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Aesthetic Experience as an Epistemological Concept

Patricia Avellano
Eastern Illinois University

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AESTHETIC EXPERIENCE AS AN EPISTEMOLOGICAL CONCEPT

(TITLE)

By

PATRICIA AVELLANO

PAPER

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VITA

Patricia Ellen Hart Avellano, eldest child of Arvel Hart and Elizabeth Dominick Hart was born March 13, 1944 at LaPorte, Indiana. She attended schools in Indiana and Illinois, graduating in 1962 from Casey High School, Casey, Illinois.

Supported by an Illinois State Teacher's Scholarship, she attended Eastern Illinois University and was awarded in 1968 the Bachelor's of Science degree in Art Education. At Eastern Illinois University she received the Winnie Davis Neely Award.

Patricia completed post-graduate work at Central State University, Edmond, Oklahoma, and at Oklahoma State University, Stillwater, Oklahoma. In September of 1975, she entered the Master's program in Adult and Higher Education at Montana State University. The Master's of Education degree was granted her in August of 1976. Graduate work was completed at Central State University, Edmond, Oklahoma, and at the University of Oklahoma, Norman, Oklahoma.

In August of 1983, she entered the Master's program in Art at Eastern Illinois University with a studio concentration in sculpture. The Master of Arts degree was granted her in August of 1984.

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ABSTRACT

The **purpose** of this descriptive study was to give definition to aesthetic experience as an epistemological concept. The **need** for the study was based on the lack of continuity and focus of definition and description for aesthetic experience which has been highly diverse in the literature of aesthetics which began foremost with Baumgarten in 1750. The **scope** of the study focuses on: four intelligences defined as an intelligence faculty of (1) general intelligence, (2) imaginative-intelligence, (3) creative-intelligence, and (4) poetic-intelligence; two perceptual ordering capacities defined as (1) an innate aesthetic sense, and (2) an acquired aesthetic sense; and two primordial activities defined in their most elemental states as (1) primordial art activity, and (2) primordial science activity. The **hypothesis** of the thesis is aesthetic experience is held to be epistemological experience in its most elegant and complete state and comes about as the result of creative and poetic intelligence. Examples given of individuals who have brought about experiences which are aesthetic are Poincare, Mendel, Darwin, Thoreau, and Michelangelo. The **result** of the study is that the definition and description of the hypothesis can be viewed as an inclusive definition and description for all epistemological experiences held as aesthetic.

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PATRICIA AVELLANO

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Chapter I

INTRODUCTION

The randomness of Nature, her powers of creativity, and man's overt demonstration of his creative powers born of the creative seeds of Nature's indeterministic ways, gives vague definition to the mysterious powers of creation—and, this allows for widespread speculation as to what creativity is. It is from Nature's evolving and ever-changing symmetry-breaking and making that form acquires definition. Man has become, as Darwin and Thoreau hailed him to be, "a part of the world he seeks to explore" (Barnett, 1979:118).

Needless to say, as Jeremy Rifkin states, "The Newtonian paradigm of precise measurement, of dividing matter into neat quantities without regard to either their effect on the rest of the cosmos or the effect of the rest of the cosmos on them, has led to the wanton manipulation and destruction of nature at the hands of modern science" (1981:223). Knowing full well what this means, I am most sensitive to the need to attempt to clarify by definition primary processes of perceptual ongoings which when fully operant can give man wisdom as to the use of his newly acquired powers which can interfere with the natural workings of Nature and lead to irreversible environmental damage. Since there is no consensus agreement as to such definitions, I have given challenge to the mystery and vagueness which surrounds most explanations of such perceptual ongoings. Especially, to be dealt with in this thesis are the ongoings of imaginative, creative, and poetic intelligence.

However divided these ongoings may appear in the following discourse, they are to be viewed as interdependent and of general experience. I have taken the liberty to organize primordial perceptual processes into those of an

innate aesthetic sense and an acquired aesthetic sense. Furthermore, I have differentiated the activities of art and science in their most elemental states as primordial perceptual making and inquiry.

All experience is categorized as general with characteristics which give some general experience specific purpose or aim. Perception is defined as all faculties and operations which bring about perceptual consummation, understanding, and discovery. Consciousness is defined as perceptual awareness and requires no further definition. The most complete form of perceptual awareness or consciousness is to be found in aesthetic experience. **What has been in the past referred to as aesthetic experience will here be referred to as sensual-emotive experience.** Sensual-emotive experience is most often characterized by socio-cultural and psychological factors. Thus, aesthetic experience, the outcome of imaginative, creative, and poetic intelligence, is the most complete form of consciousness and is held as rare. However, it is in this rarity of experience that general experience is epistemologically ordered and made elegant: **the aesthetic experience is an experience of knowledge in its most elegant and complete state.**

Creative and poetic intelligence from which aesthetic experience springs cannot be determined by IQ tests based on Gaussian probability. The occurrence of creative and poetic intelligence depends on genetic randomness; and, if it occurs, it is a genetic risk. Its occurrence and development, if successful, will be evaluated in aesthetic experience. Creative-intelligence is dependent upon the workings of imaginative-intelligence. It brings about elegant orders which are epistemologically structured and which result in aesthetic experience.

Poetic-intelligence concerns itself with the wisdom of form. Wisdom of form is a sophistication and refinement of epistemological conceptualizations. Thoreau tells us that wisdom is rhymed or musically measured:

> There is no doubt that the loftiest written wisdom is either rhymed, or in some way musically measured,—is, in form as well as substance, poetry; and a volume which should contain the condensed wisdom of mankind, need not have one rhythmless line (1966:108).

Poetic-intelligence is the most refined and sophisticated state of perceptual awareness wherein order is viewed as elegant and complete.

However, creative-intelligence, dependent upon imaginative-intelligence, breaks the parameter of past poetic impression to establish new insight into new epistemological ground. This is a most difficult and complex task, but one which is necessary for creative-intelligence to lead to discovery.

Poetic-intelligence is both an innate and acquired capacity needed to bring about recognition of those elements and characteristics which define the wisdom of form.

The **purpose of this study** is to give description to the following hypothesis: The human organism experiences the complexity of systems as elegant and epistemologically ordered as specific and aesthetic. Although rare, aesthetic experience is to be considered as a characteristic of general experience. General experience is defined as follows: Experience is defined whenever an organism is on an experiential time-space continuum which is constantly in a state of oscillation between equilibrium and disequilibrium. Its existence is only justified at a specific point in time and space. In other words: every point in time and space, occupied by an organism, is to be considered unique and having its own occurrence which distinguishes it from all other events but which is connected

with all other events in a delicate and complex web of interrelationships which carry their own past subjective occurrences and which give rise to their own particular unfolding. Each carries with it, its own evolutional history; therefore, what is to be understood is confined or limited to specific occurrences at specific points in time and space which comes to understanding only by way of perceptual processes.

General experience comes about as a result of perception in the form of (1) response to environmental activities—extrinsic involvement and, (2) response to brain activities—intrinsic involvement. All experience is general with characteristics which define its aim or purpose. General experience has three characteristics which are central to its issue: (1) aesthetic, (2) primordial artistic, and (3) primordial scientific.

Aesthetic experience is perceptual experience in its most complete and elegant form. Epistemology identifies aesthetic experience as experience which has refinement in terms of the structure of its knowledge which is elegant. Such order is described as a system. Four functions must be operant before aesthetic experience reaches consummation: (1) general intelligence, (2) imaginative-intelligence, (3) creative-intelligence, and (4) poetic-intelligence.

General intelligence is that which is, for the most part, determined by IQ tests such as the Stanford-Binet and is correlated with academic achievement required by institutions of public education. IQ tests do not measure general creativity. However, some tests have been developed (Guildford, Torrance) which attempt to measure general creativity missed by IQ tests. Such tests have not met with the same success as IQ tests. Their lack of success has been

attributed to the need for a working definition of general creativity.

General creativity, for the purpose of this paper, is defined as a characteristic of imaginative-intelligence experience and characterizes individual response or uniqueness of a perceptual expression. Imaginative-intelligence is a means by which an organism experiences the bringing about of concrete form to abstract thought by exerting its power to go beyond such concretes in contemplation (be it of fantasy, daydreaming, dreaming, or mathematics, etc.) to determine numerous possible orderings for concretes about which the organism is most immediately concerned. Imaginative-intelligence is to be differentiated from general creativity. General creativity primarily results from sensual-emotive response as well as sociocultural and psychological response. And, it reflects individuality or unique expression of an individual. Imaginative-intelligence is a desired effort to order perceptual data with continuity.

In its most sophisticated state, imaginative-intelligence is a metaphoric operation wherein connections amongst data are made by processes which differentiate significant interrelationships. Metaphorical differentiation is a kind of general poetic-condensation of complex thought or theory which results in allegorical description be it of art or science. Two examples of such poetic-condensation into metaphor and allegory are Thoreau's (1854) Walden and Darwin's (1859) allegory of "The Great Tree." Significance is merely a descriptive term for meaning. Meaning carries with it a kind of response termed affinity. Affinity is to be held as a sensual-emotive component of significance as the feelings-side of imaginative-intelligence. Affinity can be associated with the

Greek concept of eros—but not "eros gone mad." Affinity does carry with it passion—or intense feelings for a particular.

Imaginative-intelligence is a very powerful lower-order ordering operation. However, much greater in force is creative-intelligence. Creative-intelligence differentiates the most elegant forms from that which has been brought forth by imaginative-intelligence operations. Creative-intelligence is a rare occurrence and primarily operates to give form to poetic wisdom. Poetic wisdom is characteristic of forms of art and science. Creative-intelligence can be viewed as a higher-order ordering operation of imaginative-intelligence, but one which occurs as the result of genetic randomness not to be found in Gaussian distributions. However, four distinct stages noted by Wallas (1926) clearly characterize the gut workings of creative-intelligence: preparation, incubation, illumination, and verification. These stages are necessary creative-intelligence operations which determine missing links in specific mental puzzles for which an organism desires completion. Such perceptual workings require conscious preparation and are highly dependent upon unconscious operations. These perceptual workings bring about elegance, but elegance always subject to verification.

Beyond the workings of creative-intelligence is an even greater perceptual rarity: the operation of poetic-intelligence. Poetic-intelligence is an acute sensitivity to the rightness or wrongness of form. It concerns itself with the wisdom of form—wisdom, meaning the sophistication and refinement of epistemological and elegant orderings of a complex knowledge system. Two capacities are important to the workings of poetic-intelligence: (1) the innate capacity of the aesthetic sense, and (2) the acquired capacity of the aesthetic sense. Both

capacities bring about two primary activities: (1) primordial art activity, and (2) primordial science activity. **The making of form and the investigation of form are governed at the most elemental levels by these two capacities.**

Art in its most elemental state is defined as a primordial tendency to activity which symmetrically orders sensual-emotive data in response. Science in its most elemental state is defined as a primordial tendency to activity to investigate or inquire about the nature of things about which the organism is most curious. Art activity brings about symmetry to perceptual ongoings surrounding that which is meriting the organism's desire to investigate. Art is the means to perceptual continuity; science is the means to investigate that continuity. If art takes tangible form, it is referred to as a work of art. If science takes tangible form, it is referred to as theory or knowledge. Art activity is purely human response; science activity is inquiry and investigation. In this respect, art activity at its most elemental and primordial level is precursory to science activity. It is the perceptual guts of science.

It is of the utmost importance to understand the workings of the innate aesthetic sense, the acquired aesthetic sense, and the outcomes of both as primordial art and science activity. General intelligence is merely the exercise of memory and recall in response to the synthesis of socioculturally determined knowledge systems from the past which define the historical composites of both art and science. These perceptual processes are interdependent operations which bring about perceptual orderings. The innate aesthetic sense merely brings about concrete order to abstract qualities of a perceptual nature. The acquired aesthetic sense is an acquired sense which holds in memory (1) learned response

derived from sociocultural standards as well as (2) unique sensual-emotive and psychological experiential learnings.

All perceptual tendencies, capacities, processes, and operations bring about experience, both general and aesthetic, and constitute the guts of the intelligence faculty. All occur on individual space-time continuums which are pushed and pulled by intrinsic and extrinsic forces and variables. These space-time continuums describe the happenings of all things, and are interrelated in space and time. Space-time continuums give an over-all description to all which is or ever was.

However, it must be realized that almost all descriptions are lost immediately to history. Eiseley tells us how fleeting is experience:

> Directly stated, the evolution of the entire universe—stars, elements, life, man—is a process of drawing something out of nothing, out of the utter void of non-being. The creative element in the mind of man—the latency which can conceive gods, carve statues, move the heart with the symbols of great poetry, or devise the formulas of modern physics—emerges in as mysterious a fashion as those elementary particles which leap into momentary existence in great cyclotrons, only to vanish again like infinitesimal ghosts. The reality we know in our limited lifetimes is dwarfed by the unseen potential of the abyss where science stops. In a similar way the smaller universe of the individual human brain has its lonely cometary passage or flares suddenly like a supernova, only to subside in death while the waves of energy it has released roll on through unnumbered generations (1971:214-215).

