A SYNERGISTIC VIEW OF MAN AND UNIVERSE
A Psycho - Social Model of Man as an Open System

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DEDICATION

I dedicate this work to a free Palestinian child who is not yet born.

CHAPTER 1

Introduction:

In the history of civilization, there have appeared various ideas about the nature of man, some of which are so persistent as to be considered "models." Any model of man is a form of analogy that is based on a particular logic, and particular view of man and universe. A model carries within its theoretical constructs assumptions, broad concepts, definitions, goals and tools by which these assumptions could be tested, and by the results of which the concepts and definitions could be articulated. A model of man is to be considered a form of "scientific paradigm" which guides "normal scientists" in their investigations.[1] A particular model of man becomes a paradigm when beliefs and assumptions associated with it gain strength from a scientific community, which accepts the conceptual system of the model as a shared theoretical framework for regular scientific practices. In that sense one can accept Kuhn's (1970) notion that a paradigm is a model, but not every model is a paradigm.

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[1] The terms "scientific paradigm" and "normal science" are after T. Kuhn. The Structure of Scientific Revolution (2nd ed.). Chicago: University Press, 1970. The "scientific paradigm" includes collected facts that are based on a theoretical frame, values and beliefs that form commitments for researchers who are guided and/or directed by their pattern of the paradigm's frame. The scientific paradigm has two major characteristics: (a) it has a group of followers which adheres to its rules, theories and practices, and (b) it has an open-ended nature which may be recognized and re-examined by any other group of scientists. Thus, a paradigm is subjected to articulation and specification under new or more stringent conditions. Articulation of a paradigm is achieved by normal scientists as they examine the relationships between nature and facts. Kuhn describes normal scientists as puzzle-solvers, whose efforts are characterized as "mopping-up operations" requiring drastically restricted vision and realignment of methodology (pp. 24, 36, 37). Kuhn makes it clear that, "The existence of this strong network of commitments -- conceptual, instrumental, and methodological -- is a principal source of the metaphor that relates normal science to puzzle-solving" (p. 42).

Many researchers have attempted to classify psychological theories into categories of models of man. Among these researchers, Allport (1973) classified psychological theories into two categories, although he submitted that this classification is an oversimplification. The two categories Allport identifies are: (1) the Lockean tradition, and (2) the Leibnitzian tradition. Allport has associated these two traditions with two divergent models of man. The first tradition (the Lockean) represents a model of man as a passive recipient of events, and the second tradition (the Leibnitzian) represents man as an active participant in events.

In the Lockean view, man's mind is essentially passive. Evidence for this is Locke's statement that mind is a tabula raza at birth. Man is seen as a responding organism that constantly reacts to external stimuli. Accordingly, man's motivation is extrinsic and has a deficit nature, represented by the necessity for seeking tension-reduction. The activity of man as an organism is purposeful and lawful. It aims at maintaining equilibrium of its needs with the external conditions. Followers of this tradition, according to Allport, are the behaviorists, the associationists and the advocates of animal, experimental and genetic psychology. They are all psychologists who study the nature of man by applying the scientific method and using quantitative descriptive terms to report their findings.

Leibnitzian tradition views man's mind as active. The organism is self-propelled, motivation is intrinsic, and man is unique. Man's uniqueness is represented by his capacity to vary his biological needs and add to them countless psychogenic needs. These needs are reflected in part by man's cultural uniqueness and in part by his own life style. All other animals are considered psychologically less distinct than the human

being. Accordingly, psychologists cannot generalize animal behavior to describe human behavior. They have to study human nature by means of man's discovery of his own nature.

In short, according to Allport, followers of the Lockean tradition are scientifically oriented, believe that behavior is lawful, and therefore think that man is determined. Followers of the Leibnitz tradition, on the other hand, are inclined to believe that man is self-propelled. If man is predetermined in any way, he is predetermined to choose. In contrast, Allport feels that the Leibnitz tradition tends to express belief in the freedom of man. The followers of this tradition are humanistic psychologists, cognitive-interactionists, phenomenologists, and Gestalt existentialists (Allport, 1973:7-24).

The available models of man as described by Allport suggest that a model of man as an open system could be developed on the basis of the Leibnitzian tradition, particularly on the basis of the organismic theories in psychology which are of a humanistic existential orientation. This orientation is a useful source for developing a new model that utilizes and synthesizes some of the organismic theoretical constructs and presents them in a transformational model. This proposal is based on the assumption that none of the available theories, if taken singularly, is comprehensive enough to take account of the various characteristics of man as an open system. Before an attempt can be made to develop the proposed model of man as an open system, it is necessary to examine fundamental concepts that are used by psychologists. It is also necessary to develop a method of evaluating fundamental psychological theories.

The tools used in this work for examining the epistemological foundations of psychology are the logical tools of systemic analysis which are

derived from General Systems Theory (GST). Chapter two is devoted to a discussion of the systemic analysis method and the logic of scientific discovery in theory building. The main objective of this chapter is to develop criteria for evaluating whether a theory is based on a closed or an open systems view. Broadly speaking, it is assumed that the logic of scientific discovery constitutes the underlying principles which scientists use to explain, describe and predict the occurrence of those natural events which they select to investigate. Causality conceptualization, therefore, is a main criterion for classifying a theory. Theorists are assumed to conceptualize causality as efficient and/or teleological depending on their conceptualization of the time and space within which events take place. Thus, it is hypothesized that the conceptualization of time-space is another criterion in deciding whether a theory is open or closed. A systemic analysis method is developed in the first unit of chapter two and this is applied in the discussion of the logic of scientific discovery. However, the logic of scientific discovery as it has been used up to the present time is transformed here into a new alternative. The new alternative accounts for the subjective element in scientific discovery with the aim of utilizing it in developing a new model of man as an open system.

The evaluation of psychological theories is undertaken in chapter three. This chapter is devoted to a systems analysis of the epistemological foundations of psychology as a social science discipline. The chapter aims at discussing the history of psychology and its theory building with the purpose of examining the fidelity of this discipline. The evaluation includes the fidelity of psychological theories which various founders of the schools of psychology have contributed through the history of the field. The fidelity of a theory is dependent on its ability to success-

fully implement its claim to describe, understand (or explain), predict or control human behavior, as all these claims relate to the nature of man in "reality." The question of reality is dealt with as a philosophical issue that is examined on the basis of a theorist's logic. Thus, theories which are found to be based on linear logic (i.e., closed logic) are considered incongruent with the reality of human nature, while theories based on an open systems view are closer to reality. Moreover, it is hypothesized that a theory has its subjective component regardless of the claims it makes to objectivity. All psychological theories which are evaluated in chapter three are first presented in a form of conceptual webs which include the fundamental concepts of the theory.

The problem of identifying the fundamental concepts is viewed as the most serious part of this investigation, for two reasons: First, there must be an awareness of the complexity of any theoretical construct within which a given concept is located. It must be kept in mind that any concept in a system of knowledge has a given "positional value"[2] that often decides its function. Examining a concept does require focusing on its structural components, without losing track of its relationships to neighboring concepts, and/or of the whole conceptual system in relation to the implied view of man's nature, on which a given theory is built. Second, a concept in any theory is a cognitive structure that is communicated to the reader by a language, in terms that might have their private

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[2]See A. Angyal. Foundations for the Science of Personality: A Logic of Systems. Systems Thinking. F. E. Emery, 1969, rpt. Chicago: Aldine, 1974:108-118. According to Angyal's logic, it is the position of the sub-system within the whole system that decides its function, and not the structure of that sub-system.

meanings besides their popular meanings.[3] The private meaning of any term makes the term subject to interpretation. This researcher is aware of the "subjective element"[4] in research, a factor that adds to the complexity of concepts-analysis. In essence, concepts are mental constructs. Klausmeier, et al. (1976:4) who view concepts as mental constructs, define them as "ordered information about properties of one or more things, objects, events, or processes, that enables any particular thing or class of things to be differentiated from and also related to other things or classes of things." Concepts, according to this view, have three major functions: (a) classification, (b) organizing information in a communicable manner, and (c) evaluation, in the sense that the concept makes possible the pointing out of similarities or differences among classes of objects or persons. Since concepts have attributes[5] of learnability,

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[3]B. F. Skinner pointed out that scientists in dealing with behavior as a scientific datum tend to borrow terms of the popular vocabulary and that it has still to be shown that these popular vocabulary terms are validly descriptive - that "they lead to consistent and reproducible experimentation . . . restriction upon the use of the popular term frequently results in some experiemtnal consistency. The experimenter is more likely than not to hit upon experimentally real terms, and he may have some private set of properties resulting from his own training that will serve . . . But it is a mistake for him to suppose that these properties are communicated in his use of the popular term." B. F. Skinner. The Behavior of Organisms. New York: Appleton-Century-Crofts, division of Meredith Publishing Co. (1st pr. 1931, 7th pr. 1966), pp. 42-43.

