in ability

through careful and planned guidance and direction.

Focusing on personality variables suggests that the teacher should be

aware of her own personality. No teacher intends to squelch creativity, yet

it is obvious that some do. The rigid and compulsive teacher is intolerant

of deviations from work of late. ("They need to learn to get their work

done on time!") Thus, deadlines become more important than quality. The

self-conscious teacher, unsure of her ability to control the class, dares not

allow students to wander around the room and talk quietly among themselves for

fear of precipitating chaos. The narcissistic teacher cannot bear the thought that students may sometimes think of better projects or solutions than she can, and the self-effacing teacher distrusts her own ability to experiment with new methods or materials because she doubts that she can implement them well and fears the ridicule which may accompany failure. Creative behavior is not apt to occur in an environment where creative activity is not encouraged. The teacher who demands that students abide by her wishes on matters that are not really important to social responsibility or intellectual skill can hardly be viewed as encouraging independent thinking.

Helping students understand what is meant by creativity, creative ability, and creating. Two major procedures, each of which is necessary to supplement the other, seem to be required in helping students understand the meaning of creativity: (1) presentation of information concerning the nature and dynamics of creativity, and (2) placement of students in situations where they may draw conclusions in regard to it for themselves. The first of these methods might consist of presentation of information concerning the abilities, feelings and work practices of the creative person derived from research findings and from statements made by creative workers such as those mentioned in previous studies.

Students should possess the knowledge that in order to become creative persons they should be developing in the direction of becoming a person who exhibits <u>sensitivity</u> and <u>openness</u>; sharpens his <u>perceptive facility</u>; seeks <u>newness</u> and <u>originality of ideas</u>, yet is <u>selective</u> in the search; is <u>imaginative</u> and is guided by <u>emotional</u> and <u>intuitive</u> responses to his subject; <u>believes in his own powers</u>; has a <u>habit of expressing himself</u> through some creative medium with <u>aesthetic discrimination</u> and with increasing <u>technique</u> and <u>skill</u>; has <u>fluency</u> and <u>flexibility</u>; and above all is <u>persevering</u> and <u>involved</u> in his undertaking.

This information would of necessity have to be properly timed and should be given to the student when the instructor thought it appropriate in terms of student readiness and need. In some instances certain portions would have significance for individual students but not others. In all probability the information would be more meaningful to students as they looked back at their own experience in creative work and analyzed it in comparison to those models of more highly developed stages of creativeness.

The second method, experiencing creativity, will be described more fully in sections of this chapter which follow. Procedures will be suggested relating to factors influencing student creativity such as: goal setting and evaluation; implementation of student effort for the attainment of creative attitudes and various skills; and structuring the environment.

Procedures for Guiding Students to Set Goals and Evaluate Progress

Research surveyed in this study suggests students would be more interested,

more involved, and would perform at a higher level if they had a large part in

determining their own goals. Because of their inexperience in creative ex-

pression within our educational system, teacher guidance in student goal setting

is imperative.

The ascertainment of students' past experience and present abilities

should occur through discussion or a simple questionnaire prior to having them

set tentative long-range goals for the creative abilities they seek to develop, the

products they hope to attempt, and the media and processes they plan to

experience.

The procedure or means which a teacher might use for helping students

set goals should consist of (1) an overview of possible course content and

(2) some means for recording emerging specific goals. The first, presentation

of an overview of possible course content, might consist of briefly acquainting

students with: media and processes they might wish to experience; work

practices attitudes they might seek to develop to enhance their own creative

skills and abilities; and concepts they should have concerning the nature of

creative process.

Individual students should be free to list particular long-range goals

irrespective of those held by others. Short-range goals might grow out of daily

student-teacher planning. Selection of problems for intensive study by the total group or by sub-groups would be scheduled according to priority or urgency as discovered by teachers and students. Collection of student work or photographs of it assembled in a portfolio and dated in sequence with frequent critical review by student and teacher is a means of helping the student prepare for revision of goals.

Stimulation of the student should be recurringly constant. It should involve use of films, slides, prints, original works, demonstrations, and visual experiences in the environment as well as discussion. Examples should be chosen from the works of children and amateur adults as well as from mature artists, attempting to keep aesthetic standards high at all times.

In helping students set and revise goals it is important that the teacher encourage students to think in terms of long-range objectives, i.e., not attempt too much too fast nor be too discouraged with temporary plateaus. In helping the student set increasingly more complex goals for himself and set his own rate of achievement a sensitivity to student readiness is required. It has been this author's experience that the non-art major frequently performs on a child's art level, has a frustration tolerance below that of a child and aspirations exceedingly in advance of children.

Necessity for Procedures to Guide Students In Attainment of Goals Relating to Development of Creative Attitudes and Certain Skills

In order to facilitate movement of a student from a condition of non-creative or low-creative performance to one of high creative potential a number of fundamental changes must occur. The student must learn to accept personal limitations and manage feelings of frustration and dissatisfaction at any given time yet continually strive for higher future levels of expression. He must reorient himself in goals and attitudes and develop a number of skills which he formerly did not have. He must develop habits of self education that result in the refinement of personal, expressive, and technical skills. This action should lead to greater facility in such personal skills as selection and storage of unusual perceptions and images and the building of imagination. It should facilitate development of expressive skills such as an ability to use perspective, proportion, and color, to compose, to draw figures or other objects, to exaggerate and emphasize. In addition certain technical skills involving media and processes should be fostered by the habit of self education. In all of these the teacher has a definite role to play.

Procedures for Helping Students Accept Limitations of Personal Expression

Some procedures for helping students accept limitations of personal expression according to this author, might include:

1. Explanation of the fact that lower developmental levels of expression and difficulty in visualizing and perceiving result from disuse and are normal among adult amateurs and non-art majors.

2. Placement of emphasis on long-range development.

3. Praise for achievement - frequent deliberate attempt to find something worthy of praise in the work of each student.

4. Expectation that fellow students give frequent and strong encouragement.

5. Emphasis on growth that has been made.

6. Exhibition of work.

7. Recognition of and consideration for overly-sensitive (inhibited and fearful) persons who may be discovered through projection in the art product and through overt behavior.

8. Discovery of aspects of work in which students feel greatest inadequacy; provision of experiences to overcome these deficiencies.

The student who has had little or no success experiences in art frequently has negative attitudes toward art production. He does not have belief in his own powers, is not involved in his work, does not seek new experience to express, does not assume personal responsibility, takes a short-range rather than a long-range view of creating, and is literal and prosaic rather than imaginative or poetic or emotional.

Helping the student reorient himself in attitude requires an understanding and temporary acceptance of typical attitudes, a clear

view by the teacher of his own goals, and a plan for changing attitudes.

Helping this type student reorient his attitudes consists of helping him know the opposite attitude leads to higher achievement, temporary acceptance of his behavior as normal, assuring him success experiences in building skills, and stimulation of as-yet-undifferentiated-values. The first of these, knowing that positive rather than negative attitudes lead to higher achievement, may be partly taught by supplying the student with information such as the fact that these positive attitudes are characteristic of creative persons. Placing students in situations where they may frequently evaluate themselves on these attitudes should reinforce acquaintance with them. However, final acceptance of positive attitudes as personal values may only be expected from students after some time has passed and they have begun to feel some success through the strengthening of personal, expressive, and technical skills.

Procedures for helping the student become conscious of productive work practices. Helping the student reorient his actions toward practices which lead to more creative behavior consists of acquainting him with information concerning those ways of working which may be expected to lead to more creative behavior and of encouraging him to develop them over a period of time as a part of his personal repertory. Students should not be

expected to develop all of these abilities overnight, but gradually to

strengthen some and continually to add others according to their own

asperations and capabilities. Simple, friendly, sincere conversations

between teacher and student and similar discussions among members of

the class as a whole regarding in- and out-of-class practices which

constitute and strengthen creative behavior should reinforce student

motivation for the development of these abilities. Some ways of working

which students might be encouraged to develop are:

1. Getting many and unusual ideas from looking and from memory.

2. Recording and storing ideas for future use.

3. Recalling visual images, shifting and changing them to increase visualizing power.

4. Noticing details and relating them to each other and to the whole.

5. Selecting significant aspects of an idea, problem, or of visual material.

6. Looking for likenesses and differences, creating relationships.

7. Experimenting with ideas, perceptions, memory images, media, processes, tools, techniques – trying various approaches to a problem before selecting the preferred solution.

8. Trying to see things in different ways, using experience in new situations.

9. Maintaining confidence in personal ability but striving for a higher level of achievement.

10. Assuming personal responsibility for evaluation of work habits, skills, and emerging products.

11. Being deeply involved in both long- and short-term creative process.

12. Being interested in imaginative, poetic, and emotional qualities of things.

13. Study the main lines and masses of a work before attacking it.

14. Evolving products gradually.

15. Having several projects in process simultaneously at times, putting them aside when baffled to let ideas mature.

16. Using "intuitive method" or trusting to feeling and emotion in selecting, organizing, expressing, evaluating ideas and materials for art production and emerging products.

17. Organizing and polishing emerging ideas and expressions, and perfecting technical skills.

18. Evaluating products in terms of their distinctiveness, their ability to evoke an emotional reaction in an audience, unity, functional properties, and growth over prior expression.

These ways of working which research and personal testimony of artists have revealed should be communicated to students when there seems to be a personal need for the development of one or more of them. Some

of them may be more helpful to some students than to others. In some

instances they may not prove effective for particular individuals. For

example, having several projects in process simultaneously may prove

to be anxiety building rather than tension reducing.

Attainment of even some of the practices referred to above should

result in students' development of skills which will enhance their confidence

and creative ability. For example, the personal skill of an ability to

produce readily many unusual ideas, fluency and originality should result

from trying to get many ideas, from seeking the unusual and distinctive,

from reeording and storing perceptions, from fragmenting images and

building imagination, from trying to see things in different ways, from

being interested in imaginative, poetic, and emotional qualities of things,

from evaluating visual materials for their distinctiveness.

Perception, visual memory, imagination or visualization of an as-

yet-unexpressed creative form, emotional involvement, and the creative

attitudes and practices previously described seem to be the key personal

skills such as use of perspective, proportion, form, composition,

exaggeration and behind technical skills which involve media and processes.

It may be recalled that looking at man, in his psychic structure, one may see that perception functions, (1) to increase man's reach into his environment for a wider reading, (2) to increase the internal organization of the significances then resulting, (3) to increase the span of controls on action for the further reachings, and (4) to increase the involvement in creation through more selective fittings in creation's moving. Perception was created in creation's womb, and creation is its function.[1]

Table 1 on page 328   illustrates these various kinds of skills and their influences upon each other. Those which students tend to feel a need for have been marked A (aware) while those needed skills of which typical non-art majors are unaware are labeled U.

From this chart it may be seen that the adult with little or no background in creative art expressions tends to be interested in media and processes and to feel a need for realism in his work and therefore to be concerned with creative problems involving such concepts and media as perspective, proposition, color, and representation (drawing, carving, modeling, constructing). He is most often impeded in his ability to get and visualize ideas because of his undeveloped perceptivity and powers of imagery. Lacking in personal skills for representation, he at times accidentally produces a product that appears similar to those of creative

Table I

SKILLS INVOLVED IN CREATIVE PERFORMANCE

Personal Skills: Basis of Idea-Getting and Elaboration

- *(U) Perception (Selection and storage of unusual perceptions)
- (U) Visual Memory (Selection and storage of unusual images)
- (U) Imagination or visualization of an as-yet-unexpressed creative form.
- (U) Creative attitudes
- (U) Creative habits
- (U) Emotional involvement

Expressive Skills: Result from Personal Skills

- **(A) Perspective
- (A) Proportion
- (A) Color
- (U) Composition
- (A) Drawing or representing (Ability to draw, carve, model or construct figures or other objects)
- (U) Exaggeration (Ability to exaggerate and emphasize)

Technical Skills:

- (A) Use of media
- (A) Use of processes

- *(A) – Students aware of need
- **(U) – Students unaware of need

artists. But these unintended expressive products are as often as not rejected by the novice.