Eiseley tracked modern science and found the dream of Bacon: the desire that man's quest for solutions to problems be institutionalized—that unanswered problems not wait for genius—that scientific method itself would discover Nature (1970:53-94). Although some good has come from Bacon's dream, there has come also an arrogant belief of man as measure wherein man designed a

sword bent mighty for the wanton destruction of Nature: Eiseley tell us, "with understanding arise instruments of power, which always spread faster than the inventions of calm understanding." It is now man who must track himself and create a new dream beyond the dream of Bacon: Thoreau reminds us, "we, too, are the product of sea-slime." But we too are in a larger sense, intelligent:

> The hidden significance of these fables which is sometimes thought to have been detected, the ethics running parallel to the poetry and history, are not so remarkable as the readiness with which they may be made to express a variety of truths. As if they were the skeletons of still older and more universal truths than any whose flesh and blood they are for the time made to wear. It is like striving to make the sun, or wind, or the sea, symbols to signify exclusively the particular thoughts of our day. But what signifies it? In the mythus a superhuman intelligence uses the unconscious thoughts and dreams of men as its hieroglyphics to address men unborn. In the history of the human mind, these glowing and ruddy fables precede the noon-day thoughts of men, as Aurora the sun's rays. The matutine intellect of the poet, keeping in advance of the glare of philosophy, always dwells in this auroral atmosphere (Thoreau, 1966:69).

Man has the powers of a general intelligence which afford him the means by which to acquire the poetry within history. If Bacon's dream was for common men to seek answers by scientific method—then man must do so by keeping a fresh, poetic wisdom. To do otherwise, is to make sacred content without meaning. Content without meaning is that mighty sword which has a "double edge."

Chapter II

CREATIVITY, SCIENCE, PERCEPTION AND EXPERIENCE: AN OVERVIEW

The concept of aesthetics began with Greek scholars—imagination was of interest to Coleridge, Poe and Blake—creativity was contemplated by Freud, Jung and Maslow—general intelligence consumed the attention of Binet, Wechsler and Guildford—and, the creative process was a consideration of Poincare, Wallas and Ghiselin. The moral of the story is that there exist thousands of differing opinions, hypotheses, and theories for aesthetics, imagination, general intelligence, and creativity. Sorting through all the credible data written on any one of the preceding concepts occupies the lives of hundreds of scholars at any given time period. A second moral to the story is: to date, there is no universal agreement as to definitions for the four concepts. However, there is general agreement that all four concepts are related and necessary for the bringing about of new knowledge and new understanding. The question, which formally began with Plato, is how? Plato tells us of "beautiful forms" in The Symposium:

> For he who would proceed rightly in this matter should begin in youth to turn to beautiful forms; and first, if his instructor guide him rightly, he should learn to love one such form only—out of that he should create fair thoughts; and soon he would himself perceive that the beauty of one form is truly related to the beauty of another; and then if beauty in general is his pursuit, how foolish would he be not to recognize that the beauty in every form is one and the same (1973:353).

Plato tells us that teacher and student must proceed "rightly" if one is "to recognize that the beauty in every form is one and the same" (1973:353). Teacher, student, and "proceeding rightly," according to Plato, are somehow necessary

"until at length he grows and waxes strong, and at last the vision is revealed to him of a single science, which is the science of beauty everywhere" (1973: 353-354). And who might such a man be, who can as Plato desires, have the vision at last revealed of "the science of beauty everywhere?" Perhaps, such a man was Thoreau—but, of a teacher, we know not one. Thoreau tells us metaphorically in Walden:

> These foliaceous heaps lie along the bank like the slag of a furnace, showing that Nature is "in full blast" within. The earth is not a mere fragment of dead history, stratum upon stratum like the leaves of a book, to be studied by geologists and antiquaries chiefly, but living poetry like the leaves of a tree, which precede flowers and fruit,—not a fossil earth, but a living earth; compared with whose great central life all animal and vegetable life is merely parasitic. Its throes will heave our exuviae from their graves. You may melt your metals and cast them into the most beautiful molds you can; they will never excite me like the forms which this molten earth flows out into. And not only it, but the institutions upon it, are plastic like clay in the hands of the potter (1966:204).

In Thoreau's Journal on July 5, 1852, he wrote: "Here is a bird in whose strain the story is told, though Nature waited for the science of aesthetics to discover it to man." In 1859, Darwin published The Origin of Species. And it is in The Origin of Species that Darwin tell us:

> I have called this principle, by which each slight variation, if useful, is preserved, by the term of Natural Selection, in order to mark its relation to man's power of selection. We have seen that man by selection can certainly produce great results, and can adapt organic beings to his own uses, through the accumulation of slight but useful variations, given to him by the hand of Nature. But Natural Selection, as we shall hereafter see, is a power incessantly ready for action, and is as immeasurably superior to man's feeble efforts, as the works of Nature are to those of Art (1975:115).

To which teacher does Darwin give credit for leading him rightly to Nature's beauty? To no one certain man—Darwin maintains that not even Erasmus Darwin had much effect on him (Eiseley, 1961:144). And to Plato's "beautiful forms," of which one form is in and of the same beauty with all others, Thoreau and Darwin both give new definition:

> With the rise of natural selection and the philosophy of actual physical descent with modification, man becomes, along with all the other forms of life, "the child of chance" (1961:334).

The war of nature of which Darwin feared, but with which Thoreau felt affinity, brought down Plato's house of absolute "symmetry and design":

> All notion of preconceived Platonic ideal forms has vanished from this system. The fixed taxonomy of life is an illusion born of our limited experience. In reality every living thing is writhing from one shape into another in the way that we might witness the growth of a tropical forest in a speeded-up motion picture. Our long assumed stability is only the illusion produced by the tempo at which we live. (1961:334-335).

Nature is viewed as infinitely creative.

In 1916, Sigmund Freud (1856-1939) published the General Introduction to Psychoanalysis which contained the evolving theory of the libido and the unconscious, with the unconscious, soon after, to be widely accepted as the source of creativity.

Freud thought of creativity as the sublimation of the sexual urge. He saw the unconscious as a kind of "Pandora's Box" wherein exists irrational unconscious phenonmena and "things that go bump in the night." Freud instilled in most academic circles an intense fear of the "unleasing of the contents of the

unconscious." Thereafter, the unconscious and creativity were explored by most as the product of sickness, until Maslow (1908-1970) decided "that the concept of creativeness and the concept of the healthy, self-actualizing, fully human person seem to be coming closer and closer together, and may perhaps turn out to be the same thing" (1980:55).

Thoreau and Darwin had not much use for man. Nature was viewed as supremely beautiful and powerfully creative. Freud, however, was most concerned with man, but viewed him as having a kind of inner war between unconscious and conscious forces within. He viewed man as having to control unconscious urges which included the urge to create. It was commonly viewed that the release of creative forces from the unconscious were accompanied by a kind of "frenzied madness." Rollo May (1980) in The Courage to Create states, "We must indeed take a strong stand against the implications, however they may creep in, that talent is a disease and creativity is a neurosis" (1980:37). May continues, in support of Maslow's conclusions: "The creative process must be explored not as the product of sickness, but as representing the highest degree of emotional health, as the expression of the normal people in the act of actualizing themselves" (1980:38). However, the Freudian link between creativity and sickness continues to be sought—Jon Karlsson (1978) in Inheritance of Creative Intelligence, makes quite a case for the relation of creativity to the schizophrenia gene (1978:131-141). Karlsson introduces the possibility of such a relation by saying: "If psychotic symptoms can be assumed to be caused by a chemical aberration, occurring in individuals born with a specific schizophrenic constitution, it becomes easy to visualize a relationship between psychosis and creativity" (1978:131).

The randomness of Nature, her powers of creativity, and man's overt demonstration of creative powers born of the creative seeds of Nature's indeterministic ways, gives vague definition to the mysterious power of creation—and, this allows for widespread speculation. If man desires to know, he must take on the role of the waiting spectator of evolutionary processes: Depending upon his limited perceptual powers, he must attempt to decipher new order as it unfolds. And when he is curious about nature, he becomes a seeker of messages—"each man deciphers from the ancient alphabets of nature only those secrets that his own deeps possess the power to endow with meaning. It had been so with Darwin and Thoreau" (Eiseley, 1969:146). It is from Nature's evolving and ever-changing symmetry-breaking and making, that form acquires definition. For the most part, man must wait for that evolution. And so it was with Darwin and his synthesis of The Origin of Species that Newton's "machine-like universe," most despised by Thoreau, began to topple. For the first time in the history of man, scientists were forced to examine the wedge driven between the "subjective and objective" nature of man—a wedge which had received its first blow from Plato and its last blow from Newton. Western man was forced to examine his scientific and philosophic base. I believe one of the most interesting and extensive attempts to bring about a synthesis of "subjectivity and objectivity" was made by F.S.C. Northrop in the writing of The Meeting of East and West, published in 1946. However, I believe that Lincoln Barnett gives a much more comprehensible view of the eroding separation of the age old division between "subjectivity and objectivity" in The Universe and Dr. Einstein, first published in 1948. Barnett states:

> Out of Galileo's discoveries and those of Newton in the next generation there evolved a mechanical universe of forces, pressures, tensions, oscillations, and waves. There seemed to be no process of nature which could not be described in terms of ordinary experience, illustrated by a concrete model or predicted by Newton's amazingly accurate laws of mechanics. But before the turn of the past century certain deviations from these laws became apparent; and though these deviations were slight, they were of such a fundamental nature that the whole edifice of Newton's machine-like universe began to topple. The certainty that science can explain how things happen began to dim about twenty years ago. And right now it is a question whether scientific man is in touch with "reality" at all—or can ever hope to be (1979:15-16).

Barnett continues: "To understand the significance of this retreat it is necessary to step across the thin line that divides physics from metaphysics. Questions involving the relationship between observer and object, have haunted philosophical thinkers since the dawn of reason" (1979:18). He continues,

> Thus gradually philosophers and scientists arrived at the startling conclusion that since every object is simply the sum of its qualities, and since qualities exist only in the mind, the whole objective universe of matter and energy, atoms and stars, does not exist except as a construction of the consciousness, an edifice of conventional symbols shaped by the senses of man (1979:19).

Barnett's theme is that of "realization that our whole knowledge of the universe is simply a residue of impressions clouded by our imperfect senses which makes the quest for reality seem hopeless" (1979:21).

But, according to Barnett, there seems to be continuity to perceptions. He states,

> If nothing has existence save in its being perceived, the world should dissolve into anarchy of individual perceptions. But a curious order runs through our perceptions, as if indeed there might be an underlayer of objective reality which our senses translate. Although no man can ever know whether his sensation of red or of Middle C is the

> same as another man's, it is nevertheless possible to act on the assumption that everyone sees colors and hears tones more or less alike (1979: 21-22).

Barnett continues to explain why it is of such importance to scientists to begin to trust perception. He says, "the paradox of physics today is that with every improvement in its mathematical apparatus the gulf between man the observer and the objective world of scientific description becomes more profound" (1979:22). How does man deal with uncertainity? This randomness of Nature? With Darwin's forms writhing from one shape into another? Barnett tells us:

> For by dealing, in terms of statistics and probabilities it abandons all idea that nature exhibits an inexorable sequence of cause and effect between individual happenings. And by its admission of margins of uncertainty it yields up the ancient hope that science, given the present state and velocity of every material body in the universe, can forecast the history of the universe for all time. One by-product of this surrender is a new argument for the existence of free will. For if physical events are indeterminate and the future is unpredictable, then perhaps the unknown quantity called "mind" may yet guide man's destiny among the infinite uncertainties of a capricious universe (1979:34-35).

And, so it happens—the "mind" of man becomes the key to understanding where the methods of science seem to fail. However, there appears, according to Barnett, to be a limit to the mind of man. Barnett tells us:

> Another conclusion of greater scientific importance is that in the evolution of quantum physics the barrier between man, peering dimly through the clouded windows of his senses, and whatever objective reality may exist has been rendered almost impassable. For whenever he attempts to penetrate and spy on the "real" objective world, he changes and distorts its workings by the very process of his observation. And when he tries to divorce this "real" world from his sense perceptions he is left with nothing but a mathematical scheme. He is indeed somewhat in

> the position of a blind man trying to discern the shape and texture of a snowflake. As soon as it touches his fingers or his tongue it dissolves (1979: 35).

Nihil est in intellectu quod non prius fuerit in sensu:

> In trying to distinguish appearance from reality and lay bare the fundamental structure of the universe, science has had to transcend the "rabble of the senses." But its highest edifices, Einstein has pointed out, have been "purchased at the price of emptiness of content." A theoretical concept is emptied of content to the very degree that it is divorced from sensory experience. For the only world man can truly know is the world created for him by his senses. If he expunges all the impressions which they translate and memory stores, nothing is left (1979:113-114).

Science has been pushed to accept sensory perception and experience as a part of scientific method:

> For all the promise of future revelations it is possible that certain terminal boundaries have already been reached in man's struggle to understand the manifold of nature in which he finds himself. In his descent into the microcosm he has encountered indeterminacy, duality, paradox—barriers that seem to admonish him he cannot pry too inquisitively into the heart of things without altering and vitiating the processes he seeks to observe (1979:115).

Man has become, as Darwin hailed him to be, "a part of the world he seeks to explore" (1979:118). Eiseley tells us: "For many years philosophers had debated the nature of man's relationship to the natural world about him. In the year 1859 science discovered man was an animal..." (1961:255). Barnett puts man midway between macrocosm and microcosm:

> Man's inescapable impasse is that he himself is part of the world he seeks to explore; his body and proud brain are mosaics of the same elemental

> particles that compose the dark, drifting clouds of intersellar space; he is, in the final analysis, merely an ephemeral conformation of the primordial space-time field. Standing midway between macrocosm and microcosm he finds barriers on every side and can perhaps but marvel, as St. Paul did nineteen hundred years ago, that "the world was created by the word of God so that what is seen was made out of things which do not appear (1979:117-118).