[4]Kuhn (1970:126) argues that normal scientists have their commitments to a given paradigm and that this very commitment makes their "language" for communicating their findings, thoughts or concepts, a language of popular vocabulary that is understood by their scientific community. This social aspect of "language" is the subjective element of normal science. "As for a pure observation-language (which Skinner desires to have), perhaps one will yet be devised." However, Kuhn affirms, "There can be no question that efforts of this sort are worth pursuing. But their result is a language that - like those employed in the sciences - embodies a host of expectations about nature and fails to function the moment these expectations are violated" (p. 127).

[5]For a detailed discussion on concept attributes, see H. Klausmeier, et al. Conceptual Learning and Development: A Cognitive View. London: Academic Press, Inc., 1974, Chapter 1.

usability, validity, generality, power, structure, instance perceptibility, and instance numerousness, then any examination of a given concept has these various attributes in deciding the functional power of the concept as the outcome of its positional value.

Thus it is to be expected that the process of identifying pertinent concepts and examining them in connection with any model requires exhaustive effort. Nevertheless, before a new consistent, conceptual model can be developed, one must undertake this effort to examine and critique the adequacy of models already available. The network concepts are to be tested by means of systemic analysis which is defined as having an open logic of a "unitas multiplex" [6] nature. While the tools of analysis used here are systemic (i.e., viewing systems within systems), they may on occasion lead the investigator toward the "systematic" (i.e., serial order in the linear sense of the scientific method) logic of investigation. This tendency must be guarded against. It is especially important to avoid the systematic mode of thinking, since the thesis of this study is to transcend the linearity of the scientific paradigm in the field of psychology. This concern is based on the assumption that linearity in logic has harmful effects on models of human growth and their implementation in meantal health practices.

Systems thinkers do not all share the same view of man; in fact, they manifest conflicting views similar to the conflicting views of the proponents of the Lockean and Leibnitzian traditions. Systems thinkers have not developed a separate sphere of orientation in a scientific vacuum.

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[6] Unitas multiplex, according to Angyal's (1941) view of the logic of the universe, is a universal principle: wholes are unitas multiplex in the sense that every system should have one and only one construction principle.

Therefore, the value of using the insights of systems thinkers lies only in their insistence upon broadening the horizons of the researchers in the examination of their problems of universe (i.e., the unit under investigation). The rhetoric of this new scientific community often sounds like a repetition of what is known, worded in terms that are more ambiguous than the terms already used in specialized fields. Yet the value of systems thinking reveals itself in the attempts of this community to look at a unit of study from as many angles as possible, utilizing various fields of interests, and bringing them together in a coherent pattern that enables a researcher to be open in his understanding of a given phenomenon.

Angyal (1971:24) identifies a conceptual difference between two types of knowing:

> In the recent past there has been much rather inconclusive discussion concerning the possibility of two different processes of knowing: explanation and understanding . . . . The difference between the two concepts . . . is probably that explanation refers to relational thinking, understanding to system thinking. Relational thinking aims at the establishment of direct connection between two objects. For instance, in the study of causation one has to find for member A (effect) a second member B (cause) with which it is necessarily connected. In causal research the task is to single out from a multiplicity of data pairs of facts between which there is a necessary connection. In system thinking the task is not to find direct relations between members but to find the superordinate system in which they are connected or to define the positional value of members relative to the superordinate system.

Using Angyal's model, one might investigate the relational logic of the (S-R) and (S-O-R) orientations. The creation of a new model of man as an open system would need to be processed by means of systemic analysis of the various dimensions of the Leibnitzian view in the field of psychology, and then have possible gaps in its causal logic filled by borrowing some input from Lockean tradition. The input of both traditions, after

thorough investigation, would be transformed into a new "compound"[7] of systems thinking regarding what man's nature is all about. It is the positional value of the structural, available, concepts that is viewed as a problem in this resynthesis. It is the rearrangement of the structural positional values of these concepts that would relocate the "genes"[8] of various thoughts on the various "chromosomes," from which "offspring" that is genetically different from other "offspring" is created.

It is assumed in chapter three that in the process of scientific development there is no one scientist or group of scientists who may be totally credited with the origin of any concept. Scientists are able to view the problems of their universe in new ways only through a Gestalt-switch or by "wearing new spectacles." This perceptual transformation, which Kuhn (1970) used as an analogy for describing the structure of scientific revolutions, is what creates innovation or paradigmatic change in any field. On the basis of this argument Kuhn insists that the history of scientific development is a transformation process rather than one of additions.

This point of view supports the validity and the usefulness of examining models and encourages this researcher to undertake research which makes a conceptual model obligatory. The process of systems thinking is

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[7] Chemical term is used here in a metaphoric sense. The purpose of using the term compound is to introduce the view of the output as a "whole" which is qualitatively and quantitatively different from the qualitative and quantitative characteristic of its composite structures in the same way that a chemical compound is different from the characteristics of its original elements.

[8] Genetic terminology is used here in a purposeful but metaphoric sense. Although genes are known to have the same chemical structure, their location decides their function in the hereditary characteristics.

a tool of investigation that may be extremely useful for overcoming scientific dogma without sacrificing the worthwhile fruits of its earlier application. The scientifically motivated ambition of efficiency and productivity need not be abandoned, provided that the efficiency model is not developed at the cost of creating new problems which have significant impact upon the humanity of its users and creators.

Since this researcher assumes that linear logic and its closed model of man is detrimental for human growth, chapter four is devoted to a test of this assumption. It is seen as necessary to include a chapter on the implementation of psychological theories in mental health practices in the United States in this work. The aim of chapter four is to establish a rationale for developing a new model. This need might also have been fulfilled by concluding chapter three with evidence that psychological theories hold a closed view of man. However, it would not have been possible to construct a strong rationale for the need for a change in the view of man without examining the fidelity of given theories in practice. The point is that while it may be satisfactorily argued that a psychological theory is linear in its logic and closed in its view of man, the question is not yet settled. There might be nothing wrong in a theory of linear logic if its implementation is successful in helping human beings to freely develop to the best of their potential. However, if a theory fails to meet its claims on practical grounds, then a switch in its logic and its view of man becomes essential.

Chapter four therefore examines the implementation of psychological theories in counseling and psychotherapy to see whether it is congruent with the epistemological foundations of psychology, and whether practitioners function as client-agents or as socio-political agents for

maintaining the status quo. The relevant problem here, however, is not the maintenance of the status quo in itself but whether the individual's growth is controlled against his own will for the benefit of a certain dominant growth in the name of "mental health." Thus, some professional claims of mental health practitioners are cited and examined in the context of available research findings. The shortcomings and/or the movement of counselors and psychiatrists in the opposite direction from their claims is taken as criteria to justify a conclusion that mental health practices are not successful in improving human conditions. If this is indeed the case, it provides even further justification for the change in a view of man and the logic of scientific discovery.

The gaps that exist in the epistemological foundations of psychological theories and/or in the implementation of the theories in mental health practices, is the target of this work, and the problem is resolved through the development of an integrative model of man as an open system. This model is in chapter five in light of the various arguments that are made throughout this work. This model is essentially one of man as an open system and conceptualizes man and universe as two integral components of an existential being in a state of becoming (i.e., a human system in an ontological growth). It is a model which: (1) identifies the assumptions that underlie a synergistic view of man and universe; (2) identifies and defines the properties of an open system by means of which the assumptions of a synergistic view are examined; (3) attempts to develop a conceptual web for the unity of mind-body.