Necessity for helping students obtain, visualize and elaborate ideas. Assistance from the teacher in getting ideas (recognizing possible sources and means for getting them), visualization of ideas, refinement of expressive skills and elaboration of expression are necessary for students to maintain confidence and show growth.

Whereas the child depends greatly on a teacher for guidance in identifying ideas, and the artist is completely self-directive in this respect the non-art major falls somewhere in between. He needs guidance from the teacher in learning to recognize sources of ideas, means for getting them, and especially help in visualizing them in more concrete detail.

The getting of an idea, its visualization, and its elaboration are all part of an organic process which cannot be fragmented except theoretically for purposes of description and discussion. Some ideas come as "ideas" unvisualized; others are "seen" but in a simple form, unelaborated; still others are completely visualized as to theme, visual form, structural principle, composition or arrangement, and material or media which might be used for their execution. One might expect a student near the beginning of his growth to get ideas more often in

fragmentary form and to need more assistance with the development and elaboration of the idea.

The sources of ideas suitable for creative art expression are many (See Appendix C). Other areas of the curriculum such as science, mathematics, social studies, and the humanities offer possible subject matter as a point of departure in creative teaching. Extra-curricular activities such as campus life and hobbies are other sources of ideas for content or subject matter. Anecdotal materials and abstract concepts from these areas require visualization of particulars and development of symbols for their expression.

Creative teaching techniques are conscious and deliberate procedures for producing new combinations of ideas. A major contribution made by the existing professional-level creativity thinking programs, has been to suggest techniques that may be readily adopted for classroom use. Osborn's brain-storming, operating on the principle of deferred judgment, is in this author's opinion, one of the best known. It encourages students to produce feely a large number of wild ideas, since the greater the number involved, the greater the likelihood of finding useful and unique ideas. In addition to contributing

ideas of their own, students are encouraged to suggest how two or three more ideas may be combined into still others.[2]

The brainstorming technique can be used to generate an endless variety of ideas for the open-ended stories, combinations of unrelated elements, the production of elements to be combined, or any other given structure. This would be likely to increase the imaginativeness of whatever is produced and at the same time give a quicker and deeper glimpse into infinity. The usual rules of brainstorming are applicable, such as:

1. Evaluation is suspended.

2. Free-wheeling and wild ideas are welcomed.

3. Quantity is wanted.

4. Combination and improvement are sought.

5. Discussion and argument are unwelcome.[3]

To encourage creative thinking, a creative instructor will maintain an easy willingness to consider any question, any topic, any time. Thus a good teacher is seen by his students as a "creative observer." Eric Barnes describes a good teacher from a student's viewpoint: "He is perceptive, kind, appreciative, sometimes critical, but always detached. When he is on the sidelines, one's task immediately takes on new meaning and dignity. He finds the order latent in the apparent chaos of your life."[4]

There is one psychologist who has perceived these truths, not in

the abstract and theoretical manner in which I am presenting them now, but

in the living experience of self-analysis - I refer to Joanna Field, whose book,

On Not Being Able to Paint, has the greatest possible significance for our

discussion.[5] It is not a very ambitious book, (the author probably felt that

she was describing a single experiment, and that verification must come

from others working in the same field with the same methods). But, never-

theless, to anyone who has struggled defeatedly with the problems of sick

civilization, this book will have the force of a sudden illumination. Joanna

Field began with a personal problem - her inability, in spite of conventional

methods of training, to paint, and by discovering how to paint, and observing,

as a trained analyst, what was happening to her personality in the process,

she discovered the necessary interplay, in living and in painting, of the

functions of imagination and action, of dream and reality, of incorporated

environment and external environment. But this, the psychologist might say,

is the very basis of our psychotherapy, and there is nothing new in it. But

there is all the difference between external environment that is possibly

perceived and accepted, and one that is actually created or manipulated.

The practice of art enables us to establish an active and pragmatic relation-

ship between the self and the external world. As Joanna Field says, "art is

not only a created fusion between what is and what might be; it is also a

created way of giving the inner subjective reality of feeling an outer form, in

order that it may be shared, and so also tested and verified; it is a making of

new bottles for the continually distilled new wine of developing experience."

In order that it may be shared - that is an important qualification which I shall

come back to; but first let me clear, by quotation from Joanna Field's book,

the exact nature of this process of 'making real':[6]

> My own experience not only with the free drawings
> but in earlier experiments, had certainly shown how
> essential for anything but blind living was the
> emotionally colored image, as well as the intellectual
> concept. Thus it was not until I had given up looking
> for direct help, either from intellectual concepts or
> factual observations of the external world, and
> concentrated first upon images, that I had begun to
> live at all, in any real sense. It was by following up all
> the apparently unconnected, but rich and sensuous
> and many-colored images that the mind continually
> deposits on the shore of consciousness, like a sea
> upon its beaches; it was by studying 'what the eye
> likes' rather than what reason affirms and verifies,
> and I had at last become able to begin to live re-
> flectively rather than blindly. . . Having reached
> some idea of what function the arts might be ful--
> filling, it was now possible to see more what
> Cezanne might have meant when he said: "realiser:
> tout est la!' Having seen how it could be that the
> artist by embodying the experience of illusion,
> provides the essential basis for realizing, making
> real, for feeling as well as for knowing, the external
> world, it was now possible to look further into the
> artist's role to see how it is that he adds to the

generally accepted views of external reality; how
in fact art creates nature, including human nature.
Thus it seemed to follow that the artist is not only
one who refuses to deny his inner reality, but also
and because of this, is potentially capable of seeing
more than other people, or at least, more of the
particular bit he is interested in. [7]

I had discovered in painting a bit of experience that
made all other visual occupations unimportant by
comparison. It was the discovery that when painting
something from nature there occurred, at least some-
times, a fusion into a never-before-known wholeness;
not only were the object and oneself no longer felt to
be separate, but neither were thought and sensation
and feeling and action. All one's visual perceptions
of color, shape, texture, weight, as well as thought
and memory, ideas about the object and action towards
it, the movement of one's hand together with the
feeling of delight in the "thusness" of the thing, they all
seemed fused into a wholeness of being which was
different from anything because thought was not
drowned in feeling, they were somehow all there
together. . . something quite special happened to one's
sense of self. [8]

Procedures for getting ideas – strengthening perceptive power.

Long before we were able to think about life in general, and about its

larger problems, we are guided in the pursuit of ends that are not comprised

within the cycle of a single perception. And this guidance is afforded, not by

discernment, but by feeling. In the discernment of a perceived event our

disposition is a positive factor no less real than the event itself. The feelings

which attach to a dispositional readiness for response - either in a single perception, or in a series of perceptions, interrupted, perchance, by puases of sleep and distraction - are aesthetic. It is the aesthetic feelings that mark the rhythm of life, and hold us to our course by a kind of weight and balance. . . a disposition to feel the completeness of an experienced event as being right and fit constitutes what we have called the aesthetic factor in perception. [9]

Memory is the capacity to recall images in various degrees of vivideness and imagination, as this author shall use the term, is the capacity to relate such images one to another - to make combinations of such images either in the process of thinking, or in the process of feeling. The process of imagining is, in truth, of one piece, so to speak, with the process of perceiving. . . the chief difference being that in imagination a relatively larger proportion of revived factors are involved. Even these revived factors are still images in the strict sense of the word, the term "images" being reserved, for such contents as in memory and imagination do appear to stand over against the cognizing mind as objects, and upon which the act of apprehension seems (to the conscious subject in question) to be directed. [10]

At the beginning of the development, an absolute dualism between man and his surroundings occurs, unmitigated by any congenial experience.

Out of this dualism, the relationship of fear towards the outside world,

cannot but arise as the strongest mental and spiritual need, the urge for

absolute values, which delivers man from the chaotic confusion of mental

and visual impressions. The religiosity of primitive man, with its absolute

transcendent Deity to be propitiated at any cost, springs out of this need.

So does this type of art, which seeks to symbolize the absolute in geometric

form. In religion, God is not transcendent, but an idealization of the man;

and in art, the work of art is not an abstraction from life, but a direct imitation

of its sensuous perceptual appearance; perception and feelings are indissolubly

interpreted in empathy. The purpose of creativity in education should be

identical with the purpose of education itself, to develop in the child an integrated

mode of experience, with its corresponding syntonic physical disposition, in

which "thought" always has its correlate in concrete visualization – in which

perception and feeling move in organic rhythm, systole and diastole, towards

an even fuller and freer apprehension of reality. [11]

If we have no prior notion of what art should be, if we realize that creative

expression is as various as human nature, then it is certain that a mode of

aesthetic expression can be retained by every individual beyond the age of 11 and

throughout and beyond the adolescent period in general if we are prepared to

sacrifice to some extent that exclusive devotion to learning of logical modes of

thought which characterize our present system of education. The creativity of

the child declines after the age of 11 because it is attacked from every direction –

not merely squeezed out of the curriculum, but squeezed out of the mind by the logical activities which we call sciences. We feed these processes of dissolution with our knowledge and science, with our inventions and discoveries, and our educational system tries to keep pace with the holocaust; but the creative activities which could heal the mind and make beautiful our environment, unite more with nature and notion with notion - these we dismiss as idle irrelevant and inane.[12]

If consciosuness is relative (the product of social experience and individual education) then it becomes evident that the degree and quality of that conscious- ness is modified, or can be modified, by any fundamental changes in environment or training. It is only education in its widest sense as guided growth, encouraged expansion, tender upbringing, that can secure that life is lived in all its natural creative spontaneity, in all its sensuous, emotional and intellectual fullness. What the child writes or draws might best be described as an act of poetic intuition and a mystery beyond our logical analysis. The child is in a constant state of transformation. His body and brain mature, it adjusts itself inevitably if not unconsciously, to its social environment. From the very beginning the aesthetic principle must be applied to the building of the school and its decoration, to every item of its furniture and utensils, to all the organized aspects of work and play. Speech and gesture, action or movement, every mode of behavior and expression, has its configuration; and the pattern of this configuration has effect and efficiency in the degree that it has aesthetic value.[13] The desire to make beautiful things must be stronger than the desire to make useful things, or rather there must be an instinctive realization of the fact that beauty and utility, each in its highest degree, cannot be conceived separately.

The whole of the primary phase of education should be reorganized on an integral plan in which individual subjects lose their present definite and artifical outlines, to merge in a total constructive or originating activity, in this sense continuing the teaching methods of the infant and nursery schools. The development of its social groups, first the family, then the kindergarten, then the successive classes of the primary school. At every stage the group should be intact and organic, carrying on all its activities as a unit.