Science, at least, according to Barnett, was fully aware of the need to pull out the wedge between subjectivity and objectivity—between physics and metaphysics. A more recent and popular book that continues the saga begun by Barnett in 1948, is Jeremy Rifkin's Entropy: A New World View (1981). Spear-headed by 1977 Nobel Laureate Illya Prigogine's work in chemical dissipative structures, Rifkin sets forth a pressing argument which he believes would be the final force necessary to remove the wedge—that force, according to Rifkin, is entropy, the second law of thermodynamics. Rifkin defines entropy as a law which states "that matter and energy can only be changed in one direction, that is, from usable to unusable, or from available to unavailable, or from ordered to disordered" (1981:6). Rifkin summarizes the second law with the following:

> In essence, the second law says that everything in the universe began with structure and value and is irrevocably moving in the direction of random chaos and waste. Entropy is a measure of the extent to which available energy in any subsystem of the universe is transformed into available form. According to the Entropy Law, whenever a semblance of order is created anywhere on earth or in the universe, it is done at the expense of causing an even greater disorder in the surrounding environment (1981:6).

According to Rifkin: "The Entropy Law destroys the notion of history as progress" (1981:7). And, he believes "the Entropy Law destroys the notion that science and technology create a more ordered world" (1981:7). Rifkin says: "Within a few years every academic discipline will be turned inside out by the new entropy

conception" (1981:7). Rifkin continues with an extended version of Barnett's discussion by including the ramifications of the second law of thermodynamics, entropy: "Up to a hundred years ago, physics rolled along self-assured by its own claims that any set of initial conditions can lead to one, and only one, final state" (1981:222). He continues:

> Today, the causality principle of classical physics has become so qualified that it could hardly claim the status of law. Scientists now acknowledge that a given set of initial conditions can lead to several possible alternative states. They distinguish between the early deterministic laws and the newer indeterministic laws. In the latter case, probabilities are assigned to each of the best that can be hoped for in terms of measurement. But even the indeterministic laws are now being challenged by what some scientists refer to as "a second stage of indeterminism," in which the assignment of probabilities for the various outcomes of an event are virtually impossible to establish. The renowned physicist Max Born summed up the frustration of his colleagues over the direction in which their own research has led: "We have sought for firm ground and found none. The deeper we penetrate, the more restless becomes the universe; all is rushing about and vibrating in a wild dance" (1981:222-223).

Rifkin continues with an attack on the Newtonian paradigm of precise measurement:

> What scientists have learned is that every event is unique; its own occurrence distinguishes it from all other events. For that reason, each event not only claims a place all its own in the world but cannot be said to share an objective reality with any other phenomenon. Its subjective occurrence, in turn, is not the result of a particular initial set of conditions. Rather, it owes its occurrence to the entire labyrinth of all past subjective occurrences whose collective configuration gave rise to its own particular unfolding. The idea that specific phenomena can be isolated from the rest of the universe they're a part of and when connected in some kind of "pure" causal relationship with other isolated phenomena is just wrong thinking. The Newtonian paradigm of precise measurement, of dividing matter into neat quantities that can then be linked to each other and rearranged without regard to either their effect on the rest of the cosmos or the effect of the rest of the cosmos on them, has led to the wanton manipulation and destruction of nature at the hands of modern science (1981:223).

Rifkin's conclusions call for the reformulation of science and education. In the following excerpt, he explains why there is a need for such reformation:

> Ilya Prigogine, who received a Nobel Prize for his work on nonequilibrium thermodynamics in 1977, says that the entire notion of causality and precise measurement, the hallmarks of classical physics, are about to give way to a redefinition of science based on the imperative of the second law. Every occurrence in the world is unique, argues Prigogine, and for that reason it's impossible to make precise predictions about the future based on scientific observations. The most that science can do is predict likely scenarios. The old security provided by classical physics was an illusion from the beginning, say Prigogine and his colleagues. It is not possible to know nature in the sense that Descartes, Bacon, and Newton had in mind. The idea that human beings can separate themselves from nature, discover its inner secrets, and then use them as a "fixed body of truths" to manipulate and change the natural world has proven erroneous. First, as scientist Niels Bohr once remarked, we are all actors as well as spectators in the unfolding of the natural order. We can't separate ourselves from the world around us no matter how hard we try. Secondly, the notion of fixed bodies of truths, in the determininistic sense of classical physics, no longer holds up as we now experience a universe of continual fluctuation and instability. Prigogine captures the essence of the new reformulation of science when he says that "instead of the classical description of the world as an automaton we go back more to the Greek paradigm of the world as a work of art" (1981:224).

Rifkin's heavy reliance on the works of Ilya Prigogine is due to Prigogine's transformation and revision of the science of irreversible thermodynamics. A concept which received, for the most part, secondary attention to equilibrium. According to Prigogine in a recent interview published in OMNI, "it is nonequilibrium that is essential to the understanding of our world and the universe" (1983:90). In 1946, Prigogine began to formulate his conception of dissipative structures. This theory defines the workings of open dissipative systems. Open dissipative systems are systems in which matter and energy are exchanged with the outside environment. In contrast with open systems are closed systems, which according to Prigogine,

are ideal concepts (1983:86). Irreversibility describes Prigogine's universe: "You cannot reverse the evolution of the universe, even theoretically. And you cannot predict its future, except in terms of scenarios that depend on never-ending series of...crossroads in the chain of causality" (1983:86).

Prigogine extends his theory of dissipated structures to encompass the biological and social scientific fields of inquiry (Schieve and Allen, 1982). Prigogine views nonequilibrium as a source of organization and order. Based on his observation of a phenomenon termed the Benard Instability, Prigogine linked the self-organization of matter between animate and inanimate matter. His definition of open dissipative structures, as structures with continuous flows of energy which may become so complex that fluctuations occur which are too great for the system to absorb, thus forcing it to reorganize, with each reorganization producing greater complexity and the likelihood of random fluctuation, which results in even more instability, requiring more reorganization, thus producing new structures, ends with evolution as organized and ordered.

The Zhabotinsky Reactions confirmed Prigogine's theory that reactions requiring continuous outside sources of energy occur at states far from equilibrium and are self-organizing. According to Prigogine, the laws near equilibrium are different: near equilibrium occurs the most uniform state. Far from equilibrium, occurs **specificity—new orders.** The result, according to Prigogine, is **order out of chaos.**

Prigogine has given us the fuel to chip away at the remainder of the eroding Newtonian paradigm. Prigogine says of the mechanical view of nature;

> This view held that the world is made up of unchanging substances—atoms, molecules, or elementary particles. It also held that the only

> type of change is through locomotion such as the rotation of planets—that there's no qualitative change. The classical view gave rise to the idea of the world as automation (1983: 88).

What has changed, according to Prigogine, is the belief "that at some level the world is simple and is governed by universal time-independent laws...this now appears to be an excessive idealization" (1983:88). He continues, "everywhere, we're faced with complexity and time—in the classical view, we had already discovered the great laws...In my view, we have yet to discover them" (1983:88,90). According to Prigogine, the universe is defined by complexity. In order that complexity be understood, bifurcation must be considered.

Bifurcation is central to Prigogine's theory of dissipative structures. "Bifurcation," according to Prigogine, "is the appearance of new states of matter at critical points. Before that critical point is reached you have a chaotic structure. But once that point has been reached you have order" (1983:90). The outcome of bifurcation is specificity: complexity can spontaneously arise far from equilibrium. Prigogine's paradigm of self-organization gives us the capacity to view a transition from disorder to order. He says,

> Within the paradigm of self-organization we see a transition from disorder to order. In the field of psychological activity this is perhaps the main experience we have—every artistic or scientific creation implies a transition from disorder to order (1983:92).

Prigogine continues:

> Clearly in the physical universe four types of phenomena occur. Structures appear as with biological systems and social systems; and they disappear, as when you mix two liquids. There are also deterministic processes, like the motion of the earth around the sun, and nondeterministic processes. What has changed is the preception of the relative importance of these processes. We begin to see now that the deterministic processes can be seen

> only in isolated, artificial systems. The natural world, on the other hand, is a world of irreversible processes of self-organization. So I talk about a new dialogue with nature because I think we are beginning to perceive nature on Earth in exactly the opposite way we viewed it in classical physics. We no longer conceive of nature as a passive object. I can't stress enough that it is an active object in our lives. And we see now that life has much deeper roots than we once suspected (1983:92).

He concludes:

> I wanted to bring together two concepts: the idea of structure which generally is static; and dissipative, for which you need energy continually brought in and going out. This is the type of structure that may appear at some distance from equilibrium. Far from equilibrium you have specificity. The world is multiple: We have ants, elephants, plants, and civilizations. New, highly specific solutions appear when you go far from equilibrium (1983:92).

Prigogine tells us: "Well, I think today we have begun to accept the idea that our physics is the results of our conscious activity" (1983:92). He continues:

> Consciousness plays an essential role because we construct reality through mathematical concepts. If our consciousness had a different structure we probably could not use the same type of constructs that we do. That is not to say physics is subjective: there must be a relation between our physics and reality. However, the way in which we speak about this reality is something we create (1983:92).

In response to the future of science, Prigogine replies:

> The purpose of classical physics was to find some fundamental level of simplicity in terms of which our universe could be deciphered. I doubt if this level exists. Instead we will have to deal with the complexity we have discovered. But this very complexity will lead to new disciplines, which will help us to transfer our knowledge from one domain to another. Perhaps the challenge of these coming years will be to master complexity (1983:121).

He continues:

> Chardin described the world as if he were outside of it. He was sure that every change, every new bifurcation, was going in the right direction—in the direction of increased spiritually. On the

> contrary, I am more impressed by the existence of multiple time-horizons. A bifurcation can lead us to the best or to the worst. We are participating in an evolution whose outcome isn't clear to us (1983:121).

When I was a graduate student (1976) at Montana State University, my professors were kind enough to accept an answer given during the writing of one of my "Written Comprehensive" questions. The answer, revised, read something like the following: An organism is on an experiential time-space continuum which is constantly in a state of oscillation between equilibrium and disequilibrium. Its existence is only justified at a specific point in time and space. In other words: every point in time and space, occupied by an organism, is to be considered unique and having its own occurrence which distinguishes it from all other events in a delicate and complex web of interrelationships which carry their own past subjective occurrences and which give rise to their own particular unfolding. Each carries with it, its own evolutional history; therefore, what is to be understood is confined or limited to specific occurrences at specific points in time and space which comes to understanding only by way of perceptual processes.

A second conclusion reached in 1976 is that creativity and aesthetic experience are not confined to the making or appreciation of works of art; as a matter of fact, aesthetic experience, except in extremely rare instances, is not involved in the making or appreciation of most works of art. The conclusion is based on the belief that if works of art are to be the result of creative processes and felt as aesthetic experience, they are so because they are not the outcome of general creativity but of creative-intelligence. General creativity is the outcome of innate ordering capacities which result not in experiences which are

aesthetic, but which result in sensual-emotive response and lower-order imaginative-intelligence operations. I am firmly convinced that there is a definitional separation which exists between sensual-emotive response and aesthetic experience.

A third conclusion reached in 1976 is that education is a process of identifying continuums—within continuums—within continuums—which infinitely interrelate to create webs expressing scenarios—within scenarios—within scenarios—which define the history of evolution and experience. This history is to be viewed as highly complex.

The last conclusion reached in 1976, is that no one set of initial conditions defining a dynamic system can be held indefinitely closed. Primarily I see this in terms of epistemological systems which define thought. Therefore, it is concluded, that in order to reach an understanding of a complex system, the organism's thought processes would have to meet the challenge of such complexity. The question then becomes, how does this happen? I am convinced that general intelligence and general creativity do not allow for such complex understandings.

The hypothesis which I put forth in this paper is: The human organism experiences the complexity of systems as elegant and epistemically ordered as specific and aesthetic. The procedure to be used is interpretative and definitional: The thesis will attempt to conceptualize what aesthetic experience is. Although aesthetic experience is to be considered purely experiential and a characteristic of general experience, it needs to be differentiated from general experience for purposes of clarification. However, there is no such thing as modes of experience; this is an erroneous concept. Instead, there is just general experience and the characteristics of general experience. One characteristic of general experience

is that it can be aesthetic, although this is extremely rare. However, it is in this rarity that general experience is espistemologically ordered and made elegant. For the purposes of discussion and understanding, general experience, of which aesthetic experience is a rare characteristic, shall be treated apart from aesthetic experience.

Thoreau on October 10, 1858, made an entry in his last Journal (1858-1861). The entry was made near the eve of Darwin's publication of The Origin of Species. Thoreau wrote:

> The simplest and most lumpish fungus has a peculiar interest to us, compared with a mere mass of earth, because it is so obviously organic and related to ourselves, however mute. It is the expression of an idea; growth according to law; matter not dormant, not raw, but inspired, appropriated by spirit. If I take up a handful of earth, however separately interesting the particles may be, their relation to one another appears to be that of mere juxtaposition generally. I might have thrown them together thus. But the humblest fungus betrays a life akin to my own. It is a successful poem in its kind. There is suggested something superior to any particle of matter, in the idea or mind which uses and arranges the particles (1961:199-200).

Thoreau on several occassions expressed the concern that his mind had become too microscopic—too concerned with detail, most often of science. But this very fact of his nature led him rightfully to penetrating insights into the very workings of things. On March 28, 1859, Thoreau wrote in his Journal:

> ...They [arrowheads] are not fossil bones, but, as it were, fossil thoughts, forever reminding me of the mind that shaped them. I would fain know that I am treading in the tracks of human game—that I am on the trail of mind—and these little reminders never fail to set me right. When I see these signs I know that the subtle spirits that made them are not far off, into whatever form transmuted (1961:207).

As with all things, Thoreau's arrowheads carry history—the workings of things:

> ...the arrowhead shall perhaps, never cease to wing its way through the ages to eternity...arrow points lie sleeping in

> the skin of the revolving earth, while meteors revolve in space...The footprint, the mind-print of the oldest men (1961:207-208).