The model is developed by utilizing some concepts from the fields of physics, biochemistry and embryology and their meanings in the philosophy of science. Some psychological theory, which has a holistic orientation

in its view of the man-environment relationship, is also valuable in developing a new model of man. Theories that treat man-environment relationships in terms of understanding such relations along the lines of subject-object interaction are transformed to a conceptual analysis of subject-subject relationships. Everything in this universe is presumed to be perceptual and its existence is nothing more than a source of energy in various forms in man's existential system. Mueller (1974), in discussing the perceptual world of the child, points out that perceptual psychology deals with the relationship between the internal and external worlds as they are mediated by the cognitive structures of the individual. However, the present work goes beyond Mueller's view and treats both the internal and the external world as two forms of one entity which exist a priori in man's cognizer from the moment of conception. This point is inferred from a discussion of the mind-body relationship in terms of the manifestation of genetic information structure-functions in the multicellular system. The DNA (deoxyribonucleic acid) which contains the genetic information is seen as evidence for a unity of physics-metaphysics, mind-body and matter-energy in its function as an information system in living systems. A basic psychological unit is postulated to function after the DNA structure-functions and this is termed a cognizer. However, the cognizer includes in its structure a component of an archetypic nature that is described as being the container of mankind's experiences. This functions as a mediator for the relationship between the individual's sensory world and his perceptual world. The process of interpreting the sensory world and/or of acting upon it is seen as a synthesis of sensory data into cognitions, concepts and feelings in a similar way that amino acid is synthesized into various

types of protein to facilitate the growth of the cellular system. Consequently, it is argued that the psychological development of one's existential universe is analogous to the development of the fertilized egg into an adult multicellular system in which each cell has a nucleus and a DNA. The ontological growth of the human being in his physical-metaphysical holistic nature, or his body-mind unity is spiral. It expands from the ideal point of the individual's sense of existence into unbounded space. This existential sense alternates its form from contraction to expansion in a similar way that the radiant of light does. The alteration of contraction-expansion and all forms of opposites in man's psychological and/or physical existence follows the dialectic principle of order-disorder in maintaining a steady state of homeostasis in a tao.[9]

This researcher argues that the dialectic of the open/closed systemic nature of living systems in general and of man in particular carries the potential for understanding the natural phenomena in living systems, i.e., life/death, the order/disorder functions, and the diversity within unity.[10]

The model which is presented in chapter five is liable to be rejected by psychologists who follow Skinner's concept of behavior.[11] Skinner (1966A)

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[9] A tao is a term used in Chinese philosophy to define the unity of all things in one whole which is constructed from the opposites of yin-yang. The yin is the sun and the yang is the moon. Each of these complementary components has the seeds of the other. Thus, their movement is cyclical and their unity is inevitable (Capra, 1975).

[10] Diversity within unity is discussed at some length by Verna Willis in Emergent-Devolvent Synchrony in General Systems: Creativity as a Special Case. Ph. D. dissertation, State University of New York at Buffalo, 1977, chapter three.

[11] B. F. Skinner. The Behavior of Organisms. New York: Appleton-Century-Crofts, a division of Meredith Publishing Co., 1966A (1st pr. 1931).

defines behavior as "a scientific datum," and more precisely insists that behavior is to be treated as a subject matter in its own right. In contrast, the proposed model might be viewed by Skinner (1966A:441) as a non-scientific field, on the grounds that it deals with the internal world of the organism:

> An obstacle in the way of a science of behavior is the failure to understand that behavior may be treated as a subject matter in its own right. The materialist,[12] reacting from a mentalistic system, is likely to miss behavior as a subject matter because he wishes to have his concepts refer to something substantial. He is likely to regard conceptual terms referring to behavior as verbal or fictitious and in his desire for an earthy explanation to overlook their position in a descriptive science . . . The traditional description and organization of behavior represented by the concepts of "will," "cognition," "intellect," and so on, cannot be accepted as long as it pretends to be dealing with a mental world, but the behavior to which these terms apply is naturally part of the subject matter of a science of behavior . . . Traditional concepts are based upon data at another level of analysis and cannot be expected to prove useful. They have no place in a system derived step by step from behavior itself.

This view of what behavioral science accepts and rejects is a closed system view that constrains scientists from dealing with the most humanistic elements if they cannot define their existence by scientific data. The closed system approach, on the basis of which the behaviorists study man's behavior, is vulnerable to critical limitations indulging as it does in the study of a completely different system from the total system from which it is abstracted.

This argument is presented in chapter three of this work. It is pointed out that man's internal world is as significant as his external

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[12] Materialist here refers to the behavioral scientist who accepts a definition of behavior as a scientific datum, but who still indulges in the internal world -- the mental world. Tolman is the example Skinner refers to in this quotation (Edward Tolman, Purposive Behavior in Animals and Man. New York: Appleton-Century-Crofts, a division of Meredith Publishing Co., 1967 (1st pr. 1932).

world, not only on the materialistic (physical) grounds of what behavioral science advocates, but also on the theoretical grounds. The challenge that Skinner leaves to psychologists is that if they wish to find a better way of studying behavior than experimental analysis, they must make different assumptions about man to begin with. The critical assumption made in this study is that man as a living system is both a physical and a metaphysical entity, and just as no matter exists in any exclusive fashion separate from energy, and no energy exists without matter, it is also the case that man's physical and metaphysical worlds are interactively related at all points of his behavioral system. This assumption is at the core of the model which is outlined in chapter five.

Since a researcher who studies man as a behaving system shares common human elements with this unit of his study, then he is coherent with what he observes when he accounts for the subjective element. Research in many ways is as natural as living (i.e., in living, at every point of adapting to a situation, we make choices on the basis of understanding what we encounter). In everyday activities, man chooses to act in a particular manner by safeguarding his communication with other human beings, thereby making meaningful relationships possible. It is that human ability to "know oneself" that a science of behavior needs to come to grips with, so that the literature of the science of behavior would enable its reader to be his own psychologist. A researcher has to assume the responsibility of understanding behaving systems with more depth than the layman, in order to help the non-researcher to have more insight in understanding himself and thus to develop at his own pace. The model which is presented in chapter five examines these assumptions in relation to the properties of an open system.

The model of man as an open system is an attempt at breaking the traditional dichotomies, and reconstructing a "unitas multiplex" view of man's existential universe. This researcher argues on the basis of the interactive nature of being/becoming of man's nature, that perceptual psychology is more "scientifically" progressive than behavioral psychology in its view of man's nature, and that perceptual psychology might be at a point of transformation that requires only a little more effort in order to come closer to the use of multiplex logic and to depart from the linear logic in which it appears to be trapped. Perceptual psychology, in its psychological principles, assumes that nothing in the physical world is in complete correspondence with the psychological world. This observation about human perception as a cognitive process has paved the way for the belief that, by necessity, the percept would be the outcome of the dynamic interaction between the individual and his sensory world. Consequently, one can see a logical justification for assuming that the Gestalt view is based on what may be characterized as open systems thinking.

This researcher views the universe as an open system within which there are an infinite number of sub-systems. Scientists tend to categorize systems into two types: (a) open systems, and (b) closed systems. However, closed systems are defined as constructions that continue to have the same structure and obtain the same objectives provided that all factors around them are kept constant. The argument to be developed is that such a condition is hypothetical, since the factors that surround and are liable to affect any system are infinite and therefore never completely controlled. Thus, no system is ever completely closed in any "realistic" sense. The proposition here is that every system is in the final analysis an open system to some degree. And when the system is a

living entity it is open to the maximum "degree."[13]

When researchers deal with any problem relating to man's nature or to his own behavior as a sub-system of it, they are in fact investigating a concept that is taken from a psychological theory which has some specific kind of orientation. The question is: do scientists so far have a theory of human nature, or a theory of personality that is taken as a common ground for their research? Lazarus (1974) shares this researcher's concern about the lack of such a theory., Further, Lazarus addes that if individual behavior is to be changed or modified, clinical understanding is needed, and this requires a generally accepted theory of personality in psychology. It is on the basis of a similar reasoning that this study tries to formulate a view of man on the basis of multiplex logic which assumes the potential ability of introducing a view that has a universality attribute at its very core. Lazarus (1974:67) says,

> It is an unfortunate fact that the field of psychology has no generally accepted theory of personality . . . The essence of personality is that people are continuously changing, but they also have characteristics that make them recognizable and relatively stable.

This researcher argues that it is not a general theory of personality that is most necessary in order to make a breakthrough into humanism and to transform the field of psychology into providing useful tools for human growth. Rather, what is needed is a view of man and universe that is systemic in its logic, value-free in its orientation, and genuine in its application. Such a view, if ever it comes into being, would enable the

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[13]"Degree" is a term already established in the scientific paradigm. Its use here raises an incoherent semantic sub-system of discrete "degrees" to the meta concept of transformation as a flow of energy. With this new conceptual understanding, "degrees" are no longer systemic gradients in a linear process formation. This is elaborated in chapter three.

"scientist" to formulate his theory with a necessary depth of understanding of human nature and with no fear of being labeled unscientific. The same argument holds true for the artist. A theorist of this orientation is both a philosopher and a scientist at every point of his creative act.

The variety of the proposed concepts in this work and their multidisciplinary foundations is based on Sommerhoff's (1969:148) recognition of the discrepancies between knowledge of parts and knowledge of behaviors of wholes:

> Even if we know down to the last molecular detail what goes on inside a living organism, we should still be up against the fact that a living organism is an organized whole which by virtue of the distinctive nature of its organization shows unique forms of behavior which must be studied and understood at their own level, for the significance of all living things depends on this.[14]

The recognition of commonalities among the various sub-systems within the whole, and of the diversity of each sub-system that makes it distinctively its own specific whole, is another property of an open system. These principles will be elaborated in arguing against the improper usage of the term "level" in the literature of systems thinking. A new term is used to describe the phenomenon of developmental "levels" of unity, which does not perpetuate the confusion caused by popular connotations of the word "level." The proposed new term is: "transformational point." The concept of transformational point is further discussed throughout this work and the new term is shown to be consistent both with a view of man as an open system and with the non-linear logic required to represent that view.