Primary education should have as its ideal an individual in whom all the mental functions grow harmoniously. If the art of education is to foster growth, we must first discover the laws of growth; and these are the laws of harmonious progression, of balanced relationships, and of achieved patterns. The application of these laws to inorganic matter is creative art; their application to the living organism is creative education. What is wanted is an appreciation of the infinite variety of vivid values achieved by an organism in its proper environment. When you understand all about the sun and all about the atmosphere and all about the rotation of the earth, you may still miss the radiance of the sunset. There is no substitute for the direct perception of the concrete achievement of a thing in its actuality. We want concrete fact, with a high light thrown

on what is relevant to its preciousness. What is meant by art and
aesthetic education is to draw out habits of aesthetic apprehension. . . the
habit of art is the habit of enjoying vivid values.[14] The aim of education is
the creation of a sense of mutuality. For it is only when we can get a man
to fall back into his true relation to other men, and to women, that we can
give him an opportunity to be himself. So long as men are inwardly
dominated by their own isolation, their own absoluteness, which after all is
but a picture of an idea, nothing is possible but insanity more or less
pronounced. Men must get back into touch. And to do so they must forefeit
the vanity and the "noli me tangere" of their own absoluteness. Also they
must utterly break the present picture of a normal humanity; shatter that
mirror in which we all live grimacing; and fall again into true relatedness.[15]

Procedures for sensitizing the student to visual content as well as
subject content. It is difficult for the non-art major to be conscious of
purely visual content as distinct from "subject matter." In referring to
either his own sketches or other visual reference materials there exists
a constant necessity for helping the student see purely visual qualities
and opportunities for their relationships. Often students may be assisted
to some degree in overcoming this deficiency by a frequent use of visual
aids. The sensitizing of students to visual phenomena might be achieved

by developing and using a collection of slides which include, (1) various

individual interpretations of identical subject matter and (2) examples

of visual fragments (patterns of line, of shape, of texture, of colorc and

the like) in both art products and in assemblages of either nature of man-

made forms.

Procedures for dealing with ideas which are unvisualized. Some

procedures for dealing with "ideas" which are unvisualized might consist

of: (1) writing out in words the differentiated meanings for which visual

symbols are desired, (2) seeking visual symbols from first hand (direct

perception) or second hand (visual reference material such as former

sketches or from visual files) and from memory (imagery sources). Those

students who were discovered to be weak in visualizing ability from memory

might be encouraged to alternate between working from memory to

strengthen that facility and to depend on perceptual sources: (1) direct

visual stimulus material, (2) personal sketch books, (3) personal

reference files, and (4) class reference files. In all instances they

should be encouraged to select and adapt rather than merely record.

Procedures for getting ideas: strengthening visual memory and

imagination as a source of ideas. Deliberate attempts to further reinforce

visual imagery and imaginative powers might accompany the practice of

having students derive ideas from non-perceptive sources. These may be subdivided into those efforts which are intended to strengthen visual recall and those which attempt to fuse partial image fragments into what might be termed "fantasy" or "imagination."

In attempting to strengthen visual recall a teacher might determine sensory modalities of particular students and attempt to tie visual memory of each to his unique habitual way of experiencing. Experiments to reinforce recall of visual materials might consist of (1) "games" of remembering a pose from a model briefly viewed, (2) a still life quickly covered with a cloth, (3) sketching from moving objects as from a bus in motion or of persons playing basketball or table tennis, (4) slides projected from a tachistoscope or a projector to be drawn from memory, (5) drawing or modeling objects from a sense of touch when blindfolded, (6) drawing or modeling a particular pose from "acting out" the movement, (7) from listening to or from reading a word description or a poem, (8) from remembering and discussing or writing about an incident, (9) from listening to music and attempting to express its mood as well as associations which accompany it.

Procedures to foster fantasy and imagination might consist of reversals of visual elements in combinations, fusion of partial image

Table II

CONSCIOUS AND UNCONSCIOUS, LONG-RANGE AND SHORT-RANGE
APPROACHES TO IDEA GETTING

Conscious	Unconscious
Long Range:	
Getting ideas from seeing "mood," "expressiveness" rather than literal features. (Perceptive)	Record unconscious ideas maturing into conscious form - especially <u>fringe</u> ideas. (Memory)
Short Range:	
Investigate problem widely before starting to work.	Getting ideas from remembering.
Do divergent thinking.	Write, discuss, sketch on scratch paper to think idea through (memory)
Use multiple associations.	
Differentiate detail (memory) (Perceptive: from spot reference, or notes)	

Short-Range Becoming Long-Range: Build on Past

Both conscious and unconscious approaches.
Use of memory and perceptive sources.
Use of own or other person's sketches or finished products for
　　　further explorations.
Experimentation with: Ideas, Perceptions, Memory Images, Media,
　　　Processes, Tools, Techniques.

fragments, and exaggeration of parts of images. Interchange of literal –
non-literal form – color relationships such as green tree trunks with brown
leaves or red faces with white hair is one approach to reversals of folor-
form relationships. Fusion of ideas such as a "candle'face" or an
"octopus'mop" (for example) and the development of visual symbols for
these resultant images is an example of the second type of procedure to
develop imagination. Another procedure might be the invention of
nonsense words and their illustration in materials to express the mood
conveyed. Other opportunities for developing visualizing powers might
consist of having students write fantastic stories and illustrate them;
designing a velocipede-type vehicle (for example) for a five-legged man
from Mars. "Dealing" various combinations of ideas, forms, colors,
textures, materials, processes, tools, etc., as "cards" and trying to see
what new ideas might emerge from particular "hands" might be another
way of realizing this objective. The third manner in which an imaginative
approach may be fostered, i.e., exaggeration of parts of images, is
illustrated by the opportunity which puppets offer for emphasis on ex-
aggeration of parts to produce a theatrical quality. Use of collage
materials provides an opportunity to deviate from literal form-color-
texture relationships and in this way may be said to strengthen imagination.

Finally, all of these approaches may be used together to elaborate a particular idea and to build the sense of fantasy and originality as well as foster growth in visualizing ability.

Procedures for helping students find technical information concerning media and processes for the execution of their ideas. In order to help students develop skills which involve materials, processes and techniques within a creative context it is necessary to create a balance between supplying information on the one hand and creating an atmosphere of learning through discovery and experimentation on the other. Care must be exercised in furnishing enough information that students may choose undertakings which will insure reasonable opportunities for success and justify their inclusion.

No hard and fast procedures can be laid down. Instead certain generalized recommendations may be made. These involve consideration of purpose, timing, and means used to present technical information under varying classroom conditions. For example, in Table III on page 345 it may be observed that Step I, Stimulation, may be concerned with only very generalized concepts technically since its purpose is not to instruct but rather to motivate the student. Under circumstances where the teacher narrows choices for students there will be differences in content than when students are expected to choose from many possible processes and techniques which particular media afford.

TABLE III

RELATIONSHIP OF CERTAIN MATERIALS OF INSTRUCTION TO VARIOUS
STAGES IN THE PROCESS OF ART INSTRUCTION

Stage I	Stage II	Stage III	Stage IV
Helping students choose activities which will offer experiences in media, processes, and techniques for personal success and which are necessary for the age child they will teach.	Orientation to media processes, techniques. 1. To further narrow choices of what to personally experience. 2. To learn how to do activity to be engaged in for personal success and to be able to teach it to a child. 3. To develop a concept of. 4. To develop skill in.	Guidance of student after he has begun work.	Evaluation in process of activity and at the end of activity.

Means for conveying concepts:

Demonstrate:
Use of films
Use of slides
Use of filmstrips
Show examples:
Use of illustrated
    books
Urge experimentation
Use word description

Step II, Orientation to Media, Processes, and Techniques, as illustrated in this same chart, may be expected to vary according to the technical difficulties which the particular medium and process presents and to other factors such as wehter homogeneous or diversified activity is being engaged in. For example, picture-making involving use of cut or torn paper arranged and pasted involves the simplest of technical concepts. On the other hand, construction of pottery can be a very frustrating experience if adequate orientation to the behavior of clay under various conditions has not been given. Thus the amount of time and variety of means used in orienting students to the nature of materials; differing forms and states, the effect of certain forming processes on structural appearance, variables of decorating or finishing processes are required with some media more than others for students to be able to visualize potentialities. It seems necessary to be able to foresee to some degree what the outcome will be in order to visualize and in order to minimize failure. Within this context there should remain an experimental attitude which reaches out for new personal discoveries within a certain margin of safety until confidence is secure enough to gamble.

Means which may be used for conveying information of a technical nature depends upon whether all members of the class are engaged in

working with the same medium and fairly closely related processes or

whether two or more sub-groups have been organized. For example,

films, slides, film strips, and other projected materials can only be used

when the entire group is being oriented to certain technical information.

Demonstrations, pictorial reference material, actual examples, and

printed materials can be used when sub-groups are working.

Step III, Guidance, as presented in this chart, may be dealt with

as an extension of orientation. It involves helping students question their

procedures to discover causes of dissatisfaction. Thus it becomes Step

IV, or Evaluation. Additional technical information may be needed, either

a suggestion from the teacher, another demonstration, or reference to

verbal or visual reference material. Often, a look around the classroom

at ways others are working is sufficient to solve the problem.

When choosing a particular manner of conveying technical in-

formation to a group of students the teacher must analyze the situation in

terms of the variables discussed above and the communication media he

has at hand and select what seems the most appropriate in terms of

concepts to be conveyed, time, and effectiveness of the communication

media.

<u>Procedures for helping students learn to elaborate ideas and visual</u>

<u>content</u>. A number of opportunities exist for helping students learn to elaborate ideas and visual content. These concern organization of visual materials and opportunities which particular media and processes afford. General procedures for assisting students with the elaboration of an idea consist of: (1) encouraging students to take advantage of the accidental and to incorporate it into the developing idea; (2) helping students become conscious of more complex form by mixing images to elaborate ideas; (3) encouraging students to explore their own visual vocabulary and idiom in elaborating ideas, showing examples as a stimulus and cautioning against too much variety and complexity.

In elaborating ideas the long-term factor in creativity is quite evident, students should be encouraged to think both of the present moment when creation is taking place and of the past and the future. They should be encouraged to polish ideas which have come quickly in the rough. They may be encouraged to build consciously on their own past performances.

Figure II on page 349 illustrates interrelationships of perceptual and imagery abilities and technical knowledge on the process of ideation. From this diagram it may be understood how ideas which come spontaneously to students late in their development may be said to be more creative than those which are generated earlier. At least they should come with more

PERCEPTION

KNOWLEDGE OF
PROCESSES

Look for similarities,
differences, mood,
expressiveness - select
adapt, change,
exaggerate,
combine

Stress
similarities,
differences, mood,
expressiveness -
select, adapt, exaggerate,
combine.

MEMORY IMAGES

KNOWLEDGE OF MEDIA

IDEAS

KNOWLEDGE OF TECHNIQUES

Ideas from:
Curricular and extra-curricular
sources.
Visual fragments.
Structural principles, process of
making, tool usage.
Materials used.

KNOWLEDGE
OF TOOLS

Ideas:
Preconceived.
Partly preconceived,
partly from material.
Entirely from
material.

FIGURE II

BASES FOR IDEATION IN THE VISUAL REALM WITH IMPLICATIONS
FOR EARLY AND LATE DEVELOPMENT OF THE STUDENT

clarity and with greater ease. If personal and expressive skills have been refined, technical information sought and practiced,, and a conscious attempt made by the student to elaborate simple emerging ideas he should be expected to move to higher levels of creativity.

Involvement

As the student grows in power to get ideas, visualize them, and elaborate them one might expect him to become more and more "involved" in developing creativeness. In the beginning the teacher's primary role is that of (1) an encourager in order that the student may maintain a positive feeling about his efforts and (2) a stimulator who exposes him to the building blocks with which he becomes involved and with which he builds his creativeness.

In order to foster creative development of students it is necessary to help them understand what "involvement" is, how it feels to be "involved,"

and why it is important in their development as creative personalities.
This may be achieved partially by explaining what is meant by "involvement"
descriptively and by example. Placement of students in situations where
they may experience involvement for themselves and sense its essence and
its effect on them and on their productions is, of course, the crux of the
problem of educating them.

Theoretically, involvement may be thought of as the heart and core
of creativity; for it is, in many respects, the motivating force for creativity.
It concerns <u>drive,</u> <u>emotion,</u> <u>feeling,</u> <u>"intuition."</u> It manifests itself in the
moment-to-moment "becoming" cross-section or short-term creative
process and in the long-term creative endeavor that is one's lifetime.