Although Thoreau's experiences were for the most part aesthetic, they sprang from the ordering of general experience; the aesthetic element or characteristic of general experience is its aesthetic episteme. General experience, from which aesthetic experience springs, is defined as follows: General experience is defined whenever an organism is on an experiential time-space continuum which is constantly in a state of oscillation between equilibrium and disequilibrium. Its existence is only justified at a specific point in time and space. In other words: every point in time and space, occupied by an organism, is to be considered unique and having its own occurrence which distinguishes it from all other events but which is connected with all other events in a delicate and complex web of interrelationships which carry their own past subjective occurrences and which give rise to their own particular unfolding. Each carries with it, its own evolutional history; therefore, what is to be understood is confined or limited to specific occurrences at specific points in time and space which comes to understanding only by way of perceptual processes.

Eiseley tells us: "for nature lives in anticipation. Thoreau was part of the future. He walked toward it, knowing also that in the case of man it must emerge from within by means of his own creation" (1969:144). Although aesthetic experience which springs from general experience is rare, it must be the kind to which we all aspire—for it brings about perceptual understandings of the highest order.

Chapter III

AESTHETICS AND CREATIVITY

Aesthetics has its origin in Greek Philosophy, with the Greek term aesthetikos, meaning perceptive. Traditionally, aesthetics has been the branch of philosophy which deals with beauty or the beautiful, especially in art, and with taste and standards of value in judging art.

The term aesthetics was introduced by Alexander Gottieb Baumgarten (1714-1762) to imply the science of sensuous knowledge, whose aim is beauty contrasted with logic, whose aim is truth. Thus, the name of aesthetics, as the philosophy of beauty and art, was introduced by Baumgarten for the first time about 1750, and for the most part, has retained Baumgarten's definition up to the present.

However, in some cases, aesthetics is departing from traditional conceptions in philosophy by comparing examples of all the arts, and in gathering data and hypotheses from other disciplines including philosophy, psychology, sociobiology, cultural history, and the social sciences. It includes empirical study of particular phenomena versus restricting itself to abstract metaphysical discussion of the meaning of beauty. Studies stress the nature and varities of form in art, the psychology of creation, appreciation, imagination, and works of art.

The full use of scientific method is still commonly regarded as impossible or highly restricted in application. It is commonly held that aesthetics concerns itself with the nature of works of art and the nature of beauty. Beginning with Greek philosophy and continuing up to the present, there is no one single universally accepted definition or philosophy for aesthetics, beauty, or art. This has created an immense problem in the arts: the arts lack focus and definition.

I do not intend to use the term epistemology in its traditional philosophic sense. The term epistemology in this paper will be used as a descriptive term to identify aesthetic experience. The **aesthetic experience is held to be epistemological experience in its most elegant and complete state.** However, the word epistemology derives its origin from the Greek, episteme meaning knowledge plus logos, theory. It is considered the branch of philosophy which conducts inquiry into the origin, structure, methods, and validity of knowledge. "Epistemology" appears to have been used for the first time by J.F. Ferrier, Institutes of Metaphysics (1854), who differentiated two branches of philosophy: epistemology and ontology. The word gained status when it was adopted by E. Zeller, Ueber Aufgabe Bedetung der Erkenntnisstheorie (1862).

Ontology is regarded as logic: the theory of being qua being. The division between epistemology and logic (ontology) is clearly defined traditionally: logic is the formal science of principles governing valid reasoning; epistemology is regarded as the philosophical science of the nature of knowledge and truth. The division continues today in philosophy.

Art traditionally, since Aristotle, has been viewed philosophically as a branch of knowledge distinguished both from theoretical science and practical wisdom. However, there are thousands of definitions for art which are not philosophically determined in the traditional sense. The most common include the idea of art as making aesthetically pleasing objects meant to bring pleasure to a viewer. A common idea about art is that art is a unique expression of a creative origin. Creativity as Webster's defines it, is "a process of making, of bringing into being." This process is generally viewed as one of emotion or passion. Historically

there has been a clear and continuing differentiation between the making of art and the making of science. However, there has been some agreement that the processes involved in discovery or innovation be they of art or science are similar. Those processes are usually referred to as creative problem-solving steps (Wallas, 1926). To date there is no one universally accepted definition of art.

I will give definition to art in its most elemental state as the **primordial tendency to symmetrically order-up sensual-emotive data in response to experience** either real or imagined. This primordial tendency is closely aligned with the innate capacity to bring about concrete order to abstract qualities of a perceptual nature.

General creativity traditionally as been differentiated from general intelligence and has come to mean the ability to produce new forms in art or mechanics or to solve problems by novel methods. Considerable disagreement exists as to specific definition for general creativity, and theories of general creativity are exceedingly widespread and differing.

Wallas (1926) identified four distinct stages or steps of creative problem-solving: preparation, incubation, illumination, and verification. For the most part, Wallas' stages have been widely accepted. However, his stages are viewed by many as incomplete.

There does not exist one universally accepted definition for general creativity; however, most definitions include something from the following summation: Creativity is primarily the result of unconscious activity. Creativity focuses on divergent thinking abilities. Creative thinking abilities include fluency, flexibility, originality, and elaboration. Creativity has its origin in schizophrenia and/or other types of psychosis/neurosis. Creativity predominantly occurs in the

world of art versus the world of science. Creativity is the outcome of imaginative operations. Creativity involves nonconformist thinking. Creativity is a unique human capacity which sets man from all other living things. Creativity is qualitative. Creativity is required for genius contribution. Creativity is emotive.

There has been some research on creative imagination but not much. Recently there has been some interest in right-hemisphere imagery production. There has been widespread interest in the relationship between divergent thinking (Guildford 1950) and general creativity. The two leaders in the field of general creativity measurement are J.P. Guildford and E.P. Torrance, however, including the tests of these two leaders, tests for general creativity are not reliable predictors of creative performance. This lack of success is attributed to the need for a working definition of general creativity.

There does not exist an overall agreement on a definition for true intelligence; however, there is agreement as to a definition for general intelligence. General intelligence is determined by IQ scores, or academic achievement. But it is believed that testing for general intelligence is limited and culture bound. For the most part, "giftedness" is defined by IQ scores of 130 and above which define less than two percent of the general population. Evidence supports that creativity is not measured by IQ tests. The correlation is between IQ scores and academic performance.

Terman's Genetic Studies of Genius is the most complete study of developmental patterns of gifted intelligence as measured by IQ tests. Terman used as his sole criterion the Standford-Binet IQ Test. His sample included those with an

IQ of 150 and above. Although Terman's subjects were considered as successful, he did not identify one subject who made a significant contribution of eminence. However, IQ tests do measure very successfully general intelligence as it correlates with academic performance and economic success.

The first use of the Binet IQ Test in America was made by Goddard (1908). Terman adapted the Binet in 1916 at Stanford to measure general intelligence amongst white American schoolchildren. Terman's IQ test is the Stanford-Binet and although it has undergone revision, it is still used today to determine general intelligence in America. It is widely accepted that the Stanford-Binet is culture bound. It is commonly held that IQ and eminence is spurious and that an IQ beyond 120 has little relationship to general creativity. Some findings indicate that seventy percent of the top twenty percent of high creatives are missed on a measure of IQ—and having a high IQ score usually does not guarantee creativity as having a low IQ score means creativity is impossible. Therefore, it must be concluded that although measures for general intelligence are successful indicators of academic achievement, the measurements for general creativity have not met with the same success.

Khatena (1982) summarizes the basic state of affairs for general intelligence and general creativity in the following excerpt:

> Intelligence measures do not set out to appraise a person's ability to be creative, imaginative, inventive, and original. Hence, when administered to groups, these measures will only pick out those who have the ability to memorize; to generalize and evaluate; to give a single solution to a problem; to comprehend certain kinds of verbal and numerical relationships that call for single right answers. People who do thinking beyond these dimensions are, therefore, incorrectly assessed and often appear to be less bright or gifted than they really are. If we want to identify

> producers of knowledge as well as conservers of knowledge, we need to heed the caution that the IQ is not a universal measure of giftedness (1982:23).

Khatena reports that McNemar (1964) observes:

> (1) creativity tests do not yield high correlations with IQ whose uncurtailed scatter would be bivariate normal; (2) if suitable criteria measures of literary, architectural, or scientific creativity are available, the relationship between IQ and creativity, as shown by a scattergram, is triangular in shape; therefore, at the high-IQ levels, a wide range of scatter for creativity is less and less; and (3) having a high IQ does not guarantee creativity, whereas having a low IQ means creativity is impossible (1982:22).

Now I want to emphasize at this point that tests for general intelligence and general creativity are for the most part based on normal distribution. Normal distribution is a frequency distribution in which the values or scores group around the mean, with the greatest number of cases near the mean and with the frequency of cases trailing off on either side of the mean. A perfectly normal distribution will give rise to the normal probability curve when plotted. A normal probability curve is often referred to as a Bell-Shaped curve, Gaussian curve, or probability curve. This is an important consideration because I am convinced that creative-intelligence occurs outside of normal distribution; **the probability of creative-intelligence depends on genetic randomness. It would neither occur as a measure of IQ nor of general creativity testing.**

What this means is that creative-intelligence cannot be determined by any test based on normal probability. As it occurs, it is a genetic risk. However, if its occurrence and development are successful, it can be evaluated in aesthetic experience.

Chapter IV

IMAGINATIVE-INTELLIGENCE, CREATIVE-INTELLIGENCE, AND POETIC INTELLIGENCE

Webster's gives imagination the definition of: "the act or power of forming mental images of what is not actually present; and, the act of power of creating mental images of what has never been actually experienced, or of creating new images or ideas by combining previous experience." Philosophy differentiates imagination as either fancifully, spontaneous, and uncontrolled, or as constructive as exemplified by science, invention, and philosophy which is controlled by purpose. Psychology views imagination as a process of creating images or occurrences without the help of sensory data and is usually considered as of two types: fanciful, or aimed.

According to Khatena (1982), little research has been done on imagery formation, especially as it relates to creative imagination (1982:116, 406-408). Khatena contends that the study of creative imagination imagery is relatively new (1982:406). However, I disagree with Khatena and others in definition: Imagination is a separate, although related function, to general creativity and general intelligence. For the purposes of this paper, imagination will be defined as an intelligence by which an organism experiences consciousness (conscious and unconscious workings of the mind) as the bringing about of concrete form to abstract thought. Imaginative-intelligence has the power to go beyond such abstracts made concrete in fantasy, dream-states, or contemplation, etc. It can determine possibilities for the ordering of a concrete set of perceptual data about which the organism is immediately concerned. The process involves both the processing of immediately incoming data as well as data in memory unique to

the organism's past experiences. This process is termed imaginative-intelligence and is differentiated from general intelligence. It is a higher-order of lower-ordering processes and goes beyond general intelligence. General creativity may result from imaginative-intelligence whenever the possibilities are considered to be unique expressions of form, but such expressions of form will result more often from the workings of the aesthetic sense and the acquired aesthetic sense in sensual-emotive response to experience.

Regardless of whether imagination was viewed as a "mysterious power" by Coleridge or Blake, as a "divine power" by Michelangelo, or as "exalted reason" by Wordsworth, it is being defined, for purposes of this thesis, as the process to go beyond a given set of data to determine possibilities of order within such data be it in fantasy, dreaming, contemplation, mathematics, etc. Possibilities of order within set data, determined by imaginative-intelligence, may range from epistemically simple to epistemically complex. Such ordering results from both conscious and unconscious activity, constituting, for the most part, the bulk of the mind, including all that is of memory.

Imaginative-intelligence is to be differentiated from general creativity—general creativity primarily results from sensual-emotive response and socio-cultural-psychological response, whereas, imaginative-intelligence primarily results from a desired effort to epistemically order data. Imaginative-intelligence includes operations which begin to formalize a systems approach to the ordering of data. It is, for the most part, a process by which data becomes connected, operating at higher levels of organization and complexity. These operations are basically the result of the organism perceptually connecting data provided by

imaginative-intelligence into general systems. A second higher-order lower ordering characteristic of imaginative-intelligence is a metaphoric operation wherein connections are defined by metaphorical processes which differentiate interrelationships and determine significance: Metaphorical differentiation is a kind of poetic condensation which results in allegorical description. Poetry, mathematical elegance, or literary works such as Thoreau's Walden, serve as good examples of aesthetic poetic condensations which are metaphorical differentiations. Significance (meaning) is defining of form which carries with it a kind of poetic appeal, and is determined by (1) the power of the aesthetic sense to differentiate, (2) the level of sophistication of the acquired aesthetic sense as it relates to the specific, and (3) the power of imaginative-intelligence to make metaphoric differentiations. These processes will vary amongst organisms according to their greater or lesser abilities. Affinity is to be held as a sensual-emotive component of significance. Affinity is an operation wherein an organism identifies with behavioral aspects of significance. As Thoreau puts it: "A man has not seen a thing who has not felt it...its beauty is its strength." Affinity is the feelings-side of imaginative-intelligence. At its most primordial level are gut-feelings of rightness and wrongness.

Poincare (1908) in his Le Raisonnement Mathematique, describes the properties of imaginative-intelligence and creative-intelligence. He says of mathematical creation:

> In fact, what is mathematical creation? It does not consist in making new combinations with mathematical entities already known. Any one could do that, but the combinations so made would be infinite in number and most of them absolutely without interest. To create consists precisely in not making useless

> combinations and in making those which are useful and which are only a small minority. Invention is discernment, choice (1958:35).

He continues:

> Among chosen combinations the most fertile will often be those formed of elements drawn from domains which are far apart. Not that I mean as sufficing for invention the bringing together of objects as disparate as possible; most combinations so formed would be entirely sterile. But certain among them, very rare, are the most fruitful of all (1958:35-36).