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[14] G. Sommerhoff. The Abstract Characteristics of Living Systems. In F. E. Emery (Ed.), Systems Thinking, 1969, rpt. Baltmore: Penguin, 1972.

The introduction to this study is in itself an example of a structure of a transformational point, having a positional value which is intended to result in communicating to the reader the following points:

(1) The problem of investigation is a conceptual problem. Research aims at examining the tradition on which psychology is based, and at developing a more coherent model of man as an open system.

(2) The trigger for such an investigation is an imbalance at the present time in favor of empirical studies of a quantitative nature for observable behavior (the external world of the individual) as against the covert behavior (the internal world of the individual). It is hypothesized that psychology traditions in their scientific methods are based on linear thinking which contradicts the nature of the unit under study (i.e., man's behavior).

(3) Systems thinking is needed for understanding the behavioral system of man as a system of physical and metaphysical nature which is matter and energy at the same time.

(4) "Man as an open system" is proposed as a model of growth for human beings, be it on the micro and/or on the macro "levels" (transformational points). The assumption is that man replicates his openness wherever he is utilizing his properties of openness. Though he is manifesting different abilities at different times, he is still the same being in a state of becoming (physical/metaphysical entity).

One point needs to be kept in mind as the reader is in communication with this research. It is intended that any chapter of the whole work shall be free to stand by itself as a whole, and that it can be considered as a leading sub-system at any point provided that the whole structural positional values are reconstructed in a transformationally coherent

pattern. If such a criterion is met, then the writer can feel that the commitment to the expression of a strongly held view is fulfilled. It would be desirable, however, that at any point of reconstruction, the reader may find himself expanding the "negantropy" of the whole system by a new input of his or her own.

CHAPTER 2

The Systemic Analysis Method and The Logic of Scientific Discovery in Theory Building

This chapter examines the nature of scientific discovery in search for criteria of demarcation between the closed and the open systems views. Broadly speaking, it is assumed that the logic of scientific discovery constitutes the underlying principles which are used by scientists to explain, describe, and predict the occurrence of those natural events which they select to investigate. In other words, the logic of scientific discovery constitutes the metaphysical aspect of theory building, an aspect that is interactively related with the physical component of the theory (i.e., the actual research which constitutes the basis on which the theory is built or examined). Baldwin (1960:9) points out that any scientific theory has three levels. The highest one is composed of assumptions and definitions, the middle level is composed of hypotheses that are derived from the higher level, and the lower level is the empirical level on which the hypotheses are defined operationally and stated in a way that makes it possible for the researcher to test them.[1] However, Baldwin's view of scientific theory might suggest that these three levels of scientific inquiry are separate in scientific practice. It is argued here that these three levels are not separate, and that the core principle which unites them is the logic of scientific discovery. Hence, it is assumed that no research evaluation of any conceptual web would generate clear understanding for a given theory without examining the logic on the basis of which such theory is developed.

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[1] A. L. Baldwin, "The Study of Child and Development", In P. H. Mussen (Ed.), Handbook of Research Method in Child Development. New York: Wiley, 1960.

The logic of scientific discovery constitutes the conceptualization of causality for a given event in a time-space domain. It discusses the scientific methods which are used by the theory builder in identifying the causes and their effects on a given phenomenon and the conceptualization of the time-space domain in which such a phenomenon occurs. It is assumed that causality is both efficient and teleological, in the sense that an event is caused by conditions that make its occurrence possible, and that these conditions are not separate from the purpose for the occurrence of such event as a whole. The conceptualization of time and space under which the event takes place is assumed to be decisive in adopting a view with an open-system or closed-system nature. In other words, the conceptualization of time-space is hypothesized to be a major factor in deciding whether logic is open (i.e., natural causality) or closed (i.e., classical, rational causality).

This chapter starts with a description of the method of research which is used for evaluation throughout this work. The method is basically one of systems analysis and it is derived from General Systems Theory. Bertalanffy (1968A;32) points out the need for this theory and defines its subject matter as follows:

"There exist models, principles, and laws that apply to generalized systems or their sub-classes, irrespective of their particular kind, the nature of their component elements, and the relations or 'forces' between them. It seems legitimate to ask for a theory, not of systems of a more or less special kind, but of universal principles applying to systems in general. In this way we postulate a new discipline called General System Theory. Its subject matter is the formulation and derivation of those

principles which are valid for 'systems' in general."[2]

This chapter examines literature on the nature of the logic of scientific discovery by using the systemic method of analysis with the objective of drawing inferences based on the characteristics of an open system view as compared with those of a closed systems view. The nature of physical theory is treated as a core reference for understanding the nature of scientific discovery. Special attention is given to the subjective element in scientific discovery and to the various alternatives by which this element is treated. Moreover, a new alternative is proposed by the end of this chapter in which the subjective element is accounted for by studying it rather than by controlling its presence. A conclusion is presented at the end of this chapter in which inferences on the closed systems and open systems logic are summarized.

The Method of Systemic Analysis:

The method of analysis used throughout this work is basically one of systems analysis. This method has not yet been standardized by systems theorists in the sense of there being any generally agreed upon form, as is the case with the experimental method. However, based on a review of the available literature on this technical topic, this researcher has inferred her own method of systems analysis. Cavallo, in a paper on systems research, referred to the difficulties that face systems researchers in

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[2] L. Von Bertalanffy. General System Theory: Foundations Development Applications. New York: George Bragiller, Inc., 1968(A). In this work, Bertalanffy draws the attention of modern scientists to the need of working together to study the same phenomenon instead of treating the various aspects in separate fields of specialization and studying its parts in isolation. General System Theory calls for an interdisciplinary approach of a holistic nature to avoid compartmentalization among various scientists.

formulating a methodology of systems analysis.[3] However, he concluded that a general agreement has been reached among systems researchers during the last 25 years, on the need to develop understanding of properties of wholeness. This agreement, according to Cavallo, is manifested in the various recent anti-reductionist theory builders.

Cavallo (1979:44-45) points out that authors of anti-reductionist orientations see that difficulties of systems researchers can only be overcome through a systematic development of the logic and methodology of systems research in fulfilling three fundamental tasks:

(1) Construction of conceptual means of representation of the systems nature of corresponding objects;

(2) Evolvement of apparatus for description of the most important characteristics of systems;

(3) Construction of formalized systems for description of systems objects, including the formulation of specific rules.[4]

It is apparent, therefore, that methodology has to be able to discriminate between the "conceptual systems" given by the theory building and the "systems objects" he is describing by such conceptual systems. For example, in the case of theory building in psychology, it should be asked: (1) Does

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[3] R. E. Cavallo, "Systems Research Movement: Characteristics, Accomplishments, and Current Development", General Systems Bulletin, Special Issue, Summer 1979, Vol. IX, No. 3, p. 45. This paper was presented at the International Conference of the Society for General Systems Research Movement on August 20, 1979. It is felt, though, that the scholarly audience at this presentation was not satisfied with the underlying logic of this paper. This researcher sensed a common agreement among the audience that Cavallo's presenting GS research as (1) a separate discipline, (2) a field of empirical orientation, a view that is in contradiction with the interdisciplinary orientation and the systemic methodology to which GS theorists are committed (based on participant observation).

[4] Ibid., p. 45.

Skinner's conceptual system of behavior correspond to the human behavior system that is taken as his system object? (2) Does the terminology employed by Skinner correspond to the properties of the individual behavior? (3) Are the rules of the methodology employed by Skinner necessary and sufficient to be taken as reliable for accepting his findings on individual behavior?

Roscher (in Cavallo, 1977:46) points out that a pragmatic analyst requires that as systems analysts, "We should view the pursuit of knowledge in methodological terms as a specific instance of the generic idea of a procedure or process aimed at the development of a result or product. The theory of knowledge 'should' thus be approached from the direction of epistemological methodology, that is, from the angle of the methods, processes, techniques, procedures, and instrumentalities used in the production of knowledge."

This researcher adds, to the pragmatist's approach to analysis, the analysis of the relationship between the view of man and the world of the theory builder and his production of knowledge. The core point of investigation in this work is to see how psychologists deal with the subjective element in scientific discovery. It is assumed in this work that accounting for the subjective element (i.e., the impact of cultural, social and personal values of the theory builder) is significant in solving the problem of isomorphism[5] in research.