Evidence of involvement in the short-term creative process
consists of: (1) having a habit of concentration when working, (2) using
great energy, (3) projecting intense feeling on the work, (4) having
"empathy" with the work, (5) using "intuitive method" or trusting to
feeling and emotion in working with ideas and materials. When one is
involved he feels the "mood" of his subject, has a prolonged attention
span, experiments and toys with various possibilities of expression.

The diagram in Figure 3 illustrates an important aspect of the
concept of involvement. When one is involved one gropes toward some

| "The Self" | ·····> Projection ——> Empathy <——> | "Work" |

"Requirements" of the work <

<

AUTOMATION
(groping toward some dimly perceived "relationship")   Going beyond one's self,

INVOLVEMENT
(Pleasure in losing one's self in a purpose larger than the self)

| "The Self" | ——————> Empathy <——————> | "Work" |
(On a new and higher plane)
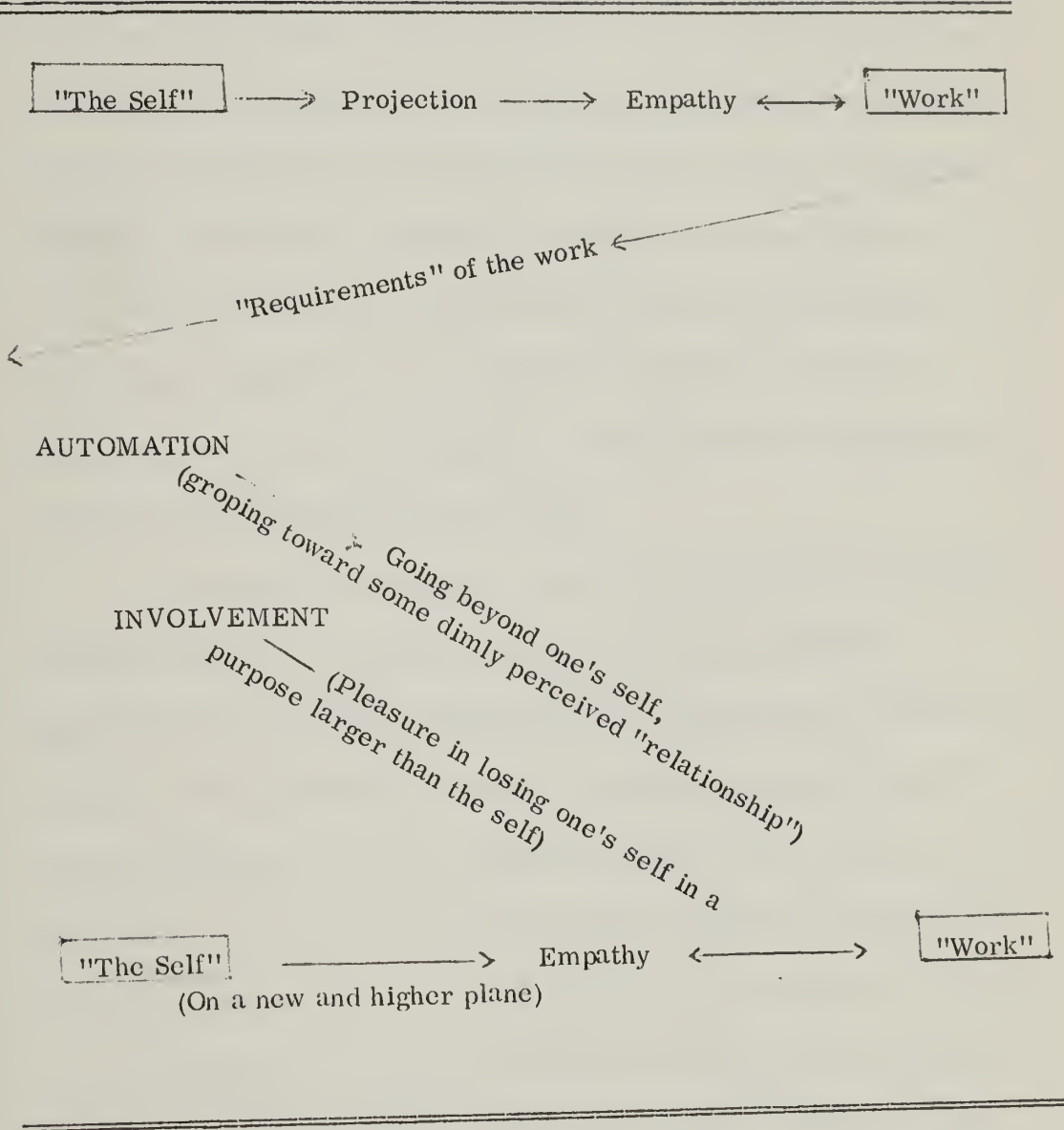
Figure III

INVOLVEMENT: A VISUAL-VERBAL SYMBOL

dimly-sensed goal. There is personal responbility, not reliance on some

outside preconceived authority, yet there is a feeling of surrender of the

self to the "becomingness" of the situation. This feeling of being carried

forward by the emerging product almost against one's will (in this instance,

preconceived ideas) is the "feeling" of involvement. There is a sense of

wonder and amazement, a fascination that desires no interruption - all

in all, a kind of pleasure at losing oneself in a purpose larger than the

self. This crystallization of new thought coming faster than can be

consciously realized is the phenomenon of "automatism" often spoken of by

creative workers as of supernatural origin.

"Involvement" in long-term creative process consists of: (1) using

"intuitive method" or trusting to feeling and emotion in selecting,

organizing, expressing and evaluating ideas and materials for creative pro-

duction and emerging products; and (2) recurringly having the habit of

long-term creative drive or persistence in pursuit of new goals, materials,

experiments and resultant skills and products. When one is "involved" in

long-term creative process in the visual arts he is interested in observing

and remembering visual form and structure, collecting visual materials

such as sketches, photographs, natural forms such as pebbles or drift-

wood, and the like. Media which might be used offer fascinating opportunities

for exploration to the person who is involved in long-term creative process; he collects marble to carve, colored glass to melt and mold, yarns to combine in stitchery, colored inks and various papers. When one is involved in long-term creative process he has many ideas laid up for the future, as well as many experiments in process in the present and some achievements of the past to rework before starting anew.

The feeling which accompanies long-term involvement is a combination of delight in sensory experience, curiosity about possibilities of interrelationships and a contained excitement or optimism about that which is yet to be discovered or invented.

An understanding of the importance of involvement is necessary for students in order that they may desire to become involved so that their work may have significance and meaning and they may grow in creative ability - not in the visual arts alone, but in every phase of life; for an understanding of creative process should enable one to become more creative in other phases of living if he would so desire and take the time and effort to build the requisite skills.

APPENDICES

A set of tests which will indicate an individual's
visual or haptic tendencies

METHOD

The 10 tests discussed here have been used to distinguish between
visual-minded and haptically-minded subjects and to measure the degree
of their visual or haptic inclination. The tests measured instinctive
or intuitive responses, art inclinations and preferences, and optical
(visual) and tactile (haptic) perceptions. Four of these tests used were
standardized psychological tests namely the Gerund Test, the Sentence
Gestalt Test, the Camouflage Penetration Test and the Quick Response Test.
The remaining six were constructed by Paul Flick. Those were the Drawing
Test, Tactile Test I, Tactile Test II, Music Association Test, Picture
Preference Test, and the Visual Retention Test.

SUBJECTS

Sixty-three subjects from nineteen to twenty-four years of age were
randomly selected from the enrollment of Pennsylvania State University to
take the series of ten tests. The (two) tactile tests were given to the
students individually. All other tests were given to the group as a whole,
in the following order:

1) Gerund Test
2) Drawing Test
3) Music Association Test
4) Picture Preference Test
5) Sentence Gestalt Test
6) Visual Retention Test
7) Camouflage Penetration Test
8) Quick Response Test

In the Gerund Test, the subjects were asked to write their immediate response to each of 24 Gerunds, being derived noun forms of verbs (i.e., saying, writing is easy). In the Quick Response Test, subjects were asked to give their instinctive responses to a list of given words. Both tests were based on the premise the visually-minded individuals will respond with more visualizable nouns being words naming concrete objects; while the persons with haptic-minded tendencies will respond with words of motion, emotion, description, or sensation. In other words it was anticipated that in the Quick Response Test a word such as winter might cause a visual-type to react with words such as snow, scarf, sled, and ice skates and a haptic-type to reply cold, frost-bite, sledding and shivering. Thus, the more visualizable nouns a subject listed, the higher his score and the more visually-minded he was judged to be.

In the Sentence Gestalt Test, subjects were asked to separate words which were run together on a page. The Camouflage Penetration Test required them to discover hidden faces in a larger illustration. Both tests were based on the premise that a person who is visually-minded will be quicker to identify individual words and faces from the larger ground. The higher a person's score on these two tests, the more visually-minded he was judged to be.

In the Drawing Test, the subjects were given ten minutes in which to draw two topics: "I am going for a walk" and "How I feel when I am sick." The topics were especially chosen to allow both visually and haptically-minded representation. "I am going for a walk" was a topic concerned with environment, external reality and concrete images, while "How I feel when I am sick" was concerned with bodily feelings and sensations. The subjects were given a relatively short time so that their representations of the topics

would be spontaneous and intuitive and so that their recorded reactions would be more likely to indicate the tendency of their personality types than would planned drawings.

Scoring of the Drawing Test was done with the help of ten judges who were familiar with a sensitive artistic evaluation of drawings, had an understanding of visual and haptic aptitudes and could identify evidences of the two types in art work. The judges first divided the drawings into three groups: strongly visual, partly visual, and slightly visual. Then they subdivided each pile into three more piles giving a developing sequence of nine divisions from strongly visual to strongly non-visual. Nine points were granted to a drawing judged most strongly visual, eight points to the next visual drawing, and so on. Drawings were evaluated by each judge individually. The highest possible score under this system, 180, would have been reached if each of the judges had granted the maximum nine points to each of a student's two drawings. The lowest possible score would have been 20, with each judge granting one point per picture. The actual scores ranged from 37 to 134.

The highest visual scores went to students whose drawings were generally objective and often detailed. Highly visual drawings on the first theme, "I am going for a walk," included trees, ponds, fences, roads, and other objects, sometimes so concerned with environment that the subject "I" was excluded. Where drawings judged highly visual did include figures, there was a general attempt to fit the figure within the environment in correct visual proportion. The drawings with the lowest score was a figure with gross exaggerations.

The Tactile Test I was used to determine the subject's ability to optify, which means the ability to recognize through the sense of touch a form identical to one he can see. In this test fourteen geometric objects were placed in front of the individual and he was asked to match them up with an identical set in a bucket next to him. He was not able to take an object from the bucket until he had made his identification; through touch only. A time limit of two

minutes was given. The test was scored on the number of correctly identified geometric figures divided by the time it took to complete the test.

$$\frac{SCORE}{TIME \quad NUMBER\ CORRECT}$$

The score was always expressed as a whole number.

In Tactile II, the subject was asked to match identical forms using only their tactile sense. Instead of matching the unseen forms with a set in front of him, the subject had to match them with another unseen set in a bucket beside him. In Tactile Test I, the higher the score the higher the visual-mindedness indicated as the subject's optical sense was an important facet of the test. In Tactile Test II, however, because the subject was completely dependent upon his sense of touch, the scoring is reversed; the higher the score, the higher the haptic-mindedness indicated.

For the Music Association Test, two musical works of contrasting moods were each played for five minutes while the subjects wrote down whatever came into their minds. The test was scored by dividing the number of visualizable nouns (i.e., sky, ocean, fire, violets) found in their writings by the total number of words in the writings.

$$\frac{SCORE}{TOTAL\ NUMBER\ OF\ WORDS \quad CONCRETE\ NOUNS}$$

The higher the proportion of nouns that named tangible, concrete objects, the higher a student's score, and the greater the degree of visual mindedness, indicated. A haptic type would obviously lean toward words expressing emotions and feelings, abstracts such as sadness, laughing or hate. The possible range of scores was 0 to 1000. No subject tested received a score higher than 500. One student scored 0 and several others received scores of less than a hundred.