Imaginative-intelligence brings about possible combinations but creative-intelligence differentiates (chooses) the most useful. Poincare continues to explain the workings of creative-intelligence:

> To invent, I have said, is to choose; but the word is perhaps not wholly exact. It makes one think of a purchaser before whom are displayed a large number of samples, and who examines them, one after the other, to make a choice. Here the samples would be so numerous that a whole lifetime would not suffice to examine them. This is not the actual state of things. The sterile combinations do not even present themselves to the mind of the inventor. Never in the field of his consciousness do combinations appear that are not really useful, except some that he rejects but which have to some extent the characteristics of useful combinations. All goes on as if the inventor were an examiner for the second degree who would only have to question the candidates who had passed a previous examination (1958:36).

Such workings of creative-intelligence require long and arduous conscious and unconscious preparation with aim. Such workings require a well-informed acquired aesthetic sense. Poincare continues to describe the relationship of significant combinations to the nature of elegance:

> It may be surprising to see emotional sensibility invoked a propos of mathematical demonstrations which, it would seem, can interest only the intellect. This would be to forget the feeling of mathematical beauty, of the harmony of numbers and forms, of geometric elegance. This is a true

> esthetic feeling that all real mathematicians know, and surely it belongs to emotional sensibility (1958:40).

The "emotional sensibility" to which Poincare refers is what I am referring to as the sensual-emotive component of significance. And, the choosing of useful combinations are the result of affinity: an operation wherein an organism identifies with behavorial aspects of significance. Poincare continues:

> Now, what are the mathematic entities to which we attribute this character of beauty and elegance, and which are capable of developing in us a sort of esthetic emotion? They are those whose elements are harmoniously disposed so that the mind without effort can embrace their totality while realizing the details. This harmony is at once a satisfaction of our esthetic needs and an aid to the mind, sustaining and guiding. And at the same time, in putting under our eyes a well-ordered whole, it makes us foresee a mathematical law. Now, as we have said above, the only mathematical facts worthy of fixing our attention and capable of being useful are those which can teach us a mathematical law. So that we reach the following conclusion: The useful combinations are precisely the most beautiful, I mean those best able to charm this special sensibility that all mathematicians know, but of which the profane are so ignorant as often to be tempted to smile at it (1958:40).

When Poincare refers to the "special sensibility" which responds with "esthetic emotion," I am to conclude that in definition: (1) the "special sensibility" is the combined functions of the innate aesthetic sense and the acquired aesthetic sense, and (2) "esthetic emotion" is the feelings of rightness or wrongness which result from sensual-emotive response to significance. Affinity is merely a way of describing an attraction to the workings of significance which cause a kinship response of a behavorial nature within the observing organism to such sanguine workings. Poincare continues to describe the emergence of significant combinations:

> What happens then? Among the great numbers of combinations blindly formed by the subliminal self, almost all are without interest and without utility; but just for that reason they are

> also without effect upon the esthetic sensibility. Consciousness will never know them; only certain ones are harmonious, and, consequently, at once useful and beautiful. They will be capable of touching this special sensibility of the geometer of which I have just spoken, and which, once aroused, will call our attention to them, and thus give them occasion to become conscious (1958:40).

However, it must be stressed that such combinations must be verified. Poincare is careful to point this out:

> ...when a sudden illumination seizes upon the mind of a mathematician, it usually happens that it does not deceive him, but it also sometimes happens, as I have said, that it does not stand the test of verification; well, we almost always notice that this false idea, had it been true, would have gratified our natural feeling for mathematical elegance (1958:40).

Now, it is also true, that the same holds for any metaphorical explanation—be it mathematical, literary, or poetic: "had it been true, [it] would have gratified our natural feeling for...elegance." This is why it is most important to consider the nature of significance as a descriptive element of elegance.

However, these two operations of higher-order ordering, that of imaginative-intelligence and creative-intelligence, will rarely be experienced, and will only be found in aesthetic experience.

Creative-intelligence is dependent upon the workings of imaginative-intelligence. Creative-intelligence brings about elegant orders which are epistemologically structured and which result in aesthetic experience. Metaphorical differentiation, significance, affinity, and verification assist the processes of creative-intelligence. However, there is inherent in such processes, a kind of higher-order intelligence which needs further definition. To this kind of intelligence, I give the term poetic-intelligence. What we are now considering are the following kinds of

intelligences which are interdependent and represent an intelligence faculty: (1) general intelligence, (2) imaginative-intelligence, (3) creative-intelligence, and (4) poetic-intelligence. General and imaginative-intelligences are lower-order ordering intelligences; creative and poetic intelligences are higher-order ordering intelligences. **All four intelligences are necessary to bring about aesthetic experience.**

Poetic-intelligence concerns itself with the wisdom of form. Wisdom means the sophistication and refinement of epistemological concepts. Sophistication is to be held as the most complete state of epistemological conceptualization; whereas, refinement is to be held as defining elegance in its most complete state. Wisdom of form, which results from poetic-intelligence, is a consideration for the evaluation and verification of aesthetic experience. It is the kind of wisdom which remains constant in a culture as long as it is needed for explanation.

Eiseley expresses such a fact: "The history of science is as full of abandoned sinkholes as a cavern. Theories emerge, have their moment, and vanish or on the otherhand, are slowly transformed into greater syntheses. Sometimes ideas regarded impossible have a way of conquering a later generation" (1975:185-186). A good example of the latter is Mendel's (1865) theory upon the nature of inheritance. Eiseley speaks of Mendel:

> Mendel is a curious wraith in history. His associates, his followers, are all in the next century. That is when his influence began. Yet if we are to understand him and the way in which he eventually rescued Darwinism itself from oblivion we must go the long way back to Brünn in Moravia and stand among the green peas in a quiet garden. Gregor Mendel had a strange fate: he was destined to live one life painfully in the flesh at Brünn and another, the intellectual life of which he dreamed, in the following century. His words, his calculations were to take a sudden belated flight out of the dark tomblike volumes and be written on hundreds of university blackboards, and go on spinning through innumerable heads (1961:211).

Aesthetic building blocks are viewed as that which helps define the history of thought of whatever discipline. Loren Eiseley in his autobiography (1975), talks about doing the research for Darwin's Century (1958); he tells us of how painfully aware he became of those who provided stepping stones to greater understandings: "I became ever more conscious of the forgotten men who work to produce change before change comes about" (1975:188). He tells us:

> Ideas do not spring full-blown from a single brain. There has to be wandering along bypaths, midnight reading, and sustained effort (1975:186).

He continues:

> As one gazes in retrospect upon the swirling cloud wraiths which closed the eighteenth century and ushered in the nineteenth, it becomes apparent how difficult it is to assign so intricate a scientific alteration of our world view to a single man magnified beyond human proportions. More recently the intellectual historian has come to see that scientific models of reality are remarkably complex in their origins and in their manner of transformation. While in no sense denigrating the achievements of the great masters of science, we have to recognize the truth spoken by the first of the atom breakers, Lord Rutherford. "It is not in the nature of things," said Rutherford, "for any one man to make a sudden violent discovery; science goes step by step and every man depends on the work of his predeccessors. When you hear of a sudden unexpected discovery—a bolt from the blue, as it were—you can always be sure that it has grown up by the influence of one man on another, and it is the mutual influence which makes the enormous possibility of scientific advance." These are the words of a scientist, but very similar and equally modest expressions have emanated from the great artist Joshua Reynolds, Jacques Loeb, the brilliant experimental physiologist, was fond of quoting the dictum of his equally distinguished botanical mentor, Julius von Sachs, that "all originality comes from reading."
>
> Sir Francis Bacon once spoke of those drawn into some powerful circle of thought as "dancing in little rings like persons bewitched." Our scientific models do stimulate a kind of fairy ring or magic circle which, once it has encompassed us, is hard to view objectively. Truth is elusive.

> Perhaps William James put things most felicitously when he said, "The greatest enemy of any one of our truths may be the rest of our truths" (1975:186-187).

Poetic-intelligence is that which allows one to break into "little rings." Eiseley concludes:

> When contradictory truths multiply, one is forced to recognize a certain mockery written into the very fabric of nature. Our eyes would have to possess as many facets as those of an insect to perceive at once the relativity of truth itself. Bemused by that old century behind us, I had followed the dancers from one toadstool ring to another. I observed the transition and as I did so I became ever more conscious of the forgotten men who work to produce change before change comes about (1975: 188).

Poetic-intelligence is that which allows for the recognition of the wisdom of forms as they appear in "little rings"; and, **creative-intelligence is that which allows for the breaking out of the same "little rings."**

Since thought takes concrete form in many varying ways—mathematics, poetry, literature, art, etc.—it is necessary to understand common wisdoms amongst each if an over-all understanding of the interdependency and inter-relationship of knowledge structures are to be put into perspective and a historical completeness is to be realized. **This is a most difficult and complex task, but one which is necessary for creative-intelligence leading to discovery.**

The workings of the aesthetic sense and the refined knowledge of the acquired aesthetic sense will give vision to poetic-intelligence. Poetic-intelligence is thus both an innate and acquired capacity to bring about recognition of those characteristics of form which are poetically wise. I suppose, to this quality, I could attribute the idea of artistic-appearance. In this respect, artistic appearance would be poetic impression—the impression that a concrete form would give in poetic

terms. Since this is a most difficult and complex concept, let me offer two brief examples of that which would epistemically illustrate poetic-intelligence. These examples are also those which are the result of creative-intelligence. Since I happen to be quite fond of Thoreau, I shall use something by him in introduction. Thoreau tells us of this kind of poetic wisdom to which I refer:

> There is no doubt that the loftiest written wisdom is either rhymed, or in some way musically measured, —is, in form as well as substance, poetry; and a volume which should contain the condensed wisdom of mankind, need not have one rhythmless line (1966:108).

Darwin gives us an example from science when he uses a simile to describe natural selection as a "great tree":

> The affinities of all the beings of the same class have sometimes been represented by a great tree. I believe this simile largely speaks the truth. The green and budding twigs may represent existing species; and those produced during each former year may represent the long succession of extinct species. At each period of growth all the growing twigs have tried to branch out on all sides, and to overtop and kill the surrounding twigs and branches, in the same manner as species and groups of species have tried to overmaster other species in the great battle for life. The limbs divided into great branches, and these into lesser and lesser branches, were themselves once, when the tree was small, budding twigs; and this connexion of the former and present buds by ramifying branches may well represent the classification of all extinct and living species in groups subordinate to groups. Of the many twigs which flourished when the tree was a mere bush, only two or three, now grown into great branches, yet survive and bear all the other branches; so with the species which lived during long-past geological periods, very few now have living and modified descendants. From the first growth of the tree, many a limb and branch has decayed and dropped off; and those lost branches of various sizes may represent those whole orders, families and genera which have now no living representatives, and which are known to us only from having been found in a fossil state. As we here and there see a thin straggling branch springing from a fork low down in a tree, and which by some chance has been favoured and is still alive on its summit, so we

> occasionally see an animal like the Ornithorhynchus or Lepidosiren, which in some small degree connects by its affinities two large branches of life, and which has apparently been saved from fatal competition by having inhabited a protected station. As buds give rise by growth to fresh buds, and these, if vigorous, branch out and overtop on all sides many a feebler branch, so by generation I believe it has been with the great Tree of Life, which fills with its dead and broken branches the crust of the earth, and covers the surface with its ever branching and beautiful ramifications (1975:171-172).

And, from Thoreau, a second example of poetic wisdom written metaphorically:

> The sea-shore is a sort of neutral ground, a most advantageous point from which to contemplate this world. It is even a trivial place. The waves forever rolling to the land are too far-travelled and untamable to be familar. Creeping along the endless beach amid the sun-squall and the foam, it occurs to us that we, too, are the product of sea-slime.
>
> It is a wild, rank place, and there is no flattery in it. Strewn with crabs, horse-shoes, and razor-clams, and whatever the sea casts up, —a vast morgue, where famished dogs may range in packs, and crows come daily to glean the pittance which the tide leaves them. The carcasses of men, rotting and bleaching in the sun and waves, and each tide turns them in their beds, and tucks fresh sand under them. There is naked Nature, inhumanly sincere, wasting no thought on man, nibbling at the cliffy shore where gulls whell amid the spray (1966:217).

Poetic intelligence is characteristic of any great work, be it mathematical, scientific, literary, or artistic—it carries with it a kind of sublimity of language or form. Such sublime elements of form define elegance in its most noble and lofty state. The recognition of poetic impressions inherent in form, such as given by Darwin's, "a thin straggling branch springing from a fork low down in a tree..." or, Thoreau's, "we, too, are the product of sea-slime..." require the working of an innate aesthetic sense which is sensitive to such poetic sublimity or the workings of the acquired aesthetic sense which would be especially

sensitive to such poetry. An acquired aesthetic sense will not, unless there is an innate tendency toward sensual-emotive response to poetic form, carry with it a sensitivity to poetry. Aesthetic experience will not reach consummation without such workings.

Chapter V

HYPOTHESIS: A DESCRIPTIVE ANALYSIS

This thesis is limited, imperfect, and incomplete. The very nature of its scope deems this necessary. The thesis presented gives only general explanations and conclusions at which I have arrived. In the future, I intend to provide in a dissertation detail and more complete explanations and conclusions. This thesis is presented somewhat as argument and includes brief references to the difficulties encountered in giving argument and definition to its hypothesis. Although general in definition, the hypothesis is complex in description—much will remain somewhat obscure, but I, with only the most serious of intent, offer the best of which I am capable. It is my contention that all most all definitions, descriptions, and measurements, for creative-intelligence (of which aesthetics is a part) are erroneously misleading and refer to general creativity.