Handy, et al. (1973:10), in presenting the Dewey-Bently pragmatic views of scientific method and the course of inquiry, give support to this researcher's stance from the "subjective" element, or the metaphysical

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[5]The problem of isomorphism is inferred from the Gestalten principle of isomorphism which states that "there is no one-to-one relationship between stimuli and percepts, but that the form of experience corresponds to the form or configuration to the stimulus pattern" (Chaplin and Krawiec, 1968:142).

problem. Handy et al. (1973:10) say: "The two-fold construction of observation in terms . . .of what is observed and . . . of the position from which the observation is made, is essential to any dependable knowledge of the kind we call science."[6]

The consideration of the "knowns" and "knowings" as not isolated or separated from what the scientist is investigating, is essential for a systems analyst in evaluating any product of knowledge. This researcher views the rhetoric of General Systems Theory as a commitment to a holistic approach in attempting to evaluate the solution of contemporary problems in research. Unfortunately, systems theorists are mostly trapped by the reductionist approach as they try to either research a phenomenon or evaluate a given research finding. An example of such inconsistency between commitment and action is the Cavallo report already mentioned. Cavallo (1979) goes too far in pointing out the contribution of general systems theory and research to a point of almost claiming that every field of science uses systems analysis, and accrediting the findings of technology, biology, physics, etc., to the systems analysis method. Such a claim cannot be substantiated and neither is it consistent with the commitment of systems theorists to be "holistic".

A major systems analyst, whose ideas are most relevant to this work, is Angyal. In "Foundations for a Science of Personality" he sets the foundations of systems analysis in conceptualizing wholes as systems within systems. According to Angyal (1941:18):

> The whole is never structureless but is a true unitas multiplex, as the philosopher would say. The division of the whole

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[6] R. Handy and E. C. Harwood. Useful Procedures of Inquiry. Behavioral Research Counsel, 1973:10. They define the isomorphic problem as the discrepancy between the observed and the observer.

> into smaller units can be made, therefore, in such a way that the line of division coincides with the structural articulation of the whole itself, and thus the lines of division are prescribed by the structure of the whole itself. The parts which will be obtained by such division are real holistic unitus. . . In this type of analysis one starts out with a vague, but necessary, preliminary picture of the whole. This picture becomes more definite if in the course of analysis one succeeds in determining with greater precision the role of the parts in the total[7] scheme. . . A truly holistic analysis of personality into its internally determined parts has never been made. The conventional way of analysis consists in the division of personality by abstraction into various aspects - the physiological, the psychological, and the social . . . then in a search for units in the artificially defined fields . . . In such analysis one will find, of course, only psychological or physiological units or units of socially defined behavior patterns, but not true parts of the integrated organism. The holistic division of the personality cuts across the conventional classification, and the units obtained by holistic analysis do not coincide with physiological or psychological units. For example, what is considered as a unit physiologically may belong to more than one part of personality and vice versa.[8]

This researcher infers from Angyal's holistic concept, that a systems analysis method has to view any unit or sub-system of any given conceptual network, in relation to all other units individually and to the conceptual network as a whole. This method approaches the problem from within its interactive sub-systems, and beyond its whole structure in relation to its subject matter (i.e., the phenomenon the theory builder is studying). Since theory builders in psychology concern themselves with the individual's behavior and his experiences as he learns, thinks, perceives, feels, adjusts to the environment, etc., holistic analysis has to deal with all these sub-system processes within the whole system of the individual as he interacts with the environment. The concept of "the beyond" the individual as a

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[7] This researcher prefers to use the term "totality" instead of "total" to emphasize wholeness rather than summation.

[8] A. Angyal. Foundations For a Science of Personality. New York: 1941:13.

whole system necessitates viewing the interaction process between the individual and his environment as a whole system process. This approach requires, from this researcher's viewpoint, the donning of new spectacles to study the "organism" and the "environment". This new proposition is similar to Angyal's proposition to "study life as a unitas whole and endeavor to describe the organization and dynamics of biosphere.[9] The subject matter of our considerations are not organismic processes but biospheric occurrences in the integral reality."[10]

In adopting Angyal's systems analysis here, this researcher is committed to focussing her efforts on the formulation of a model of man as an open system in terms of solving the dichotomies of body-mind, physical-metaphysical worlds, being-becoming, and consequently breaking through the linear logic to a unitas multiplex logic that coherently fits the "integral reality" which Angyal describes.

The following points summarize the preceding discussion on systems analysis in the context of the search for an open system of man. The methodology requires:

(1) Discrimination between the "conceptual system" of a given theory and its "systems objects" to evaluate the ability of the theory builder to solve the problem of isomorphism. This includes the theory's epistemology, its operational rules, its methodology, and its findings and interpretations.

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[9] Ibid., p. 100. "Biosphere" is a term Angyal uses to describe the realm of life in which the total process takes place. This realm of life includes the individual (organism) and the "environment", not as interacting parts, not as constituents which have independent existence, but as aspects of a single reality which can be separated only by abstraction.

[10] Ibid., pp. 100-101.

(2) Establishment of a link between the orientation of the theory builder in terms of his view of man and the world, and his production of knowledge in relation to the holistic view of man and the universe.

(3) Employment of an analysis which goes from the general into the particular with a retroductive[11] reflection on these particulars as they relate to each other and to the conceptual system of the theory builder as a whole system. This is to be done with special focus on the aforementioned points.

However, this researcher postulates that literature in the field of psychology, as in other scientific fields, tends to communicate its knowledge in a pattern which is based on classified and hierarchical structures. Such a postulation is justified on the basis of a literature review.

The problem of hierarchical structure in nature and artifact is viewed as so significant by various scientific disciplines that it was the focus of an interdisciplinary symposium in 1968. Whyte, Wilson and Wilson (1968: vii-iii)[12] in an introduction to the proceedings of the symposium, say:

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[11] "Retroductive or hypothetic logic is reasoning (putting together) whereby from an interrelation or interrelations another interrelation or interrelations are derived, but the newly derived interrelation(s) contain more than the premises from which they were derived. There is a leading feedback from conclusion to premise." K. Popper. "The Nature of Research," in The Logic of Scientific Discovery. New York:1959:4.

[12] L. Whyte, A. Wilson and D. Wilson (Eds.). Hierarchical Structures. New York: American Elsevier Publishing Company, Inc., 1969. This work reports the proceedings of a symposium held November 18-19, 1968 at the Douglas Advanced Research Laboratories, Huntington Beach, California. Whyte, Wilson and Wilson, in the preface to the report, say, "Through placing in juxtaposition specific hierarchical systems from the inorganic, organic, conceptual and artifact worlds, it was hoped to gain insight into the problems of levels, parts and wholes, and the origin of the various species of hierarchical structures" (p. vii). Such objectives seem not to have been met successfully. The major difficulty that seems to have confounded the various participants is the question of "reality." The fundamental question is: "Do some or all of the hierarchies we discern in nature possess objective reality or are they subjective patterns derivative from the human mode of perception and conception?" (p. vii).

> The terms "hierarchical structure" and "hierarchy" were taken generally to mean a set of ordered levels. Whereas a more orthodox definition of "hierarchy" requires a governing-governed relation between levels, this attribute was intended only when specified . . . Beyond the questions of definition and classification, several basic problems concerning hierarchical structures were raised: Do some or all of the hierarchies we discern in nature possess objective reality or are they subjective patterns derivative from the human mode of perception and conception; if levels are structural realities, can the origin of inorganic hierarchies be explained in terms of known physical laws without improbable ad hoc initial conditions; can a reductionist explanation be found for the levels of biological organization; do the similarities between the various species of hierarchies and level structures imply a structural commonality that is meaningful on some level of abstraction; if so, can the existence of such structures be derived from some fundamental meta-principle -- informational, combinatorial, topological, or whatever. These and other relevant questions were approached during the symposium along a path leading from the specific to the general. While few answers were forthcoming, the new differentiations and syntheses developed by the participants gave the general feeling that the proceedings produced much of value to the embryo subject of hierarchical structure.

However, in spite of the value which the symposium has produced, Whyte Wilson and Wilson make a number of valid points. They identify two challenging classes of physical and biological problems: (1) there is a need for an authentic physical and biophysical theory of the inorganic and organic structural hierarchies of levels with their similarities and differences; (2) there is a need for a systematic and exhaustive survey of the types of three-dimensional spatial ordering levels in both realms.

This researcher argues that these needs are legitimate provided that they include the interdeterminacy principle and the relativistic concept that cross the tridimensional model of ordering in space time. It is on the basis of the dynamic view of the "quantum effect" that one can challenge the "hierarchical structures" as they are viewed by their theory builders. In spite of their arguments against the static implication of "hierarchical structures", Whyte, et al. (1969:11) argue for its conceivable role: "In sufficiently ordered quasi-stationary systems, mechanical and kinematic representations may for certain purposes be unnecessary. It is conceiv-

able, in principle, that under certain conditions everything is derivable from angles. It seems that a theory may sometimes pass rather easily from central geometrical hierarchical models to the heterogeneous properties of static, stationary, or near-equilibrium systems, thus opening the way towards a "physics of hierarchy".