The Picture Preference Test was used to determine the students' preference for either visual or haptic art. A group of twelve judges determined

the haptic or visual tendencies in reproductions of fourteen paintings. These were shown to the students and they were asked to list the seven of the fourteen they liked best. The list was to be in order of preference--the one they liked best, second best and so on. No points were awarded for selecting the paintings the judges classified as haptic. For choosing paintings classified as visual, points were given according to the order of the student's choice. If a painting labeled visual was selected as a student's first choice he received seven points. If his second choice was a visual painting he received six more points. A visual painting for his third choice gave him five more points and so on down the line of selection. (But for any choices that were rated haptic, he recieved 0. This procedure was used to keep scoring on the basis of visual-mindedness and also to take into account the rating a painting was given.) Thus scoring would be done this way:

<table>
<tr><td></td><td>Subject A</td><td>Subject B</td></tr>
<tr><td>preference 1</td><td>visual = 7 points</td><td>haptic = 0 points</td></tr>
<tr><td>2</td><td>visual = 6 points</td><td>haptic = 0 points</td></tr>
<tr><td>3</td><td>visual = 5 points</td><td>visual = 5 points</td></tr>
<tr><td>4</td><td>haptic = 0 points</td><td>haptic = 0 points</td></tr>
<tr><td>5</td><td>visual = 3 points</td><td>haptic = 0 points</td></tr>
<tr><td>6</td><td>haptic = 0 points</td><td>visual = 2 points</td></tr>
<tr><td>7</td><td>visual = 1 point</td><td>visual = 1 point</td></tr>
</table>

Subject A's total score would be 22 points and would therefore suggest a visual-type artistic preference. Conversely, Subject B's total score would be eight points indicating a haptic preference. The highest score would have been 28. Since no points were awarded to haptic choices it is also theoretically possible to have a score of 0. The actual scores ranged from 15 to 25.

The Visual-Retention Test was used in determining the subject's visual or haptic retention of art. In this test two slides of black and white line drawings were shown to the subjects for five seconds, after which they were asked to write down what they saw. The drawings were chosen because of their simple linear quality and because the absence of color eliminated any color associations which could prejudice or distort the subjects' responses. The

pictures coincided with both types as they were of a mixed nature; there was visual detail--teeth, club, hat, feet--attracting persons who tended to be visually-minded and were inclined to notice concrete objects. At the same time the drawings also centered about themes that allowed subjective interpretations, therefore a natural haptic response. Fear, anger, and falling were typical responses judged to be haptic.

The test was scored by dividing the number of visualizable nouns (club, feet) by the total number of words written:

$$\frac{\text{CONCRETE NOUNS}}{\text{WORDS WRITTEN}} \text{ SCORE}$$

The highest possible score of 1000, which indicated that all the words a subject used were visualizable nouns, was reached by three subjects. The lowest score, indicating the use of none such nouns, would have been 0.

The students with the highest scores, the visual-types, simply listed as many objects as they could remember in the drawings, without any further description or association of ideas. The low-scoring or the haptically-minded persons, seemed more concerned with the intangible aspects of the drawings.

DISCUSSION OF TEST RESULTS

General findings

The tests as a whole consistently corresponded with Lowenfeld's definitions of each type. The visual types were detected by their extreme reliance upon or association with imagery in their speech, thought processes and attempts at drawing.

In the music test the visual types were shown to be stimulated imagistically rather than emotionally. Their mind was affected rather than their mood.

In the drawing tests, the visually-minded subjects strove more often

than the haptic subjects for photographic correctness, perspective, and proportion. Their preferences in art also reflected their orientation toward naturalism. Given a choice between paintings it is obvious they would choose works of the Impressionists rather than the Abstract Expressionists. They chose paintings in which the representation of form rather than that of sensation or movement was most important. Also, the Visual Retention Test showed that they remembered many details of art work they glimpsed for only a few seconds. These findings all relate to the visual types reliance on the eyes for perceiving, and a tendency towards observing details.

In the tactile tests, the visually-minded subjects did poorly when they were asked to identify similarities of shape through touch only; they did slightly better when one object was placed in view and identical shapes had to be picked out by touch. As before sight played a dominant role in recognition for the visually-minded subjects and their sense of touch had only a minor role in identification.

Consistent with their intense involvement with imagery and identification of concrete objects, visually-minded subjects showed their aptness to relate to an abstracted experience--a situation which involved external closure-- than did haptically-minded subjects. In the Sentence Gestalt Test, they more easily picked out words from the line of letters.

The tests as a whole detected haptically-minded subjects through the characteristics listed by Lowenfeld; their extreme concern with sensations rather than optical perception.

The word response tests showed their primary involvement with sensation and motion, and they seldom replied with concrete nouns. There was more indication of self in their immediate responses than in those of the visual-types. The tests showed their preoccupation with motion and their own feelings; they tended to ignore the performer of an action and concentrated instead on their feelings connected with it.

The music test also showed their concern with awareness, emotion and action. The haptically minded persons were not stimulated to react with images of a countryside or other settings or people, but with laughter, crying and related moods. It would be expected that a haptic individual would be responsive to Stravinski rather than the impressionistic Debussy, and that responses to the latter would manifest themselves in mood rather than visions of sun-lit forests or quiet ocean waves.

The haptic subjects, in drawing and in indicating their preferences in art work, again showed their concern with self, motion, and physical sensation. They would be most receptive to the works of Pollock, Bacon or Dubuffet which are extensions of the artist's body motion, physical sensation rather than to works of artists involved in impressionism and naturalistic representation. And in drawing they were concerned mainly with the human body, often exaggeratedly, and tended to omit such environmental details such as flowers, roads and furniture (which visual subjects almost invariably included). In the Visual Retention Test, where visually minded subjects would report all the tangible items they had seen and remembered several details, the haptic types gave emotions and feelings to the subjects in the drawing.

The haptic-minded subjects were easily detected through their ease of recognizing the geometric forms in the Tactile Tests. They quickly identified the forms by means of their sense of touch not needing their eyes for perceiving the object. In line with this they were less skillful in finding the "hidden words" in the Sentence Gestalt Test, for in the latter they could not employ the use of their primary sense--their tactile sense--and were forced to rely on their eyes. These findings relate to Jung's statement concerning the radical difference of the two types' "Psychic assimilations." The results do not correspond with intellect but with the particular types tendency transform what he perceives.

The Gerund Test and the Visual Retention Test were the criterion tests --

the tests most indicating the model or standard rule. They have a significant
(-.29) negative interaction which indicates that the two tests measure two
views of the visual-haptic sequence. Thus negative correlation between the
two criterion tests and the meaningful correlation between groups indicate
that the two groups are measuring opposite tendencies.

SPECIFIC FINDINGS

For a better understanding of the use of correlation in the specific
findings a definition is offered:

Correlation: the degree of relationship between two attributes or
measurements on the same group of elements. The correlations cited here
were taken by means of a correlation-coefficient which is the measure of
correlations on the linear sequence:

    +1 = Perfect positive linear correlation
    -1 = Prefect negative linear correlation
     0 = Complete lack of correlation

1. The highest correlation (.38) was between the Gerund Test and the Quick
Response Test. There was also a notable relationship between the Gerund Test
and Drawing Tests. This indicated that these three tests measured a common
element.

2. The relationship between the scores on Tactile Test I and II was -.05.
This indicated, as expected, a contradictory relationship (negative corre-
lation) since the two tests were made especially to measure opposite tendencies.
The low correlation observed, however, would imply that a noteworthy negative
correlation did occur between the Viktor Lowenfeld Gerund Test and scores on
Tactile Test II. These two tests were also designed to measure opposite
tendencies, as the higher score on the Gerund Test would indicate a visual-
type, while the higher score on the Tactile Test II would obviously indicate
a haptic-minded type.

3. The negative correlation of the visual retention test with the camouflage

penetration test (-.20) highly suggested that in this study the students who scored relatively high on their ability to remember visual images do not necessarily possess the ability to find the hidden faces in the camouflage picture. Therefore, it may be validly assumed that these two traits are different.

4. From the correlation of Tactile Test I with the Visual Retention Test (-.31), it was possible to infer that the visual requirement necessary for a higher score on Tactile Test I--that is, the power of identifying an unseen form by having an identical form in the line of vision (optification) had little to do with the ability to remember what had been previously seen.

5. However, when correlating the Picture Preference Test with the Visual Retention Test the results were .28. This may have been because both tests were centered around visualization. The values given to the pictures on the Picture Preference Test were highest on the visual end of the scale and lowest at the haptic end. The possibility that a rather unsophisticated (in preference to art) group of students might choose realistic paintings as first choice must not be overlooked.

6. The Music Association Test and the Visual Retention Test had a correlation of .10. The significance of this correlation is very low, but it proved to be of some importance when an over-all multiple correlation was made. The stimulation through music, whether visual or haptic seemed to have little bearing on one's power to remember visual objects from a picture.

The tests for this study, then, appear to be valid and very useful in both determining the existence of the visual and haptic aptitudes in individuals and roughly measuring their intensity. Once the visual and haptic aptitudes have been detected there is no limit to the application of this knowledge, particularly in the stimulation of creative thinking. Discovering an individual's psychological type is the first step to understanding his motivations and contributing with sensitivity to his complete self-development.

APPENDIX B

ADDITIONAL RESEARCH CONCERNING IMAGERY AND ITS PHENOMENON

At Wurzburg, Kulpe's students and associates carried out a series of
studies during the years 1910-1918 that had a profound impact on the whole
introspective undertaking.   They set about studying thinking by putting
subjects in problem situations and then asking them immediately afterward
to describe what had gone on in their minds.   The disturbing finding was that
while thought obviously occurred, correct judgments were made or arithmetic
operations carried out, the reported conscious contents did not seem adequate
to account for the performance: They were too meager, or too irrelevant.
The most positive yield of these experiments was the concept of set (which
Ach called determining tendency): the temporary scaffolding of thought set
up by the task, or Aufgabe.   An even more important contribution, however,
was the discovery that the essential operations even or ordinary problem
solving or associative thinking in the laboratory did not go on in the full light
of consciousness.

Radar operators who have to monitor a scope for long periods;
long-distance truck drivers in night runs over turnpikes, but also other
victims of "highway hypnosis"; jet pilots flying straight and level at high
altitudes; operators of snowcats and other such vehicles of polar explora-

tion, when surrounded by snowstorms - all of these persons have been troubled by the emergence into consciousness of vivid imagery, largely visual but often kinesthetic or auditory, which they may take momentarily for reality. In such a situation, when serious accidents can occur on its account, practical people are not likely to be impressed by the argument that imagery is unworthy of study because it is "mentalistic" and virtually impossible to experiment on with animals.

Ever since Berger discovered the Alpha rhythem, this strikingly regular and predictable activity of about 10 cycles per second has puzzled electroencephalographers. Though strongly present in most persons, it is said to be wholly absenct in the records of about one out of six people who do not seem particularly different in other ways; moreover, it is easily abolished by having most subjects open their eyes or engage in mental activity, but another sixth of the population have a persistent Alpha that does not respond to these influences - so Gray Walter (1953) tells us.

From his laboratory, Short (1953) reported that these three different types of persons, distinguished by the behavior of their Alpha waves, had different types of thought imagery: Those who had persistent Alpha that was hard to abolish were verbal imagers; the majority with normally responsive Alpha had the usual predominance of visual imagery;

while the few who lacked Alpha altogether seemed to have particular vivid

powers of visualization. The trouble with this appealing picture is that

it has not been wholly replicable; after a better controlled study, Barratt

(1956) concluded that "active visualizing is a factor in the suppression

of Alpha rhythm but not by any means the factor."