Most definitions of general intelligence are without clear definition. However, it will not be the concern of this thesis to dwell on definitions of general intelligence and general creativity, for the thrust of the thesis is to give focus and definition to creative-intelligence which is best recognized in aesthetic experience viewed as an epistemological concept. Thus, the hypothesis of the thesis is stated as follows: **The aesthetic experience is held to be epistemological experience in its most elegant and complete state and comes about as the result of creative and poetic intelligence.** The human organism experiences the complexity of systems as elegant and epistemically ordered as specific and aesthetic.

I am fully convinced that definitions, descriptions, and measurements for creative-intelligence occur far from equilibrium in specificity—apart from Gaussian distribution—and are best recognized in aesthetic experience. I am

convinced that creative specificity, when it occurs, establishes its own distribution. **If creative-intelligence is to be located, it is to be located far from equilibrium—independent of normal distributions—and in the form of specificity having its own evolving distribution.**

It is, therefore, of the greatest importance to gain insight into the means of such a differentiation which defines itself as a symmetry-making property inherent in disequilibrium, and which begins to define itself in the form of a new and differentiated emergent form, occuring sometime after numerous bifurcations. It is my expressed conclusion, that not all bifurcations will lead to creative specificity, or to the emergence of creative-intelligence which will act other than as a genetic risk. Bifurcation is viewed as life's constant struggle to exercise continuous evolutional processes in response to a necessity to move to higher orders of complexity in search for steady states which allow for a continued survival response to forced states of temporary chaotic complexity. I conclude, that there is no assurance that self-organization will occur beyond continuous states of instability. It appears to me that higher order complexity will ultimately lead to diffused states, wherein the original nature of a bifurcation will disengage and disperse into an environment as undifferentiated energy. This I view to be the property of extinction or the end to a mutation.

The kind of creativity which concerns this thesis is one which survives symmetry-breaking and which I have termed <u>creative-intelligence</u>. It is held that rarely in the dynamic processes of disequilibrium and bifurcation will symmetry-breaking lead to creative-intelligence emerging far from equilibrium.

What does emerge, for the most part, are higher orders of complexity, or extinction, or the end to a mutation. Measures for general intelligence and general creativity (Binet, Terman, Weschler, Guildford, Torrance) have used Gaussian-based models to test for general intelligence and general creativity. However, since I have concluded that Gaussian distribution does not identify creative specificity, it is to be thought that such measures are erroneous measurements for creative-intelligence.

Creative-intelligence viewed in this light is extremely rare. Still, it is held to be a very powerful kind of intelligence which brings about order to highly complex ongoings of experience. The tendency of most organisms is to aspire to equilibrium—for with each experience of a bifurcation, complexity increases without assurance of a forthcoming equilibrium. With each bifurcation and reorganization, the organism risks extinction or the end to a mutation—therefore, it is most seriously concluded, that **to arrive at a perfected state of creative specificity is a genetic risk; and, the probability of creative-intelligence depends on genetic randomness.**

Art is a primordial tendency to order up sensual-emotive data in response to experience. Science as a primordial tendency is the desire to investigate things about which the organism is most curious. Scientific method is an acquired sophisticated method, usually culture bound, by which to conduct inquiry. When imaginative processes become active in either of the primordial activities of art or science, in most cases mental functions occur which are of a higher-order, and which will usually result in general creativity response. The move from lower-order ordering activities to higher-order

ordering activities, as we shall see, is a shift from the primordial tendencies of art and science, to general imaginative-creative processes. General imaginative-creative processes are dependent upon general intelligence. Transitional moves from lower-order ordering to higher-order ordering are not hierarchical moves, and do not reflect developmental stages, patterns, or steps. These moves are experiential perceptual workings inherent in the organism's capacity to "get along" in its environment. The demands of the environment will solicit such workings. However, it must be understood that these workings are in a constant state of evolution and will show greater or lesser intensities in time. The organism must be seen as struggling to emerge successfully in order that it can successfully deal with environmental demands. Consequently, depending upon environmental circumstances, organisms will vary in perceptual strength. In other words, some organisms will be forced to exercise capacities to a greater or lesser extent to meet environmental demands as they struggle to become successful survivors.

The aesthetic sense and the acquired aesthetic sense are crucial ordering capacities common to all organisms. These capacities bring about initial perceptual lower-orderings which will later be highly influential in determining higher-orderings. These capacities operate both consciously and unconsciously. The innate aesthetic sense is a synthesis operation involving all sensual-emotive systems and organs. These systems and organs are interdependent operations and give the organism the capacity to formulate instinctively, uniquely-ordered precepts, which for the most part will generally correspond to that which is being experienced. The organism is naturally equipped to perceive something

of order in colour, balance, rhythm, shape, depth, sound, temperature, movement, location, etc. The innate aesthetic sense gives the organism a sense of equilibrium or disequilibrium: It gives the organism a basic sense of its physical and mental state of affairs.

The acquired aesthetic sense is an acquired capacity and highly dependent upon the workings of the innate aesthetic sense. It is sociocultural and psychological in origin. Its content, for the most part, is determined by the standards of sociocultural order as well as recall data based on the organism's unique experiences. It is the composite of a man's sociocultural and psychological heritage. An example of a standard cultural order would be calculus. Another example would be democracy. These cultural standards reflect norms and mores of a civilization and have been determined by past societal experiences which have been organized into paradigms and world views representative of a people. These cultural standards are transferred primarily through educational practices. However, an organism's own unique experiences contribute greatly to the content. This must be understood as vital and necessary for a society, especially for a highly complex social order for it brings coherence to a group.

For the most part, the function of the acquired aesthetic sense is dependent upon the organism's own experiential evolution: It defines the organism's past history of experience. The basic temperament of the organism influences the organism's tendency to pay attention to some aspects of experience over others—however, a social sense ultimately becomes the greater influence. As an organism matures, its basic temperament flowers into personality which is the overall sociobiological, cultural, and psychological

persona of the organism. It is represented in the acquired aesthetic sense. The nature of the acquired aesthetic sense is not static, but dynamic. It continues to expand its content until the death of the organism. **Its nature greatly influences behavior and decision.**

Experiences which are primordial in origin are basically of two types: (1) primordial artistic, and (2) primordial scientific. Primordial artistic experiences are lower-order ordering experiences which result in sensual-emotive response governed by the aesthetic sense. Primordial scientific experiences are lower-order ordering experiences of investigation which center on things which are found to arouse the organism's curiosity. Both primordial experiences are experiences which are necessary to order perception. Both experiences give the organism a lower-order sense of the structure of things, which for the most part, constitutes information about shape, weight, texture, colour, position, rhythm, pitch and tone, etc. It is during such primordial experiences that an organism establishes feelings toward objects and occurrences.

These primordial experiences are exercised with little forethought or afterthought. Now if the organism were to intensify such experiences—make them more complex—then its awareness would become more acute and its perceptions more complex. If it be deemed necessary for an organism to take command of such complexity and arrive at some sort of conceptual completion, it would have to increase the workings of conscious and unconscious processes in an attempt to go beyond lower-order perceptual data. Some sort of contemplation would begin to take place. **However, no organism will allow complexity greater than it is able to order successfully.** It can use all kinds of

mental gymnastics to avoid disequilibrium, such as repression, sublimation, rationalization, etc., as well as, agression, violence, annihilation, etc. One other aspect of lower-order contemplation would be an increase in language use, especially in the form of internal dialogue and imagery formation. Language and imagery formation are perceptual ordering tools. I understand that it is commonly held that symbolism or symbol formation is involved at this level. However, I am firmly convinced that symbols are not static, but dynamic, and, therefore, the discussion of symbol formation is an erroneous consideration for this argument.

Now if the organism continues to experience an increase in complexity, and its desire to know is correlate, then it is required to speculate as to possible solutions or explanations. To speculate is, as I deem it, the beginnings of lower-order intelligence with its origin in the capacity to imagine. I refer to this as imaginative-intelligence, which is a capacity to go beyond a given set of data to determine possible structuring for such data. It is now that the aesthetic sense and the acquired aesthetic become more refined as processes for perceptual ordering beyond mere sensual appearances. Since the organism's sensual-emotive perceptual capacities are limited, imaginative-intelligence assists with the going beyond such limitations through speculation. An example of keenly extending the power of imaginative-intelligence to a higher-order would be the creation of formal mathematical concepts. Formal mathematical concepts give the organism even greater power to overcome lower-order perceptual limitations. Mathematics is a "perceptual ordering tool" which enables the organism to arrive at even greater and more refined speculations

about the true nature of things. A highly sophisticated form of imaginative-intelligence speculation would be hypothesis and theory. The most intense and perfect form of imaginative-intelligence is to be found in the aesthetic experience which is defined by elegance. An elegant theory would be the most intense and perfect form of perceptual order as well as the most intense and perfect form of aesthetic experience.

Now the exercise of imaginative-intelligence—the going beyond a given set of perceptual data to determine possibilities of perceptual structure—presents itself as the organism's **deviation from primordial activities of art and science.** It is a much more refined behavior and gives the organism higher-order ordering powers. These higher-order ordering powers are considered human characteristics of intelligence. The exercise of higher-order imaginative-intelligence powers differentiate man from other living things as human—but this is not to say he is alone in having these powers: The song of bird is no less the song of man.

Imaginative-intelligence is dependent upon how well the organism was able to exercise perceptual ordering capacities during primoridal artistic and scientific experiences; imaginative-intelligence is dependent upon how well-stored these experiences are in memory. Memory—storage and recall—are fountainheads, not only for general intelligence and general creativity, but also, for imaginative-intelligence, creative-intelligence and poetic-intelligence. Since experience is accumulative, it has continuous power to influence all mental functions. The exercise of lower-order ordering of imaginative-intelligence is primordial and merely allows the organism to begin to recognize and determine patterns and relationships beyond sensual-emotive data.

Imaginative-intelligence allows the organism to go beyond a given set of data to determine possible structures within such data, and this activity begins, first, by establishing patterns and relationships beyond sensual-emotive data—appearances beyond sensual-emotive patterns and relationships akin to past primordial artistic and scientific experience. Imaginative-intelligence is an exercised capacity to reach beyond lower-order perceptual limitations and simple knowledge structures in a desire to know more and reach some kind of simple consummation. Experimentation, the probing of Nature by man, is trial and error investigation and making, and probably becomes much more intense at this point, as do mental activities set in motion by conscious and unconscious lower-order contemplation. It must be remembered, that these are not hierarchical processes. All processes thus discussed are continually operant and made available for more intense and complex use if necessary. All processes are interdependent and one cannot be activated without affecting the workings of all others.

Therefore, if lower-order workings of imagination-intelligence do not sufficiently give perceptual satisfaction to an organism's desire to know, then the organism may become so motivated as to increase the workings of imaginative-intelligence in an attempt to arrive at greater perceptual completeness. Usually, but not always, this desire to know more is motivated by feelings of dissatisfaction, the need to survive, or to gain power; however, it can be motivated by pleasurable feelings of just knowing, but this is rare. Now lower-order workings of imaginative-intelligence, which bring about perceptual awarenesses of patterns, relationships, and connections within

sensual-emotive data, do not include an awareness of significance. Significance, or meaning, is not ascribed to order at lower-levels. These awarenesses of order are certainly of a lower-higher order than those which are primordial and sensual, but they are not differentiated in terms of significance. In order that the organism attribute significance to such imaginative-intelligence orderings, it must activate the powers of the aesthetic and acquired aesthetic sense in their most refined form, which is in the form of poetic-intelligence. Here I am not talking about sensations, feelings, psychological needs and wants—these are all response. I refer to significance as an acute and penetrating understanding of highly complex natures of things. However, significance certainly includes the workings of sensual-emotive response and sociocultural and psychological orderings of memory.

Poetic-intelligence, most rare, occurs when the organism deems that its knowledge base is weak and lacks in wisdom. The organism may then be motivated to increase its data base by seeking and/or providing for a necessary meaningful consummation. At this point, the organism's level of existence is most intense and has become highly complex. The organism, in this state of complexity will have to exercise its capacity to reorganize and increase its data base, and now begin to exercise its powers to create. However rare it might be, the capacity to create is an innate higher-order capacity which gives epistemological form to perception. It attempts to bring elegance to form—it attempts to make the complex, simple and complete.

It is now that the organism may, perchance, decide to order up the complex in a number of ways. If it be so bent toward the artistic, the form of

the ordering will most often be in the form of a work of art. If it be so bent toward the scientific, the form will often show itself in the form of hypothesis or theory. Regardless of whether the form be artistic or scientific, the attempt here, is to bring about epistemological and elegant completion to culminate in a kind of meaningful consummation in the form of a tangible-ordering of highly complex experiential and perceptual data made simple.

Organisms which have the powers of creative-intelligence are biologically driven in greater or lesser degree to arrive at perceptual completeness. If conditions are not conducive to the organism's success, it can not make connections necessary to bring about significance amongst large numbers of variables to which it innately responds and retains. Such an organism arrives at a kind of intellectual discipline by its very nature: It is forced to survive by overcoming overwhelming complexity to which it is innately sensitive in response. To do otherwise would lead to unbearable confusion fostering neurosis and psychosis, and in some cases, death. **It is forced to master complexity and excessive bifurcations; it must bring about self-organizing properties to establish equilibrium.** However, when successful, it was most equipped to do so. Out of this need to organize comes epistemological structuring of the highest order. It is here that the innate aesthetic sense of the organism must present itself as highly sensitive to form for the organism will most surely depend upon it for poetic differentiations.