However, one might ask, is it conceivable for any physical system to have a static, stationary nature after modern physics has established the principle that "matter is in continuous motion"? This question raises many points of interest to those who still have faith in the static "hierarchical structures" for the conceptualization of nature. Needless to say, such a view becomes more difficult to substantiate when it is used in theory building in describing "human nature" and the psychological processes, since the unit of study in psychology is the behavior of a living system - a human system. However, psychologists who recognize this attempt to study response processes (an example of this is Bandura's work - see chapter 5).

Bunge (1969) attempts to define hierarchy, structural level and their epistemological, methodological and metaphysical components. He points out that: (1) "Reality (= world) is an ontology that proclaims both diversity and unity" (p. 22); (2) "The basic element in the concept of hierarchy is the concept of domination in the sense that a hierarchical structure is a set equipped with a relation of domination and its converse, subordination" (p. 17); (3) Level structure is taken to mean a family of sets, having a relation between the sets that represents emergence or a novelty generating process. The emergence relation does not occur unless the elements in a given set are qualitatively homogeneous; and (4) the level structure is a hierarchy only when, instead of the emergence relation between sets or levels, there is an antisymmetric dominance relation.

Bunge emphasizes that one-sided domination is an artifact. He says:

"It is misleading to speak of hierarchies in nature, particularly when referring to evolutionary lines" (p. 19). Bunge's argument is highly relevant to the psychological processes. Any form of hierarchy in the description of human behavior is misleading, especially the idea that human beings are engaged in continuous processes of growth.

Bunge (1969:22-23) presents five ontological hypotheses on the metaphysics of levels:

> O1. Reality (= world) is a level structure such that every existence belongs to at least one level of that structure . . .
>
> O2. In the course of every emergence process (self-assembly or evolution) some properties, hence also some laws, are gained while others are lost. In other words, emergence, though "creative" of new patterns, is not cumulative . . . progress then, when real at all, is not uniform but partial, and in any case, it is not inevitable.
>
> O3. The newer levels depend on the older ones both for their emergence and for their continued existence . . .
>
> O4. Every level has, within bounds, some autonomy and stability. That is, the dependence of a given level on its supporting level(s) makes room for some play. Thus the biological properties are hardly altered if the isotopic composition of constituted atoms changes.
>
> O5. Every event is primarily determined in accordance with the set of specific laws that characterize its own level(s) and the contiguous levels. In other words, not every level takes full part in the determination of any given event: inter-connections are usually restricted to be one level of its neighbors.

According to Bunge (1969:23-25), these ontological hypotheses suggest the following epistemological principles:

> E1. The real level structure is knowable and scientific knowledge is a level structure that matches the former. Stated negatively: no single science embraces the whole of reality. This thesis contradicts reductionism, the epistemological partner of monism.
>
> E2. Every newly formed science has its peculiar objects and special methods. And, although every science retains some of the ideas typical of the parent science(s), it does not

preserve all of them and it introduces new concepts absent from the latter . . .

E3. The understanding of any level is greatly deepened by research into the adjacent levels, particularly the underlying ones . . .

E4. Every level of science has, within bounds, some autonomy and stability, For example, not every revolution in physics has had an impact on biology. And many psychological laws can be found without digging into their neurological bases. This is not only because we ignore most interlevel relations but also because of the objective stability of real levels.

E5. Every system and every event can be accounted for (described, explained or predicted, as the case may be) primarily in terms of its own levels and the adjoining levels, without necessarily involving the whole level structure.

These epistemological principles outline the impact of the assumed level structure of the world or our knowledge of it. Bunge's principles could be utilized within the frame of this researcher's systems analyses for psychological theories. Furthermore, Bunge's methodology of levels, which is given to the metalevel hypotheses and their corresponding epistemological principles, are significant tools for systemic analysis.

In this regard Bunge (1969:25-26) states:

M1. Start by limiting your inquiry to one level. Should this level prove insufficient, scratch its surface for further levels. That is, stick to (methodological) reductionism till it fails: a reduction programme is as instructive when failing as when it succeeds. Methodological reductionism, if open-minded, is consistent with integrated pluralism; level separatism, on the other hand, is not.

M2. Face emergence and try to explain it: begin by attempting to explain novelty away but, should this move fail, take it seriously. That is, start by attempting to explain the new in terms of the old. If this strategy does not succeed, meet the challenge: take the nova by their horns . . .

M3. Explain the emergence of every level in terms of some of the older levels without skipping any intermediate level . . . For example, regard psychological laws - which are patterns not involving neurophysiological variables - as only temporary acquisitions to be completed later on - as end links of a chain to be filled in.

M4. Begin by investigating your class of facts on their own level(s): introduce further levels only as required . . .

M5. Start by finding or applying the interlevel laws. Should this strategy fail, resort to hypothesizing or applying interlevel laws.

Bunge's (1969) scheme for understanding systems analysis is basically one of deductive understanding. He recognizes the significance of the integrative principle, and he claims that the "reality" hypothesis "contradicts every shade of monism (reductionism), for it asserts the originality, hence the irreducibility, of every new level" (p. 27). He recommends reductionism in the methodology of level M1.

This researcher proposes, in brief, a systemic analysis methodology that follows the general principles of epistemology of levels that Bunge suggests. However, the methodology should be congruent with unitas multiplex logic and the method of systems analysis discussed earlier in this section. The methodology for the present work is as follows:

(1) Start by dilineating a general picture of scientific discovery as a holistic system of knowledge.

(2) Choose psychology in the general sense as a focus for systemic analysis and draw inferences from its epistemological principles as they have evolved in the history of scientific knowledge in general, and the history of psychology in particular.

(3) Shift to some sub-systems of psychological theory and examine them on the basis of their ability to describe, understand and predict human behavior.

(4) Consider the possibility of a need for a new model of man and then proceed, with the emergence of new concepts, to start building a new model.

The main point that must be remembered is that systemic analysis has to have the ability to relate to any system of knowledge in a form of system - sub-system without losing its integrative element at any point. This requires a style of analysis that is not one-dimensional. It is at a certain level deductive, at another inductive, but mostly it is retroductive. The logic of analysis need not be unidirectional, because events in nature are not such. The main point in relation to hierarchical structures is that linear hierarchical structures are artifacts. This is true in man-made systems, and evidently clear in living systems, especially in human systems. This researcher rather employs "the process of transformation" to describe the emergence of processes - level structure in Bunge's terms.

The Logic and Psychosocial Dynamic of Scientific Discovery:

Scientists often like to believe that they are objective in their description of "reality" or events that take place in nature. The issue of "reality" has attracted many theorists, and in fact presents itself at the very core of any viewpoint, regardless of one's orientation in viewing man and universe. The "reality" question has its origin in Greek philosophy and it has continued to appear in all history of scientific discovery. Ardley (1950) examines "the foundations of the modern sciences" and points out that originally Greek philosophers such as Socrates, Plato and Aristotle advocated the search for the natural (physis), or what for them was the underlying reality behind appearances. Natural reality to the positivists is whatever persists change. This trend of persisting change is called the physis order of the universe from the Greek philosophers' point of view. The antithesis to this form of order is the "nomos." This concept was introduced by Protagoras who insisted that "man is the measure of

all things." According to Protagoras's dictum, there is no objective reality. This view stands in opposition to the objective view. The dialectic of these two extreme views, namely, physis vs. nomos, was synthesized by the "harmony of faith and reason" as proposed by St. Thomas Aquinas in the 13th century. St. Thomas's task was to unite the purely rational philosophy of Aristotle with the structure of Christian theology. Ardley (1950:0) quoted St. Thomas Aquinas in an illustration of physis and nomos as a form of the contrast of juridical natural law with human positive law: "There is an eternal law, namely the reason existing in the mind of God, by which the whole universe is governed. And: The rational creature has itself a share in the eternal reason and derives from this its natural inclination towards its proper action and end; and this manner of sharing in the eternal law, which is peculiar to the rational creature, is called the natural law."