When Moruzzi and Magoun discovered that the reticular substance

of the brain stem was directly responsible for sleep and wakefulness,

and that the degree of behavioral and subjective alertness corresponds

quite closely to the amount of cortical activation from this deep structure,

such philosophical and mentalistic concepts as states of consciousness

began to enter psychology again, this time coming from the respectiable

mouths of biologists. Cajal, Polyak, and others have discovered efferent

fibers running from the reticular formation out to the retina itself, so

that the RAS may very well play a critical role in hallucinations, mediating

something like Freud's "regression to perception," the hypothetical topo-

graphic regression producing dream imagery (Scheibel and Scheibel, 1962).

There are in the temporal cortex innumerable neurone patterns

which constitute records of memory. The electrode causes the patient

to have a physical experience, like the memory of some past event, and

he can describe it as he lies upon the operating table. The hallucination

thus produced may be auditory or visual, or both, but is neither a single

sound nor a frozen picture. . . such hallucinations, or memories, or

dreams continue to unfold slowly while the electrode is held in place. They

are terminated suddenly when the electrode is withdrawn. This is a

startling discovery. It brings physical phenomena into the field of

psychology. It should have profound significance also in the field of

psychology provided we can interpret the facts properly.

As a general working hypothesis, I propose that we start with

the assumption that many sorts of imagery occur to the subjects in

experiments on sensory alteration and deprivation. It might be useful to

consider a kind of null hypothesis, that one function of the variegated

stimulation provided by the ordinary lives of most of us is to distract our

attention from what is going on inside. We are not a nation of philosophers

few of us have either the leisure or the inclination to meditate and get

acquainted with our own purely internal lives.

Put a sample of contemporary men into an artificially simplified

environment except what they can generate themselves, and many will

begin to notice entoptic phenomena for the first time. Cohen, Silverman,

and Shmavonian (1962) have reported the very suggestive finding that in

experi ental isolation, field-dependent subjects report hallucinations
while the field independent, experimen tally defined as those who can use
inner feelings of gravitational pull to orient themselves, report only their
usualy images and phoephenes.

Several lines of evidence are beginning to suggest, however, that
the capacity for an astonishingly complete recording of experience may be
virtually universal, and that the problem is primarily one of getting
access to the traces. Recall Penfield's finding that an electrode on the
right spot of the temporal lobe can evoke a detailed hallucinatory reliving
of a forgotten experience. Put this together with the evidence from studies
of the Poetzl phenomenon that much more may register in the brain than
is in focal awareness; and evidence from hypnotic investigations that
induced regression can bring back with great vivacity and affective force
memories that have been long forgotten - as can lysergic acid, at times,
dreams, and psychoanalytic treatment. Notice that in each of these
diverse examples, the vehicle of the extraordinary recall is imagery.
The indirect means of imagery may furnish the key to the fabulous store-
house of memory, if we can learn how to make use of this neglected
human capacity.

The subjective world of images and the like had progressed from being at first the total subject matter of psychology, then a marshy realm of uninteresting epiphenomena, and now a legitimate output of a theoretically constructed psychic apparatus, and perhaps a specially interesting one, since it may give something of a look inside the famous black box.

APPENDIX C

A SELECTED LISTING OF COMMERCIALLY AVAILABLE METHODS AND

PROGRAMS AIMED AT ENHANCING CREATIVITY WITHIN THE CLASSROOM.

1.   Affective Domain: Stimulation of the feelings and emotions of

persons, to improve or enhance sensitivity to feelings, environments,

and responses of others, as well as to develop values and release creative

potential.

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Spolin, V. Improvisation for the Theater. Evanston, Illinois: Northwestern University Press, 1967.

Weinstein, G. & Fantini, M. D. Toward Humanistic Education: A Curriculum of Affect. New York: Praeger, 1970.

2.   Attribute Listing: Emphasizes the detailed observation of each particular characteristic or quality of an item or situation. Attempts are then made to profitably change the characteristic or to relate it to a different item. See: Crawford, R. P. Direct Creativity (with attribute listing). Wells, Vermont: Fraser, 1964.

3.   Awareness Development: A program to increase the individual's sensitivity to what is going on within himself and how he relates to the here and now. See: Perls, F. S., Hefferline, R. F. & Goodman, P. Gestalt Therapy. New York: Julian Press, 1951.

4.   Biographical Film Program. An educational program of ten documentary biographical films and a flexible textbook. It provides

filmed contact with exemplary personalities and opportunity to draw from students' own inner resources in expressing themselves. Designed for college-bound students. See: Drews, E. M. & Knowlton, D. "The being and becoming series for college-bound students". Audiovisual Instruction, 1963 (January), 8, 29-32.

5.   Bionics. A technique which seeks discovery in nature of ideas which are related to the solution of man's problems. For example, attributes of the eye of a beetle have suggested new types of groundspeed indicators for aircraft. See: "Bionics". J. Creative Behavior, 1968, 1, 52-57.

6.   Brainstorming. Promotes rapid and unfettered associations in group discussions through deferment-of-judgment. See: Osborn, A. F. Applied Imagination. New York: Scribners, 1963.

7.   Candid Camera Films. The Cornell Candid Camera Collection, which includes films originally made for and used by the television program, has many delightful short films which illustrate principles of creative problem solving and effective (as well as not-so-effective) thinking. Write for further information and catalog to: Du Art Film Laboratories, Du Art Film Building, 245 West 55th Street, New York, New York, 10019.

8. <u>Checklists</u>. Focuses one's attention on a logical list of diverse categories to which the problem could conceivably relate. See: Osborn, A. F. <u>Applied Imagination</u>. New York: Scribners, 1963.

9. <u>Classroom Teaching and Creativity</u>. Many articles and books have been addressed to the classroom teacher, providing ideas for encouraging creativity in the classroom. The following bibliography summarizes some useful resources:

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Torrance, E. P. Rewarding Creative Behavior. Englewood
Cliffs: Prentice Hall, 1965.

Torrance, E. P. "Developing creativity through school experiences."
In Parnes, S. J. and H. Harding (Eds.) A Source Book For
Creative Thinking. New York: Scribners, 1962, 31-47.

Torrance, E. P. Encouraging Creativity in the Classroom.
Dubuque, Iowa: William C. Brown, 1970.

Torrance, E. P. & Myers, R. Creative Learning and Teaching.
New York: Dutton, 1970.

Wodtke, K. and Wallen, N. "Teacher classroom control, pupil
creativity, and pupil classroom behavior." Journal of
Experimental Education, 1965, 34, 59-65.

10.   Collective Notebook. Participants record their thoughts about a

problem several times daily, then review the list, selecting the most

promising ideas for further investigation. See: Haefele, J. W.

Creative Innovation. New York: Reinhold, 1962.

11.   Creative Analysis. A program of exercises designed to increase
the college student's facility in discovering relationships within the
knowledge he possesses, and thereby in creating new knowledge.
Emphasizes words as tools of the mind and the thought process. See:
Upton, A. & Samson, R. Creative Analysis. New York: Dutton, 1964.

12.   Creative Instructions. Emphasizes how instructions are given
(problem presented, etc.) as a key determinant in stimulating individual
or group production of creative responses. See unpublished doctoral
dissertation (67-15607), Colgrove, Melba, Annetta. "Stimulating
Creative Problem Solving Performance Innovative Set." University of
Michigan, 1967.

13.   Creative Thinking Workbook. A program for adults and college-
level students; many exercises suitable for high school students. The
exercises are designed to remove internal governors and to provide
practice in stretching the imagination in problem-finding and problem-
solving. Problems are included on product design and on presenting
ideas. Can be self-instructional. Available from: W. O. Uraneck,
56 Turning Mill Road, Lexington, Massachusetts, 02173 (1963).

14.   Curriculum General. Many recent developments in curriculum
and instruction have been concerned with providing opportunities for

creative growth. In this section, and the next five, several representative

publications are listed in a variety of curriculum areas. (See also

Affective Domain.)

> Franco, J. M. Project Beacon. Public Schools, Rochester,
> New York 14608. (Concerned with the development of
> ego strength in primary grades.)

> Gibson, J. S. The Intergroup Relations Curriculum. Medford,
> Massachusetts: Tufts University Press.

> Janes, R. & Woodbridge, B. Bowman Early Childhood Series.
> Glendale, California: Bowman Publishing, 1969.
> (Designed to help develop positive self-awareness and
> identity, awareness of self as a person, ability to relate
> to others.)

> Kresse, F. H. Match Projects. Boston: American Science and
> Engineering, Inc., 20 Overland Street. (Materials and
> activities across many areas, for grades 4-6+).

> Massialas, B. G. & Zevin, J. Creative Encounters in the Class-
> room. New York: Wiley, 1967.

For anthologies dealing with educational and curricular implications of

creativity studies:

> Gowan, J. C., Demos, G. D. & Torrance, E. P. (Eds.) Creativity:
> Its Educational Implications. New York: Wiley, 1967.

> Davis, G. A. & Scott, J. A. (Eds.) Training Creative Thinking.
> New York: Holt, Rinehart, and Winston, 1971.

> Treffinger, D. J. (Ed.) Readings on Creativity in Education. To
> be published by Prentice-Hall, Inc.

15. Curriculum – Mathematics.

Davis, R. B. The Madison Project. Reading, Massachusetts:
Addison Wesley. Five different curricula; grades 2-8.

Matthews, G. Nuffield Mathematics Project. New York: Wiley.
A British program for ages 5-13.

Werntz, J. H. Minnemast Project. For grades K-6; write:
720 Washington Avenue SE, Ninneapolis, Minnesota, 55414.

16. Curriculum – Preprimary.

Dunn, L. M. Peabody Language Development Kit. American
Guidance Publishers, Circle Pines, Minnesota, 55014.

Frostig, M. Frostig Visual Perception Program. Chicago: Follett.

Stendler, C. Early Childhood Curriculum: A Piaget Approach.
Boston: American Science and Engineering.

For research on creativity among preprimary children, contact
Professor Elizabeth Starkweather, Oklahoma State University,
Stillwater, Oklahoma.

17. Curriculum – Reading, Literature, Language Arts.

Clymer, T. et al. Reading 360. Boston: Ginn and Company, 1969.
An innovative series, in which E. Paul Torrance served
as creativity consultant.

Medeiros, V. The Voices of Man Literature Series. Reading,
Massachusetts: Addison-Wesley. High School literature
series for disadvantaged students.

Moffet, J. A Student Centered Language Arts Curriculum. (Vol-
ume 1: K-6; Volume 2: K-13). Boston: Houghton Mifflin, 1968.

18.   Curriculum – Science.

Anderson, R. D., DeVito, A., Dyrli, O. E., Kellogg, M.,
Kochendorfer, L. & Weigand, J. Developing Childrens'
Thinking Through Science. Englewood Cliffs: Prentice-
Hall, 1970.

Brown, R. R. Elementary Science Study. (K-6). Manchester,
Missouri: Webster Division, McGraw-Hill.

Karplus, R. & Thier, H. D. Science Curriculum Improvement
Study. (K-6). Chicago: Rand-McNally.

LaSalle, D. Write for information concerning an independent
science center. Talcott Mountain Science Center,
Montevideo Road, Avon, Connecticut, 06001.

Mayor, J. Science: A Process Approach. (K-6). New York:
Xerox Corporation.

Washton, N. S. Teaching Science Creatively. Philadelphia:
W. B. Saunders, 1967.

19.   Curriculum – Social Studies.

Bruner, J. S. Man: A Course of Study. Curriculum Development
Associates, 1211 Connecticut Ave., NW, Washington, D. C.
20036.