It is important to understand that creative-intelligence is a rare genetic occurrence which when successful enables an organism, sensitive to

large numbers of incoming sensual-emotive data, the power to organize. This kind of creative-intelligence does not blow "willy-nilly in the wind" seeking novel results—that is more the nature of general creativity. What it seeks are epistemological orders for specific sets of interrelated data or knowledge systems and it is highly selective in the process. The selectivity inherent in the creative process, for the most part, is done by the aesthetic sense. Yeats, Poincare, and others, have told us that such a process of selection is attributed, as in Yeat's case, "to instinct," and in Poincare's case, to an "esthetic sensibility." The refined operations of the aesthetic sense bring about a natural response to poetic form.

Although, initially, the organism is forced to depend upon creative-intelligence workings to order up highly complex and numerous incoming sensual-emotive data in order that it attempt to avoid confusion and states of disequilibrium, it can in time, use its creative powers to order up **any complex set of data** it so desires. This kind of avoidance of confusion must not be taken as the kind of confusion which characterizes schizophrenia. It is not accompanied by hallucinations or manic-depressive states or whatever else is usually ascribed to such a sickness. It is just as possible that one who has the powers of creative-intelligence may also have some sort of mental illness, but it must not be confused with creative-intelligence and its workings. If anything, such illnesses would be highly detrimental to its success and, I would dare say, cause an unbearable state of mental affairs for an organism. Creative-intelligence is a very powerful answer to ordering highly complex data to completion. It is a most erroneous practice to treat creative-intelligence

as the outcome of some sort of mental illness, for it is the very opposite of mental illness. Still, today, the attempt to do so is widespread.

Poetic-intelligence, the sensitivity to the wisdom of form, does not always accompany creative-intelligence. When it does, it provides the greatest of aesthetic experience. Two examples of such a combination of creative and poetic intelligence are Thoreau's Walden, and Darwin's The Origin of Species. In art an excellent example would be the fresco paintings by Michelangelo on the ceiling of the Sistine Chapel in Rome; in physics, Einstein's $E=Mc^2$; and, in biology, Mendel's monumental and single work with peas in Brunn. These works carry with them a poetic elegance of form and most certainly are the result of creative-intelligence with aim.

Chapter VI

CONCLUSION

This conclusion need only be brief.

> Man is no more natural than the world. In reality he is, as we have seen, the creator of a phantom universe, the universe we call culture—a formidable realm of cloud shapes, ideas, potentialities, gods, and cities, which with man's death will collapse into dust and vanish back into "expected nature" (Eiseley, 1970:120).

Man, modern man, has created a phantom universe based on science—content without meaning—a continuation of Bacon's dream: the desire that man's quest for solutions to problems be institutionalized—that unanswered problems not wait for genius—that scientific method itself would discover Nature (Eiseley, 1970:53-94).

General intelligence gives us understandings of a culture we have created but it does not take us beyond that culture. Imaginative-intelligence, the stuff of dreams, takes us beyond the appearance of that which is given by general intelligence—it gives wings to fanciful thought in utopian verse. It is the beginnings of discovery. But it is creative-intelligence which allows men to discover consistently; although, oftentimes, what is discovered merely deepens the grave of the phantom universe.

The answers that Bacon desired from science are found in poetic wisdom--however rare such wisdom be, without such wisdom, content is empty of meaning. "In the abstract language of mathematics," Barnett tells us, "he can describe how things behave though he does not know—or need to know—what they are" (1979:36). Barnett continues:

> Einstein carried this train of logic to its ultimate limits by showing that even space and time are forms of intuition,

> which can no more be divorced from consciousness than can our accounts of color, shape, or size. Space has no objective reality except as an order or arrangement of the objects we perceive in it, and time has no independent existence apart from the order of events by which we measure it.
>
> These philosophical subtleties have a profound bearing on modern science. For along with the philosopher's reduction of all objective reality to a shadow-world of perceptions, scientists became aware of the alarming limitations of man's senses (1979:19-20).

Nihil est in intellectu quod non prius fuerit in sensu. Science has been pushed to accept sensory perception and experience as considerations of scientific observation and investigation. Barnett tells us:

> Man's inescapable impasse is that he himself is part of the world he seeks to explore; his body and proud brain are mosaics of the same elemental particles that compose the dark, drifting clouds of interstellar space; he is, in the final analysis, merely an uphemeral conformation of the primordial space-time field. Standing midway between macrocosm and microcosm he finds barriers on every side... (1979:117-118).

To admit limitations of a scientific-artistic intelligence is profound. It forces modern man to confront himself and Darwinian Evolution—"his body and proud brain are mosaics of the same elemental particles that compose the dark, drifting clouds of interstellar space..." To separate himself from meaning is to experience emptiness of content:

> In trying to distinguish appearance from reality and lay bare the fundamental structure of the universe, science has had to transcent the "rabble of the senses." But its highest edifices, Einstein has pointed out, have been "purchased at the price of emptiness of content." A theoretical concept is emptied of content to the very degree that it is divorced from sensory experience. For the only world man can truly know is the world created for him by his

> senses. If he expunges all the impressions which they translate and memory stores, nothing is left (1979:113-114).

Man is now more than scientific man—he is man artistic. His ultimate and most lofty searches for answers **demand** creative powers. The search for the mysterious keys to unlock the transcending powers of creativity in every man has become as Bacon's dream, the dream of modern man: The need to institutionalize creative powers which beget intellectual power. However, the powers of creative-intelligence belong to rare and random occurrence—and, when such powers are successful, **they too are imperfect and primordial.** Eiseley tells us:

> That the manifestations of genius are culturally controlled we are well aware. The urban world, in all its diversity, provides a background, a cultural base, without which—whatever may be hidden in great minds—creativity would have had to seek other and more ephemeral expression or remain mute. Yet no development in art or scientific theory from the upper Stone Age onward seems to have demanded any further development in the brain of man. Mathematical theory, science, the glories of art lurked hidden as the potential seeds of the universe itself, in the minds of children rocked to sleep by cave fires in ice-age Europe (1971:215).

However primordial the beginnings of genius, it is the outcome of creative and poetic intelligence, and its probability of occurring depends on genetic randomness. It is a genetic risk. But Bacon's cryptic scientific dream repeats itself now with **a desire to make creative-intelligence common method in laboratories:**

> If genius is a purely biological phenomenon one must assume that the chance of its appearance should increase with the size of populations. Yet it is plain that, as with

> toadstools which spring up in the night in fairy rings and then vanish, there is some delicate soil which nurtures genius—the cultural circumstance and the play of minds must meet. It is not a matter of population statistics alone, else there would not have been so surprising an efforescence of genius in fifth-century Greece-a thing we still marvel at in our vastly expanded world. Darwin committed to biological explanations alone, was left fumbling uncertainly with a problem that was essentially not reducible to a simplistic biological explanation. Without ignoring the importance of biology as one aspect of an infinitely complicated subject, therefore, the modern researcher favors the view that the intensive examination of the creative mind and its environment may offer some hope of stimulating the sources from which it springs, or, at the very least, of nurturing it more carefully (1971:216).

But how nurture it more carefully? Perhaps it can be nurtured if successful, but I doubt much if it can be manipulated. One of its characteristics is that it is keenly perceptive and penetrating. However, the results of creative-intelligence most certainly can and have been used in ways not intended by genius.

I have concluded, creative-intelligence will best be measured in aesthetic experience, which fortunately means such experience is in the past. Nevertheless, Bacon's "scientific society" has reached description, and it is in man's best interest to heed its outcome as he ponders creative powers. Eiseley describes modern man's scientific society which may perhaps, someday echo modern man's "creative society":

> In simple terms, the rise of a scientific society means a society of constant expectations directed toward the oncoming future. What we have is always second best, what we expect to have is "progress." What we seek, in the end, is Utopia. In endless pursuit of the future we have ended by engaging to destroy the present (1970:105).

If creative powers are viewed as anything, they are viewed commonly as that which will ultimately bring about the "Utopia" which modern man so desperately seeks. Although man needs no more than what general intelligence gives him to move silently with other animals of a rain forest, modern man's phantom universe requires much more. It requires that he confront himself as he who has come to look upon the rain forest as a thing outside himself: "an object to be manipulated or discarded at will" (1970:59).

The sensitivities which come about as the result of creative and poetic intelligence are not widespread amongst men. Such sensitivities give man an understanding, as it was with Thoreau and Darwin, that he must move silently with other animals of a rain forest if he is to survive. What were primordial tendencies to art and science have become struggling chimera deep in the more ancient and instinctive fossil parts of man's brain. The fossil brain lies sleeping in most—the new brain has emerged with a modern-scientific-sense. Primordial tendencies to art and science are lost to ice sheets along with hairy mammoths and long-horned bison. What was purely experiential is now culture bound to **modern myths** of science and art. Somewhere the past grew mutant amongst 537 in viscid mud of Darwin's cup. Modern man cannot but speculate as to the significance of paintings in Lauscau Cave galleries—he can no longer rally thoughts long asleep in the silence of earth carried by bird feet.

As I have defined aesthetic experience, plastic art is a strange sort of experience which has evolved as rarely aesthetic. The example of art which constitutes aesthetic experience are the fresco paintings by Michelangelo. The reasons for citing the frescos in example are as follows:

1. There is an epistemological order for narrative aspects of the frescos as well as for elements of art such as line, shape, colour, etc. Both orders are epistemologically complex and elegant.

2. In terms of conception and execution there was required acute intelligence operations of the general, imaginative, creative, and poetic. Perceptual workings culminated in forms which are refined and sophisticated. Intelligence and skill were of the highest order.

3. The works provide new artistic knowledge structures, new intellectual concepts, and are by their nature, discovery. They result in a work of eminence and represent an aesthetic building block which carries with it a kind of poetic-intelligence.

However, the reason why I hold the plastic arts in general as limited in aesthetic example is because most art appears as vehicles for (1) the communication of sociocultural beliefs; (2) sensual-emotive response in the form of socio-psychological expressions; and (3) perceptual ordering of data to make the abstract (thought, sensation, feeling) concrete. For the most part, works of art which are plastic tend to be offerings of bits and pieces of isolated-fragmented-egocentric-abstract perceptual data with an aim to express sensual-emotive, socio-psychological, and sociocultural sensations, feelings, and thoughts as concrete. In general, such art works are without aim of providing epistemological structures which are complex and elegant knowledge systems. One exception to such works would be Michelangelo's Sistine Chapel fresco paintings.

This is not to say that perceptual data of most art works are void of aim, it is merely to say that such perceptual data are barren of far-reaching-poetic elegance and are significantly limited in meaning. However, when art works are aesthetically ordered, they are profoundly aesthetic. And **Michelangelo's Sistine Chapel fresco paintings are profoundly aesthetic.**

It must be understood that when it is held that a work be complex in order that it be aesthetic, it does not mean complex in appearance but complex in conceptualization or understanding. The physical appearance or apparent mechanics may be very simple in statement, but the arrival at such a simple statement must have demanded highly complex operations if it is to be elegant and representative of aesthetic experience. Such operations would have to include combined and interdependent-workings of intelligence of the general, imaginative, creative, and poetic. And far superior the work of art which displays poetry of wisdom!

This thesis addresses works of art which are included in a definition of that which represents aesthetic experience; however, if one were to address works of art other than those which are included in the aesthetic, a different criterion would be in order. I believe, Herbert Read and others have provided ample criteria by which one can make such evaluative judgements. However, it is not the intent of this thesis to make such examinations. Such works have received immense attention from art historians, art critics, art educators, and philosophers of art throughout history. Herbert Read pins it down best:

> To be precise: I believe that among the agents or instruments of human evolution, art is supremely important. I believe the aesthetic [he is using aesthetic as traditionally defined] has been the means of man first acquiring, and then refining consciousness. Form, the progressive organization of elements otherwise chaotic, is given in perception. It is present in all skills—skill is the instinct for form revealed in action. Beyond this physiological and instinctive level, any further progress in human evolution has always been dependent on a realization of formal values (1957:IX-X).

And formal values are those which characterize most works of art which are plastic. This thesis addresses, to use Read's words, "the physiological and instinctive level" versus "a realization of formal values." However, I break with Read when he continues with a preceding discussion in the "Preface" of The Philosophy of Modern Art. Read says, "aesthetic activity is biological in its nature and function..." But he continues with a belief that such a function differentiates human evolution from animal evolution; and I disagree emphatically with this belief. This "aesthetic faculty" to which Read refers as only human appears to be a typical response by one who takes the arrogant position that "man is the measure." I am firm in this disagreement. I do not view man as the only living creature with a capacity to be aesthetic as Read defines aesthetic.

It had been assumed by most biologists that insects did not feel pain upon injury—however, it is now known that insects do in fact feel pain. And it is known that pain and pleasure are a physiological polar. Now all one has to do is step on a cat's tail to hear it painfully scream; or stroke its head gently to hear it purr with pleasure. As classical aesthetics has it, "aesthetic experience" cannot occur without feelings of pleasure. (I use the terms pain and pleasure as interrelated and interdependent for one cannot spring forth in feeling without the other potentially present.) Now as "man the measure" would have it, the cat would be instinctively responding to danger or reward. Danger, yes—Reward, no.

The innate aesthetic sense and the acquired aesthetic sense are capacities characteristic of all living things bound to perception for survival—it is now known that plants emit sound. However, the point to be made here is what

modern man makes of these lower-order perceptual capacities when he believes they rightfully differentiate him from animal. And this would require another thesis beyond the scope of this thesis. I do not hold that such a capacity for the aesthetic in the classical sense belongs to only man. I do hold that the purring cat is experiencing its own kind of lower-order aesthetic response to pleasurable experience.