This view of man and natural laws does not help in understanding the interactive relationship between the physical (physis) and the metaphysical (nomos) of universal "orders". Aquinas's view is dualistic and, in essence, reflects the motif of the culture of its producer. In the 13th century, theologians wanted to give rebirth to scholastic philosophy but simultaneously felt the need to be consistent with the teachings of the church. Thus, assuming that the existence of God represents the "natural law" seems to have been a necessity to those scholars, but it does not follow that it represents the true picture of what man is. Nevertheless, it does leave space for man to view the world in his own way. However, man is not given the credit for figuring out what natural laws are except inasmuch as he approximates his self from "proper action and end" (i.e., God). Still, the two views of "physis" and "nomos" were not resolved in such a way as to

permit a modern scientist to completely accept either one. The first leaves the scientist with the closed view that is typical of Plato's society while the second leaves the scientist in a completely open system with no boundaries - "Man is the standard of all measures".[13] Neither extreme fits adequately into the systemic principle of universe. This researcher defines the systemic principle of universe as a multiplex order of open-close nature, that unifies the diversity within unity. Every system is structurally composed of sub-systems, and is itself a sub-system in relation to other universal sub-systems which make up the structure of universe. However, the sub-systems within any system are in dynamic functional relationship in terms of their positional value, at any point of their transformation. According to this logic physics and metaphysics (physis and nomos in Greek terms) constitute a whole system and they are interactively related at any point of their sub-structural systems. If physis is described as the external reality, and nomos is viewed as a relation to such external reality, then it follows that any external reality that is assimilated by the observer would be reconstructed in a way that has a "meaning" for the observer.[14]

Bridgman (1936:9-10) presents historical evidence of the sharp contrast between the physical and metaphysical methods of describing events. He says,

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[13] Plato's closed system is evident in his Republic, where society in its ideal structure follows a strict static stratification. The upper ruling class, corresponds to the brain and constitutes philosophers and highly rational people, the middle class corresponds to the heart - the middle structure of the body - and is constituted of the industrious and warriors; the lower class corresponds to desire - the genital area of the body - and these are the slaves.

[14] Meaning, according to P. W. Bridgman, (The Nature of Physical Theory, New York: Dover Publications, 1936), has a general aspect which is a self-analysis product, and an operational aspect that is attached to it by carrying out the physical operation actually (pp. 8-9).

> The procedure of Einstein was in sharp contrast with the former method of defining concepts, as for example, the celebrated definition of Newton of absolute time as that which follows uniformly, independent of material happenings. In the first place this definition was in terms of properties, instead of operations, and in the second place the properties themselves had no operational definitions in terms of actual physical operations, but were defined in terms of metaphysical and idealized operations, which could, therefore, contain no assurance that they correspond to what will be found in experience. As a matter of fact, they were found not to have such correspondence to a sufficient degree . . . the convention that physical concepts be defined in terms of physical operations is such an obviously useful one that it is coming to be accepted by physicists and demand tacitly.

The essential contribution of Einstein's "relativity" and its co-partner quantum theory, is that "physis" and "nomos" are to be viewed in no absolute sense or any form of separation. Quantum theory is often referred to, by systems thinkers of an open-system view, in relation to the behavior of particle-wave activity. It is observed that the particle is simultaneously a wave and a particle. Which aspect is observed depends upon the method of observation, since observation itself alters the state of motion. A particle-wave activity in relation to quantum mechanics is analogous to "rabbit-duck" perception in psychophysical illusions. The phenomenon of a particle-wave activity is a fundamental evidence for Heisenberg's principle of Indeterminacy.[15]

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[15] Heisenberg's principle of indeterminacy states that material is in continuous motion. However, the motion of the matter is not completely determined by "position" and "time", for neither time nor space is absolute; both space and time are dynamic in their interactive relation to the object, and the relation of the object to the observer. "Wave mechanics makes a great advance over former theories in its recognition that the act of observation is essential feature in any physical condition. . .and the thesis of new theory is that no act of observation can be performed without interfering with the system in a manner not capable of complete control." In, Bridgman (Ibid.:122). This fact, of uncontrollable interference associated with the act of observation, makes it difficult to expect a mathematical function of the observer or a report of the physical act in any absolute sense. For this reason the operational act is defined mathematically by probability figures rather than by absolute ones.

See also Banesh Hoffan. The Strange Story of the Quantum, New York: Dover Publications, 1947, p. 149.

In view of the "quantum effect" on particle-wave behavior, one can see remarkable evidence for the abandonment of the static concept of time and space, and for adherence to the Greek precedent of separating the "physis" order from the "nomos". The indeterminacy principle and the relativity concept of time and space are scientific evidence of the necessity for multiplex logic. Statisticians attempt to gratify this need in their formulation of the "probability" mathematical equations. However, probability concepts might be impotent to deal with the principle of indeterminacy when the raw data is collected on the basis of static-determined hypotheses, especially the directional ones. The essential problem of the scientist is the selection of apparatus for observation and measurement. This researcher is in agreement with Bridgman's view (1936:122): "It may be hopeless ever to expect a mathematical formulation of the observer; the fact that the theory is itself a creature of the brain of the observer who is trying to formulate a theory which shall include his own brain would lead one to expect mathematical difficulties." The problem of reporting observed data in mathematical equations becomes more complex when one views mental processes (observation) beyond the function of the brain. This work stresses the importance of finding a model of man as an open system in which the body-brain dichotomies do not exist, and in which reality is the interaction of the physical and metaphysical world.

The question of objective vs. subjective reality, in research, seems never to have been settled in favor of one direction or another in theory building. However, in normal science, scientists tend to view their work in terms of an objective search for "natural" laws. In this regard, Kuhn (1970) presents a thorough argument on the basis of examining the history of natural sciences. He asserts that science is not free from the subjective

element.[16]

This researcher assumes that the logic of scientific discovery is not separated from its subjective psycho-social dynamic element. Since philosophers, starting with Aristotle, tend to view logic as being hierarchically juxtaposed to scientific discovery, it is worthwhile to examine this position and analyze its relation to the assumption that scientists are not free from the subjective element. Aristotle is taken as an initial example for examination, since his logic is a heritage of Western theory building. Ardley (1950:16) presents a summary of the Aristotelian program which was originally given by O'Neil:

> Aristotle held that every existing individual was what it was by reason of its essence or inner ground. Hence we can have scientific knowledge of an existing individual only when we are able to trace the connection of contents of that individual with its essence. The scientist or philosopher attains truth when he analyzes and re-synthesizes an individual in such a way as to make clear the inner necessity that links the sensible accidents of that individual with its essence. He is started on this quest by observing facts of experience. These facts, inasmuch as they are merely known to happen, belong to the world of opinion, not to the world of science. But their happening suggests to the scientist or philosopher a problem: the problem of demonstrating a necessary connection between the observed fact and the essence. The solution of this kind of problem involves both induction for the purpose of discovering essences and first principles, deduction for the purpose of converting a mere conjunction of facts into a rational connection. Should our scientist or philosopher succeed in demonstrating this rational connection, his conclusion is scientific or philosophic, he knows not merely that the fact happens but also why it must happen.[17]

Several points could be inferred from the Aristotelian program: (1) science and philosophy are to be viewed as one thing; (2) scientific

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[16] A detailed analysis of T. Kuhn (1970) is presented below on pp. 54-66 and a summary of his paradigm is given in the Appendix A to this work.

[17] Essence is defined by Aristotle as the persisting element that does not change, it is the "physis" order or the objective reality of nature. In G. Ardley, Aquinas and Kant: The Foundation of the Modern Sciences, New York: Longmans, Green and Co., London, 1950.

knowledge follows a methodology that has a pattern; the pattern proceeds sequentially from particular to general (induction by observation), and then tests the connected facts against a rational pattern or logic of deduction (from general to particular); (3) experience by observation of the actual operation is separated from the logic of demonstrating its rational connection.

Let us see now, how these scientific rules that the Aristotelian program offers work in actual scientific practice. The focus here will be on the field of physics, the natural science with the greatest reputation for "objectivity". This researcher does not argue with the assumption that scientists and philosophers should be viewed as one entity. Such an assumption supports the view that physics is not separated from metaphysics, assuming that rational analysis is the function of the philosopher and reporting data as it occurs in nature is the function of the scientist. Since rational analysis accompanies observation at every point, a philosopher is a scientist, provided that one accounts for the element of intuition in addition to logic and empirical observation as a source of knowledge. Intuition, however, is not even mentioned in the Aristotelian program. Aristotle instructs the scientist to follow induction, and then deduction, and eventually to separate the actual operation from the logic of its demonstration. Bridgman (1936) points out several problems that the physicist encounters as he investigates natural events. These are, briefly, (1) the problem of meaning in describing the operational aspect (in Aristotelian terms, the actual operation) of a physical phenomenon; (2) the problem of isomorphism between the structure of language, thought and the structure of direct experience; (3) the problem of generalization in logic; and (4) the problem of relativity in mathematics.