Edcom Systems. Space, Time, and Life. (Grades 4-6). EDCOM
Systems, 145 Witherspoon Road, Princeton, N. J. 08540.

Educational Research Council of America. Concepts and Inquiry.
(Gr. K-8). Boston: Allyn and Bacon.

Lippitt, R. Social Science Laboratory Units. (Gr. 4-6). Chicago:
Science Research Associates.

Muessig, R. Discussion Pictures for Beginning Social Studies.
New York: Harper and Row, 1967.

Taba, H. & Durkin, M. <u>Taba Social Studies Curriculum</u> (Gr. 1-8). Reading, Mass.: Addison-Wesley, Co.

20.   <u>Delphi Technique</u>. Polling procedure resembling an absetnee "brainstorming" effort used to generate alternative futures for a particular topic or series of topics. See: Helmer, Olaf. <u>Social Technology</u> Basic, 1966. For additional references, contact Book Service, World Future Society, P. O. Box 19285, Twentieth Street Station, Washington, D. C., 20036.

21.   <u>Developmental Stage Analysis of Creativity</u>. See: Gowan, J. C. <u>The Development of the Creative Individual</u>. (1971). Robert Knapp Pub., Box 7234, San Diego, California, 92107.

22.   <u>Experimental Psychology Techniques</u>.

Caron, A. J. "A test of Matlzman's theory of originality training." <u>Journal of Verbal Learning and Verbal Behavior</u>, 1963, 1, 436-442.

Duncan, C. P. "Attempts to influence performance on an insight problem." <u>Psychological Reports</u>, 1961, 9, 35-42.

Gallup, H. F. "Originality in free and controlled association responses." <u>Psychological Reports</u>, 1963, 13, 923-929.

Maltzman, I. "On the training of originality." <u>Psychological Review</u>, 1960, 67, 229-242.

Maltzman, I., Belloni, Marigold, & Fishbein, M. "Experimental studies of associational variables in originality." Psychological Monographs, 1964, 78, 3. (Whole #580).

Maltzman, I., Brooks, L., Bogartz, W. & Summers, S. "The facilitation of problem-solving by prior exposure to un0 uncommon responses." Journal of Experimental Psychology, 1958, 56, 399-406.

Maltzman, I., Bogartz, W. & Breger, L. "A procedure for increasing word association originality and its transfer effects." Journal of Experimental Psychology, 1958, 56, 392-398.

Maltzman, I. & Gallup, H. F. "Comments on 'originality' in free and controlled association responses." Psychological Reports, 1964, 14, 573-574.

Maltzman, I., Simon, S., Raskin, P. and Licht, L. "Experimental studies in the training of originality." Psychological Monographs, 1960, 74(6). Whole #493.

23.   Forced Relationship Techniques. Specific types of exercises designed to derive new combinations of items and thoughts. See: Whiting, C. S. Creative Thinking. New York: Reinhold, 1958.

24.   Futuristics. Predicting the future, with projections for five, ten, and fifty year periods. Write: Carl Gregory, California State College, School of Business, Long Beach, California, 90801. Also contact: World Future Society, P. O. Box 19285, 20th St. Station, Washington, D. C. 20036.

25. <u>General Semantics</u>. Approaches which help the individual to discover multiple meanings or relationships in words and expressions. See: Hayakawa, S. I. <u>Language in Thought and Action</u>. New York: Harcourt Brace and World, Inc., 1964. For continuing current information, see <u>ETC.: A Review of General Semantics</u>, a quarterly journal with editorial offices at San Francisco State College, San Francisco, California, 94132. See: True, S. R. "A Study of the Relation of General Semantics and Creativity." <u>Dissertation Abstracts</u>, 1964.

(Note: a conference on Creativity and General Semantics was held in conjunction with the 17th Annual Creative Problem-Solving Institute, in June 1971.)

26. <u>Incident Process</u>. A problem-solving approach (and/or training program) developed at the college and adult level. It stresses multiple viewpoints and a wide search for problem-elements; applies many methods similar to the older Job Relations Training program. See: Pigors, P. W. & Pigors, F. C. <u>Case Method in Human Relations: the Incident Process</u>. New York: McGraw-Hill, 1961.

27. <u>Kepner-Tregoe Method</u>. An approach (or training program) that emphasizes "what a man does with information," i.e., how he interrelates facts in analyzing problems and making decisions. Developed at adult level. See: Kepner, C. H. & Tregoe, B. B. <u>The Rational Manager</u>. New York: McGraw-Hill, 1967.

28. <u>Management of Intelligence</u>. A number of techniques for creative problem-solving, including negative ideation, 7 x 7 technique, and others, are included in: Carl E. Gregory. <u>The Management of Intelligence: Scientific Problem Solving and Creativity</u>. New York: McGraw-Hill, 1967.

29. <u>Morphology (Or Morphological Analysis)</u>. A system involving the Methodical interrelating of all elements of a problem in order to discover new approaches to a solution. See: Allen, M. S. <u>Morphological Creativity</u>. Englewood Cliffs, N. J.: Prentice-Hall, 1962.

30. <u>Problem-Solving Training</u>. A program on problem-solving, skills for high-IQ first graders. Consists of units called "games." Presented by the teacher as a programmed script for individual instruction (one child at a time). See: Anderson, R. C. "Can First Graders Learn an Advanced Problem-Solving Skill?" <u>Journal of Educational Psychology</u>, 1965, 56(6), 283-294.

31. <u>Process Education Resources</u>. A survey of materials and resources, which can be utilized in process education: Seferian, A., & Cole, H. P. <u>Encounters In Thinking: A Compendium of Curricula for Process Education</u>. Buffalo, New York: Creative Education Foundation, (Occasional Paper #6).

32.   <u>Productive Thinking Program.</u> A self-instructional program for
the upper elementary grades. It attempts to help children improve their
creative problem-solving ability. To be published, in an expanded version,
by Charles E. Merrill, Inc., of Columbus, Ohio. Considerable research
has been conducted in which the original version of the <u>Productive Thinking</u>
<u>Program</u> was used; much of this research is reviewed in: Treffinger, D. J.
and Ripple, R. E. "Programmed instruction in creative problem-solving."
<u>Educational Leadership</u>, 1971, 28, 667-675. Other published reports
include:

       Covington, M. V. "Some experimental evidence on teaching for
          creative understanding." <u>The Reading Teacher</u>, 1967 (Feb.),
          390-396.

       Covington, M. V. & Crutchfield, R. S. "Facilitation of creative
          problem-solving." <u>Programmed Instruction</u>, 1965, 4, 3-5, 10.

       Crutchfield, R. S. "Creative thinking in children: its teaching
          and testing." In H. Brim, R. Crutchfield and W. Holtzman
          (Eds.) <u>Intelligence: Perspectives 1965.</u> New York: Harcourt
          Brace and World, 1966.

       Crutchfield, R. S. "Instructing the individual in creativity." In:
          Educational Testing Service's <u>Individualizing Instruction</u>
          (Princeton, 1965); also in Mooney and Razik's <u>Explorations in</u>
          <u>Creativity</u> (1967).

       Crutchfield, R. S. & Covington, M. V. "Programmed instruction
          and creativity." <u>Programmed Instruction</u>, 1965, 4, 1-2,
          8-10.

       Evans, D., Ripple, R. E. & Treffinger, D. J. "Programmed
          instruction and productive thinking: a preliminary report

of a cross-national comparison." In: Dunn, W. R. & Holyroyd, C., (Eds.) Aspects of Educational Technology. London: Methuen, 1968.

Olton, R. M. "A self-instructional program for the development of productive thinking in fifth- and sixth-grade children." In: F. E. Williams (Ed.) First Seminar on Productive Thinking in Education. St. Paul, Minnesota: Macalester College, 1966, 53-60.

Olton, R. M. "A self-instructional program for developing productive thinking skills in fifth- and sixth-grade children." Journal of Creative Behavior, 1969, 3, 16-25.

Olton, R. M. & Crutchfield, R. S. "Developing the skills of productive thinking." In: Mussen, P., Langer, J. & Covington, M. (Eds.) New directions in developmental Psychology. New York: Holt, Rinehart, and Winston, 1969.

Olton, R. M., Wardrop, J., Covington, M., Goodwin, W., Crutchfield, R., Klausmeier, H. & Ronda, T. "The development of productive thinking skills in fifth-grade children." Technical Report #34. Madison: University of Wisconsin R and D Center for Cognitive Learning, 1967.

Ripple, R. E. & Dacey, J. S. "The facilitation of problem-solving and verbal creativity by exposure to programmed instruction." Psychology in the Schools, 1967, 4, 240-245.

Treffinger, D. J. & Ripple, R. E. The effects of programmed instruction in producting thinking on verbal creativity and problem-solving among elementary school children. Ithaca, New York: Cornell University, 1968. Final Report of USOE Research Project OEG-0-8-080002-0220-010.

Treffinger, D. J. & Ripple, R. E. "The Effects of programmed instruction in productive thinking on verbal creativity and problem-solving among pupils in grades four through seven." Irish Journal of Education, 1970, 4, 47-59.

Treffinger, D. J. & Ripple, R. E. "Developing creative problem-solving abilities and related attitudes through programed instruction." Journal of Creative Behavior, 1969, 3, 105-110.

Wardrop, J. L., Olton, R., Goodwin, W., Covington, M., Klausmeier, H., Crutchfield, R. & Ronda, T. "The development of productive thinking skills in fifth-grade children." Journal of Experimental Education, 1969, 37, 67-77.

33.   Psycho-Dramatic Approaches. These include a variety of techniques such as role playing and role reversal. In psychodrama the attempt is made to bring into focus all elements of an individual's problem; whereas in sociodrama the emphasis is on shared problems of group members. Elements of these techniques have been used in various types of educational settings and training programs. See: Moreno, J. L., Who Shall Survive? New York: Beacon House, 1953. For current reading, see the quarterly journal Group Psychotherapy by the same publisher.

34.   Purdue Creativity Training Program. This program consists of 28 audio tapes and accompanying printed exercises, for the development of creative thinking and problem-solving abilities among elementary school pupils. For further information, write: John F. Feldhusen or Donald J. Treffinger, Educational Psychology Section, Purdue University, South Campus Courts G, Lafayette, Indiana, 47907. Published descriptions and research reports include:

Bahlke, S. J. A study of the enhancement of creative abilities in elementary school children. Unpublished master's thesis, Purdue University, 1967.

Bahlke, S. J. Componential evaluation of creativity instructional materials. Unpublished doctoral thesis, Purdue University, 1969.

Feldhusen, J. F., Bahlke, S. J. & Treffinger, D. J. "Teaching creative thinking." Elementary School Journal, 1969, 70, 48-53.

Feldhusen, J. F., Treffinger, D. J. & Behlke, S. J. "Developing creative thinking: The Purdue Creativity Program." Journal of Creative Behavior, 1970, 4, 85-90.

Feldhusen, J. F., Treffinger, D. J. & Thomas, S. J. B. Global and Componential Evaluation of Creativity Instructional Materials. Buffalo, N. Y.: Creative Education Foundation, 1971.

Robinson, W. L. T. Taped-creativity-series versus conventional teaching and learning. Unpublished master's thesis, Atlanta University, 1969.

WBAA. Creative Thinking: The American Pioneers. (A manual for teachers. West Lafayette, Indiana: Purdue University, 1966.

35. Racking Techniques. (Also 7 x 7 technique and other forcing techniques). See: Gregory, C. E. Management of Intelligence: Scientific Problem-Solving & Creativity. New York: McGraw-Hill, 1967.