Man has been determined since the beginning of civilization to make something of himself "supernatural." He does so most often by "lording" himself over other creatures. In 1859 Darwin put man where he rightfully belongs: with other animals. Ninety-three years have passed between Darwin's (1859) The Origin of Species and Herbert Read's (1952) The Philosphy of Modern Art. And an even greater time has passed since 1859 and 1984: one hundred and twenty-five years have passed. Perhaps, Carl Jung provides an adequate answer to man's lack of accepting his Darwinian position. Jung gives an interesting explanation as to why freedom is one of the more difficult things to accomplish. Jung attributes such a problem to the avoidance of psychic injury. Jung believes that the unconscious is capable of self-regulation. But he also believes this is a most difficult task (1982:115). He says, "there are all too many who, on account of their notorious ineptitude, thrive better in a rationalistic system than in freedom...freedom is one of the more difficult things" (1981:115).

He uses Goethe's Faust in example: "Those who can stomach this way out can say with Faust..."(1981:115):

> This earthly circle I know well enough.
> Towards the Beyond the view has been cut off;
> Fool—who directs that way his dazzled eye,
> Contrives himself a double in the sky!

> Let him look round him here, not stray beyond;
> To a sound man this world must needs respond.
> To roam into eternity is vain!
> What he perceives, he can attain.
> Thus let him walk along his earthlong day;
> Though phantoms haunt him, let him go his way
> (1951:283).

Such an answer to the problem would be ideal however, as Jung points out, the unconscious remains active; it cannot be emptied (1981:116). Jung continues with Faust, "One may for a while play with this delusion, but the day comes when one is forced to say with Faust..." (1981:116):

> But now such spectredom so throungs the air
> That none knows how to dodge it, none knows where.
> Though one day greet us with a rational gleam,
> The night entangles us in webs of dream.
> We come back happy from the fields of spring--
> And a bird croaks. Croaks what? Some evil thing.
> Enmeshed in superstition night and morn,
> It forms and shows itself and comes to warn.
> And we, so scared, stand without or friend or kin,
> And the door creaks—and nobody comes in
> (1951:281).

According to Jung, man's free will is not great enough to make empty the unconscious of its power. Jung believes that deception on this point is the best man can do (1981:116). He continues with Goethe:

> Unheard by the outward ear
> In the heart I whisper fear;
> Changing shape from hour to hour
> I employ my savage power (1951:282).

Jung tells us that only one thing is effective against the power of the unconscious: "hard outer necessity." Otherwise, Jung says, "Only what is really oneself has the power to heal" (1981:117). He tells us, "This is why Mephisto offers Faust, who is sick of the 'madness of magic,' the following advice..." (1981:117):

> Right. There is one way that needs
> No money, no physician, and no witch.

> Pack up your things and get back to the land
> And there begin to dig and ditch;
> Keep to the narrow round, confine your mind,
> And live on fodder of the simplest kind,
> A beast among the beasts; and don't forget
> To use your own dung on the crops you set!
> (1951:67).

Jung's discussion centers on the idea that truth of the self, of who man is, will be forced to consciousness by the powerful unconscious, however it oftentimes will come about by necessity. We will on occasion receive a glimpse of who we really are and if it is viewed as potentially damaging to our psyche, it will be repressed or rationalized as "nonsense." However, as Jung tells us, there may occur on occasion necessity to acceptance. Jung continues:

> It is a well-known fact that the "simple life" cannot be faked, and therefore the unproblematical existence of a poor man, who really is delivered over to fate, cannot be bought by such cheap imitations. Only the man who lives such a life not as a mere possibility, but is actually driven to it by the necessity of his own nature, will blindly pass over the problem of his soul, since he lacks the capacity to grasp it. But once he has seen the Faustian problem, the escape into the "simple life" is closed for ever. There is of course nothing to stop him from taking a two-room cottage in the country, or from pottering about in a garden and eating raw turnips. But his soul laughs at the deception. Only what is really oneself has the power to heal (1981:117).

If one has difficulty with accepting the "aesthetic experience" had by a purring cat and views it as nonsense, then most certainly one would have a most difficult time viewing one's self as a **Darwinian animal.** Jung concludes:

> The regressive restoration of the persona is a possible course only for the man who owes the critical failure of his life to his own inflatedness. With diminished personality, he turns back to the measure he can still fill. But in every other case resignation and self-belittlement are an evasion... (1981:117).

But he shall have to accept himself as Darwin found him to be, or he shall destroy himself in ignorance and illusion: Man has not been the "measure" for some 125 years. For that matter, he has never been the "measure" except in the illusion and comfort of his own phantom universe.

Art rather than science has more greatly influenced the making of these myths of his phantom universe. Art continues to twist perception into braided mythologies of multi-dimensional-Utopian shapes and dreams in answer to a silent universe. Goethe reminds us, "Enmeshed in superstition night and morn...It forms and shows itself and comes to warn..." The truth of man's Utopian dreams, of his phantom universe, and of his arrogance will by the power of the unconscious be revealed. As Jung tells us, it will be revealed by necessity to consciousness. However, it may never be fully revealed or for long; man has also the powers of avoidance.

If ever there was a "human element" separating man from animal, it has been man's belief in myths. Plato perhaps more so than any other philosopher struggled to bring about consummation to the idea of ideal forms. He wished for a single science, "the science of beauty everywhere" (1973:354). Newton and Einstein desired an ordered universe. Their sciences were based on this desire. No sane man would truly desire that his universe or his mind blow "willy nilly in the wind."

I chose Thoreau as an example of one who uses the mind to bring about a delicate balance between truth and fact. I could have just as easily used Goethe or Wordsworth or Milton. What I could not do successfully was use numerous artists from the plastic arts. I chose Michelangelo as the one example, for I

believe that he accepted the genius of his skill and presented to us in poetry the genius of his soul. As one from the plastic arts who brought about aesthetic experience, I see none greater than Michelangelo, even though on completion of the fresco paintings in 1512, he said, "ne io pittore—**I am no painter**" (Bertram, 1964:36). He did accept the genius of his skill and I see this as the utmost in importance in understanding the nature of Michelangelo's creative and poetic intelligence.

Michelangelo, Darwin, and Thoreau are excellent examples of those who sought for the expansion of mind—Thoreau more so than the others. Eiseley tells us of Thoreau: "He wanted desperately to know to what degree the human mind is capable of inward expansion" (1969:143). And this I believe is the issue: general intelligence, imaginative-intelligence, creative-intelligence, poetic-intelligence, and all the workings of this intelligence faculty has to be operant for inward expansion and perceptual consummation to end in aesthetic experience.

The conclusions may in this paper appear unkind to the arts but they need not be taken in this way. I have stated that art activity in its most primordial and elemental state is precusory to the activity of science in its most primordial and elemental state. Art activity is the beginnings of perceptual order for it is the outcome of the workings of the innate aesthetic sense, which makes lower-order perception complete. It is the beginnings of perceptual-making. However, I do conclude that **in the mind of primitive man such a division between the activities of art and science did not exist.** Jung supports this conclusion:

> Art by its very nature is not science and science by its very nature is not art; both these spheres of the mind have something in reserve that is peculiar to them and

> can be explained only in its own terms. Hence when we speak of the relation of psychology to art, we shall treat only of that aspect of art which can be submitted to psychological scrutiny without violating its nature. Whatever the psychologist has to say about art will be confined to the process of artistic creation and has nothing to do with its innermost essence. Indeed, art and science would not exist as separate entities at all if the fundamental difference between them had not long since forced itself on the mind. The fact that artistic, scientific, and religious propensities still slumber peacefully together in the small child, or that with primitives the beginnings of art, science, and religion coalesce in the undifferentiated chaos of the magical mentality, or that no trace of "mind" can be found in the natural instincts of animals—all this which alone would justify a reduction of the one to the other. For if we go so far back into history of the mind that the distinctions between its various fields of activity become altogether invisible, we do not reach an underlying principle of their unity, but merely an earlier, undifferentiated state in which no separate activities yet exist (1981:303).

However, and this is important, Jung continues with the preceding exposition by saying: "But the elementary state is not an explanatory principle that would allow us to draw conclusions as to the nature of later, more highly developed states even though they must necessarily derive from it" (1981:303). Jung makes this statement because he believes that the scientific attitude will tend "to overlook the peculiar nature of these more differentiated states in favour of their causal derivation..." (1981:393). In otherwords, as Jung sees it, science will continue to search for **one right answer to psychological phenomena** by the means of cause and effect and "will endeavor to subordinate them to a general but more elementary principle" (1981:303). However, I need to point out in explanation the gist of Jung's terminology:

Jung is telling his reader that artistic creation can be evaluated by psychologists if creative processes are being investigated; however, as to what art is in terms of "aesthetics" must be answered by those whose concern is aesthetics (1981:302). Jung is using the term "aesthetics" in its traditional sense as the investigation of beauty. Nevertheless, Jung is on the right track by pointing out that in a primordial and elemental sense the division between the activities of art and science are undifferentiated. However, for the purposes of this thesis, I have given the activities of art and science in their most primordial and elemental states an interdependency with art precusory to science. I believe that Jung (1922) gives a good discussion in his "Relation of Analytical Psychology to Poetry," for he had to rely on information about art and creative processes which were limited.

During Jung's time of writing the "Relation of Analytical Psychology to Poetry," it was very much in acceptance that creative processes were functions of the unconscious, which was held by Freud to be a kind of "Pandora's Box" which contained the roots of neurosis and psychosis. It was very popular at this time to see the artist as driven by a kind of "divine frenzy." As Jung puts it: "The divine frenzy of the artist comes perilously close to a pathological state, though the two things are not identical" (1981:317). Now I certainly do not want to confuse Jungian psychology with my thesis, but I do want to give credit to his kind insights into the workings of the unconscious and creative processes. Jung in many ways was indeed very perceptive, however his time was a very trying time for psychology. Freud dominated the field of psychology, and the unconscious was viewed as the source of creative processes and "things that go

bump in the night." Both of which were viewed as a part of making art. Nevertheless, it must be understood that these erroneous beliefs and myths about artistic creation still exist today.

I do want to mention that I believe that Jung twisted somewhat his use of Goethe's Faust to meet his needs in discussion; however, I do believe his intent was pure. The truth of perception will push its way into consciousness or dream but it will do so because the unconscious workings of the mind are in a constant state of perceptual ordering and reordering of data to better an organism's chance to survive its environmental ongoings with success. If it cannot order the perceptual workings of its mind with success, it is because it is "biologically imperfect." If it acts in a state of continued perceptual confusion, it is because it is suffering from illness. If it were in such a state of mental confusion in certain hostile environments, it would not continue to survive. Viewed in this light, the necessity of fully operating perceptual capacities becomes the concern of a species if the species intends to survive.

From amongst Darwin's "most exhalted animal—man," the most "fit" must act as "Scare-Catchers." "Scare-Catchers" net "scary-things." They are those who can with courage shatter elusive beliefs of which a phantom universe is made. It must be their task to net such beliefs and carefully reformulate them to reflect reality more nearly complete. Darwin, Thoreau, and Michelangelo "netted scary-things" and brought them to new orders for all of mankind. Old beliefs of their phantom universe began to dissolve into more fitting ways to lead to new insights and discoveries. Darwin was "buried in facts" which he so diligently worked to organize; he says:

> It was evident that such facts as these, as well as many others, could only be explained on the supposition that species gradually become modified; and the subject haunted me...and I can remember the very spot in the road, whilst in my carriage, when to my joy the solution occurred to me... however, all nature is perverse and will not do as I wish it; and just at present I wish I had my old barnacles to work at, and nothing new (1958:42-43, 190-191).

None was without labor to insight and discovery.

The breaking down of myths is trying but necessary. It always begins with an awesome ordering of "scattered-perceptions." Perceptual consummation is the most elusive of all that man experiences of his phantom universe. Darwin speaks of such elusiveness when he tells us of the difficulties he experienced with the coming about of The Origin of Species:

> Looking back, I think it was more difficult to see what the problems were, than to solve them, so far as I have succeeded in doing, and this seems to me rather curious. Well, good or bad, my work, thank God, is over, and hard work, I can assure you, I have had, and much work which has never borne fruit (1958:216).

However, when perceptual consummation is reached—made elegant—"has borne fruit—," it is the most profound of all experiences known to man: it is the experience of the aesthetic.

Rollo May (1982) in Man's Search for Meaning refers to a kind of "creative self-consciousness." He expresses the coming about of meaning which comes from this consciousness:

> The creative self-consciousness is a stage that most of us achieve only at rare intervals; and none of us, except the saints, religious or secular, and the great creative figures, live very much of our lives on this level. But it is the level which gives meaning to our actions and experiences on the lesser levels (1982:141).

May continues and refers to a kind of "anxiety" which accompanies the bringing about of meaning. Anxiety is experienced, according to May, as profound when man is faced with the powers of Nature:

> It takes a strong self—that is, a strong sense of personal identity—to relate fully to nature without being swallowed up. For really to feel the silence and the inorganic character of nature carries a considerable threat. If one stands on a rocky promontory, for example, and looks at the sea in its tremendous rising and falling of swells, and if one is fully and realistically aware that the sea never "has a tear for others' woes nor cares what any other thinks," that one's life could be swallowed up with an infinitesimal difference being made to the tremendous, ongoing, chemical movement of creation, one is threatened...This is the profound threat of nothingness," or "nonbeing," which one experiences when he fully confronts his relation with inorganic being (1982:73-74).

There may come from some such as Darwin and Thoreau a spirit which allows for glorious reactions to awesome and complex workings of Nature's powers but Nature "haunts" even them. Nevertheless, **it is a phantom universe which comforts and protects all men including Darwin and Thoreau.** However, it will be men like Darwin and Thoreau who will be "Scare-Catchers" and who will bring about an end to phantom-universe-mythologies and the universe will then appear less scary and more profoundly aesthetic as we will "reap from what they sow."

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