36. Self-Enhancing Education. Emphasis on basic principles of creative problem-solving, including education for setting as well as solving one's own problems. See: Randolph, Norma & Howe, W. A. Self-Enhancing

<u>Education, A Program to Motivate Learners</u>. Sanford Press, Sanford

Office, 200 California Avenue, Palo Alto, California, 1967.

37.　　<u>Self-Instructional Course in Applied Imagination.</u>　Programmed

set of 28 self-instructional booklets.　For complete curriculum No.

015677 or microfiche of report EDO-10382 write to ERIC Document

Report Service, 4936 Fairmount Avenue, Bethesda, Maryland, 20014.

38.　　<u>Sensitivity ("T Group")</u>.　A training program designed to help a

person gain insight into himself and his functioning in a group.　It attempts

to increase the person's openness to ideas and viewpoints.　See: Bradford,

Leland P., Gibb, Jack R. & Benne, K. (Eds.)　<u>T Group Theory and</u>

<u>Laboratory Method</u>.　New York: Wiley, 1964.　(Also see Affective Domain.)

39.　　<u>Structure of Intellect</u>.　A model devised by J. P. Guilford giving

organization to the various factors of intellect, and arranging them into

three grand dimensions: contents, operations, and products.　Also see:

>　Guilford, J. P.　<u>The Nature of Human Intelligence</u>.　New York:
>　McGraw-Hill, 1967.

>　Guilford, J. P.　<u>Intelligence, Creativity, and Their Educational</u>
>　<u>Implications</u>.　San Diego: Knapp, 1968.

40. <u>Synectics (Or Operational Creativity).</u> A training progra m which stresses the practical use of analogy and metaphor in problem-solving. The Synectics mechanisms "force new ideas and associations up for conscious consideration rather than waiting for them to arise fortuitously." Developed at adult level. See: Gordon, W. J. <u>Synectics: The Development of Creative Capacity</u>. New York: Harper Bros. 1961.

41. <u>Theoretical Issues.</u> The question, "Can creativity be developed?" has interested many scholars, and the literature, both supportive and critical, contains many stimulating papers. Among them are:

Anderson, H. H. "Creativity and education." <u>College and University Bulletin</u>, 1961, 13.

Ausubel, D. P. "Fostering creativity in the school." <u>Proceedings of the Centennial Symposium</u>, "How Children Learn." Ontario, Canada: Phi Delta Kappa and O. I. S. E., 1967, 37-49.

Ausubel, D. P. <u>Educational psychology: a cognitive view</u>. New York: Holt, Rinehart and Winston, 1968.

Ausubel, D. P. & Robinson, F. <u>School learning</u>. New York: Holt, Rinehart and Winston, 1969.

Danziger, K. "Fostering creativity in the school: social psychological aspects." <u>Proceedings of the Centennial Symposium</u>, "How Children Learn." Toronto: Phi Delta Kappa and O. I. S. E., 1967, 50-59.

deMille, R. "The creativity boom." <u>Teachers College Record</u>, 1963, 54, 199+.

Gagne, R. M. <u>The conditions of learning</u>. New York: Holt, Rinehart, Winston, 1965.

Getzels, J. W. "Creative thinking, problem-solving, and in-
struction." In NSSE Yearbook, Theories of learning and
instruction. 1964, 240-267.

Guilford, J. P. "Factors that aid and hinder creativity."
Teachers College Record, 1962, 63, 391.

Hallman, R. J. "Can creativity be taught?" Educational Theory,
1964, 14, 15+.

Parnes, S. J. "Can creativity be increased?" In Parnes and
Harding. A source book for creative thinking. New York:
Charles Scribner's Sons, 1962, 151-168.

Parnes, S. J. Creative potential and the educational experience.
Buffalo: Creative Educationa Foundation, 1967. (Occasional
Paper #2.)

Taylor, C. W. (Ed.) Creativity: Progress and Potential. New
York: Wiley, 1964.

Taylor, C. W. & Williams, F. E. (eds.) Instructional Media and
Creativity. New York: Wiley, 1966.

White, W. F. Psychosocial principles applied to classroom
teaching. New York: McGraw-Hill, 1969.

42.   Think Products. A series of materials for teachers and industry

to stimulate creative performances. Included is a series of TNT materials

for teachers (techniques and tips) and a little magazine called "The

Creative Thinkier". Available from Think Products, 1209 Robin Hood

Circle, Towson, Md., 21204.

43.   Thinking Creatively. Gary A. Davis, Department of Educational

Psychology, University of Wisconsin, Madison, Wisconsin, has been active

in research on the development of creative thinking abilities, and in

constructing instrucational programs and materials as well. He has also

published with Joseph A. Scott, an anthology entitled, "Training Creative

Thinking". New York: Holt, Rinehart and Winston, 1971. Related

articles and materials include:

Davis, G. A. "Training creativity in adolescents: a discussion of
        strategy." Journal of Creative Behavior, 1969, 3, 95-104.

Davis, G. A. & Houtman, S. E. Thinking creatively: A guide to
        training imagination. Madison: University of Wisconsin
        R and D Center for Cognitive Learning, 1968.

Davis, G. A., Houtman, S., Warren, T. & Roweton, W. "A
        program for training creative thinking: I. Preliminary
        Field Test." Madison: University of Wisconsin, R & D
        Center for Cognitive Learning, 1969.

Davis, G. A. & Manske, M. "An instructional method of in-
        creasing originality." Psychonomic Science, 1966, 6, 73-74.

Davis, G. A. & Roweton, W. "Using idea checklists with college
        students: overcoming resistance." Journal of Psychology,
        1968, 70, 221-226.

Manske, M. & Davis, G. "Effects of simple instructional biases
        upon performance on the Unusual Uses Tests." Journal of
        General Psychology, 1968, 79, 25-33.   .

44.   Torrance's Materials. E. Paul Torrance, Professor of Educational

Psychology at the University of Georgia, Athens, Georgia, has developed

with colleagues several sets of instructional materials for fostering

creative thinking among elementary school children. His Ideabooks series,

with Robert Myers, includes "Can You Imagine?", "For Those Who

Wonder," "Invitations to Thinking and Doing," "Invitations To Speaking

and Writing Creatively." and "Plots, Puzzles, and Ploys." The Imagicraft

series, with B. F. Cunnington, includes recorded exercises, based on

biographical sketches of famous people and the "Sounds and Images"

exercises. Most are intended for elementary school children, but contain

imaginative exercises which might readily be used with adolescents and

adults with minor modifications. For information, write Ginn and Company,

Waltham, Massachusetts, 02154. The Torrance Tests of Creative Thinking

are published by the Personnel Press, Princeton, New Jersey. See also:

> Britton, R. J. A Study of creativity in selected sixth-grade
> groups. Unpublished doctoral thesis, University of Virginia,
> 1967.

> Torrance, E. P. & Gupta, R. "Development and evaluation of
> recorded programmed experiences in creative thinking in
> the fourth grade." Minneapolis: University of Minnesota,
> Bureau of Educational Research, 1964.

> Torrance, E. P. "Priming creative thinking in the primary
> grades." Elementary School Journal, 1961, 62, 34-41.

(See also Classroom Teaching and Creativity above.)

45.   <u>Value Engineering (Or Value Analysis, Value Innovation, Value</u>
<u>Management, Etc.)</u>. Training programs applying general principles of
creative problem-solving to group efforts toward reducing costs or
optimizing value, Adult level. See: Miles, L. D., <u>Techniques of Value</u>
<u>Analysis and Engineering.</u> New York: McGraw-Hill, 1961; also Value
Engineering Handbook, H 111, U. S. Department of Defense, March 29,
1963 (U. S. Government Printing Office, Washington, D. C.). For
current information, conference reports, bibliographies, etc., write
Society of American Value Engineers, Windy Hill, Suite E-9, 1741
Roswell Street, Smyrna, Georgia, 30080.

46.   <u>WFF'N Proof.</u> A symbolic logic game designed to increase one's
ability to discover new relationships in a logical manner. Portions
applicable at elementary level, proceeding through adult levels. Available
from author, L. E. Allen (WFF'N Proof, The Game of Modern Logic),
P. O. Box 71, New Haven, Connecticut, 06501.

47.   <u>Williams' Model.</u> Franke E. Williams, Portland State College,
Portland, Oregon, has developed an approach for helping teachers integrate
the teaching of cognitive and affective skills with the presentation of
subject matter. Recent published reports include:

Williams, F. E. "Fostering classroom creativity." Cal. Teachers Assn. Journal, March 1961.

Williams, F. E. "The search for the creative teacher." Cal. Teachers Assn. Journal, January 1964, 60, 14-16.

Williams, F. E. "Perspective of a model for developing productive-creative behaviors in the classroom." In: Williams, F. E. (Ed.) First Seminar on Productive Thinking in Education. St. Paul: Macalester College, 1966, 108-116.

Williams, F. E. "Training children to be creative may have little effect on original classroom performance, unless. . ." Cal. Journal of Ed. Research, 1966, 17.

Williams, F. E. "Models for encouraging creativity in the class room by integrating cognitive-affective behaviors." Educational Technology, 1969, 9, 7-13.

Williams, F. E. Classroom Ideas for Encouraging Thinking and Feeling. Buffalo, New York: D. O. K. Publishers, 711 East Delevan Avenue, Buffalo, N. Y., 14215.

Williams, F. E. Media for Developing Creative Thinking in Young Children. Buffalo, New York: Creative Education Foundation, 1968 (Occasional Paper #3).

48.   Work Simplification. An industrial training program that applies

some of the general principles of creative problem-solving to the

simplification of operations or procedures. Provides opportunity for

personnel to use their mental resources in helping improve organizational

operations, using simple industrial engineering principles. ("Job Methods

Training," as well as other similarly named programs of World War II

and thereafter, applied the basic concepts of this program.) See:

Goodwin, H. F. "Work Simplification" (a documentary series of articles).

Factory Management and Maintenance, July 1958. Briefer but more

recent information may be obtained from Work Simplification Conferences,

P. O. Box 30, Lake Placid, New York, 12947 and from an article on

Work Simplification by Auren Uris in the September 1965 issue of Factory.

49.   Young Thinker. For children between 5-10 years of age. A series

of more than 50 projects and exercises which can be used by the individual

or by groups. These have been used in the home and in schools. Available

from W. O. Uraneck, 56 Turning Mill Road, Lexington, Massachusetts,

02173.

FOOTNOTES

CHAPTER TWO FOOTNOTES

[1]Edward M. L. Burchard, "The Use of Projective Techniques in the Analysis of Creativity." Journal of Projective Techniques, 1962, 16, 412.

[2]J. W. Getzels and P. W. Jackson. Creativity and Intelligence: Exploration with Gifted Students. New York: Wiley, 1962, p. 101.

[3]C. W. Taylor and S. J. Parnes. "Humanizing Educational Systems: A Report of the Eighth International Creativity Research Conference," Journal of Creative Behavior, 1970, 4, 3, p. 177.

[4]J. P. Guilford. "Creativity: Yesterday, Today and Tomorrow." Journal of Creative Behavior, 1967, 1, 1, pp. 3-14.

[5]Webster's Collegiate Dictionary, Fifth Edition. Springfield, Mass.: G. and C. Merriam Co., 1948, p. 238.

[6]Ibid.

[7]Ibid.

[8]Alex F. Osborn. Applied Imagination, Principles and Procedures of Creative Thinking. New York: Charles Scribner's Sons, 1953, p. 3.

[9]Earl Kelley and Marie Rasey. Education and the Nature of Man. New York: Harper and Brothers, 1952, p. 116.

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to purely contemporary art by which we assume he means either abstract, non-objective, or abstract expressionistic art it is difficult to follow his reasoning. When he says "from a low primitive stage of differentiation up to the highest gestalt level" we are further confused since the perception of constancies involves less differentiation than the perception of non-constancies or the "repressed" retinal images.

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