The first problem lies in the fact that "meaning" has a self-analysis component and an operational component. As the scientist identifies a given operation he is relating to it. Thus he gives it a private meaning of his own that requires self-analysis; however, he still has to identify the meaning of the operation in terms of actual events. These two components in fact are not separate, and Bridgman maintains that, whatever meaning the scientist gives to the operation, it has a subjective element by the mere fact that he as an individual has made such a choice. The most that the scientist can do to "objectivate" his choice is to perform self-analysis and bring the experience to the conscious level (i.e., his awareness).

The second problem of isomorphism is evident in the fact that there is no one-to-one correspondence between the structure of language and the structure of direct experience. "All we can say is that we recognize certain features in language, and that we can set up and maintain an approximate correspondence between some of these features. But nothing could be further from truth than that there is complete correspondence of structure between all experience and all language, or even between any limited aspects of language and experience" (Bridgman, 1936:23).

Bridgman believes that isomorphism is a real problem because the language structure of its nouns or verbs is static at certain levels but dynamic in relation to describing acts or operations.[18] Since the scientist

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[18] For example, the statement, "This is a door" is static in comparison to the statement, "I open the door". In the first instance, door is an object not involved in any action, relatively speaking. The door as such is not operated upon. But in the second instance the verb "open" is describing a process that is dynamic in relation to the door and the person who opens it. Thus it cannot be assumed that the door in the first instance corresponds to the door in the second instance, by any objective measure.

takes note of an infinite number of features for a given operation that he is trying to describe, he has to make a choice to concentrate on certain features at the expense of others. Thus, the words that describe these features, whether nouns or verbs, have a private structure which mirrors the scientist's choice.

The third problem, generalization in logic, requires that the statement should stand the challenge of any single case in which it is not correct. In a closed class of objects it is easy to prove whether the statement as a generalization is true or not. One can arrive at generalizations in a closed class of objects either by experiment, or by method of exhaustion. But the scientist cannot hope to do this when the class of objects is open, or infinite. What adds to the problem of generalization is the concept of property of things. Bridgman (1936:43-44) argues:

> This position involves the thesis that things have properties fixed and inherent, independent of anything that we may do about it. This is merely an aspect of the trait of thought of endeavoring to analyze experience into little frozen bits, and neglects the consideration that experience is essentially activity. "Property" is an invented concept, defined itself by the property of that things have properties in and of themselves, independent of what we do or think. But it is always dangerous to define concepts by their own properties, and in this case we have obviously attempted the impossible, for we have neglected to remember that "property" must find its meaning in operations as performed by someone, so that it is meaningless to talk about the thing in itself, for always we have the system of operator and operand. That is, here again is an example in which we have failed to achieve complete success in inventing the kind of concept we wanted to invent because we failed to take into account an inherent limitation.

The problem of demonstrating a necessary connection between the observed fact and the essence, which the Aristotelian program expects scientists to solve by logic, is apparently not solveable by such means, according to Bridgman's argument. Thus, having faith in logic as a tool of solving the subjective element in scientific methodology is contrary to

the evidence that generalizations cannot be made when scientists deal with an open class of objects, especially when these objects are in operation.

The fourth problem that physicists encounter in their investigation into natural phenomena, is viewed by Bridgman in relation to the application of methematics. He says, since mathematics is the language of the "possible" and it implies the concept "might exist", then the question becomes, what is the operational meaning of the words "possible" and "exist"? Bridgman's (1936:51-52) answer to his own question is:

> It seems . . . that things exist because for one thing the concepts work in the way I want them to . . . Mathematics is not limited simply to results that have been investigated, but goes further and says something about any thing that we might do at any time in the future. The reason that this sort of a description has appeal must be sought in the realization of mathematics that the objects and concepts of mathematics are not subject to the same sort of control as the objects of our material experience.

The mathematician talks about the mathematical relation, then the relations of the mathematical objects. This argument illustrates the difficulty of applying mathematical analysis to descriptions of the observed data. At this point the issue of isomorphism, the question of the observed in correspondence to the observer, becomes an issue. Such a problem is most obvious in view of the fact that the "observed" structure as a system of relations among mathematical concepts is not congruent with the "observed" system's structure of the experience in operation. This discrepancy between the observer and the observed leads to the conclusion that mathematics does not help the scientist in reporting reality as it is in "actual" operation.

One might argue, however, that mathematics will continue to be a useful tool in describing the quantitative aspect of experience. The question is: How useful could the apparatus of measurement be when its structure is

static and the event it is measuring is dynamic? This question suggests that there is a problem of the existence of uncontrolled events, and implies that it is difficult to quantify events as they occur in nature. Scientists deal with this problem by utilizing the concept of "probability". However, Bridgman argues that the concept of "probability" as a "property" is not applicable to the individual event but only to an individual event plus a setting. The setting, however, requires the repetition of the event under identical conditions numerous times (p. 101). The question remains as to whether it is possible to replicate completely the conditions for the repetition of any event. The answer, based on pure quantum mechanics, and its co-partner the Heisenberg principle of indeterminacy, is negative. Scientists cannot assume the existence of "identical" conditions unless they can control all conditions under which a given event has occurred. This is impossible unless "time" and "space" are static and thus reversible. Since "time" and "space" are neither static nor reversible, the "deterministic" attitude or view of scientists leads them nowhere. Besides, as long as the "probability" concept is applicable to individual events and their settings, probability is an artificial concept. It is artificial because, though it claims the responsibility of solving the problem of indeterminacy, it has within its claim the seeds of assuming determinacy in searching for "identical" settings. Scientists as such seem to move in a closed circle. However, there is still a source of knowledge that scientists have, to the present time, refused to utilize. It is the thesis of this work to bring this neglected source of knowledge into the picture, namely, intuition. This concept will be discussed later in this work after a further investigation of scientific logic has been undertaken.

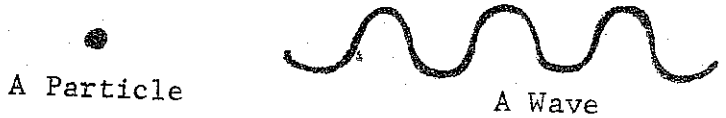
The Heisenberg principle is a significant finding that seems not yet

to be utilized by social scientists. To say the least, this principle presents strong arguments against the acceptance of classical views regarding position and momentum of a particle as operations. The classical view holds that the time and the place of an operation must be given to decide the momentum, for otherwise the physicists could not know exactly what to do. Bridgman (1936:126) argues, "If time and place must be exactly specified in fixing the operations of the measurements, then by the determination principle itself we no longer have a free choice of accuracy with which we shall measure the momentum and energy, whereas the possibility of a free choice as to whether momentum and energy shall be measured with accuracy is basic to wave mechanics point of view."

This dilemma facing the physicists, in quantifying the observed behavior of particle-waves, would be more of a dilemma for psychologists in their attempts to quantify the behavior of individuals on the basis of observation. The individual in his relation to the environment, is in a particle-wave relation. The peculiarities of particle-wave behavior are similar to those of the individual-environment behavior (The individual-environment relationship in terms of influencing one another might be conceived after the particle-wave behavior. See chapter 5).

FIGURE 1

Particle - Wave Relationship
(After Capra, 1975:67)



Quantum theory states that particles are waves, and this implies that they behave in a very peculiar way. Capra (1975:192) describes this

peculiar behavior as follows: "Whenever a subatomic particle is confined to a small region of space, it reacts to its confinement by moving around. The smaller the region of confinement, the faster will the particle 'jiggle' around in it. The behavior is a typical 'quantum effect', a feature of the subatomic world which has no macroscopic analogy. . . particles are represented, in quantum theory, by wave packets. . . the length of such a wave packet represents the uncertainty in the location of the particle."

Figure 1 shows the particle-wave relation: the analogy between man's behavior in his environment and the "quantum effect" is clear in the difficulty of separating the "self" from the "others" in and around the self. In spite of the fact that every individual shares his self with others, he also has a "self" which is uniquely his. The function of the self that discriminates the individual from "others" in the socialization process, but still is linked with these others in any social interaction, especially in a close relationship, as in the case of love, appears to be analogous to the behavior of particle-waves (chapter five discusses this analogy in more detail).

In short, the preceding discussion on the Aristotelian scientific program, in light of "The Nature of Physical Theory" (Bridgman, 1936 and Capra, 1975), shows that scientists face difficulties when they base their understanding of the physical phenomena in nature on the inductive, empirical, quantitative method. The core problem that scientists continue to struggle with is the problem of isomorphism, which is inherent in describing any phenomenon operationally. The discovery of the indeterminacy principle in particle-wave quantum theory adds to the challenge that scientists face in trusting the deterministic paradigm in solving any scientific problem. In quantifying an event operationally, they face the challenge of

the indeterminacy principle even when a probability concept is utilized. The whole argument suggests that the subjective element is evidently uncontrollable and that the time-space domain is unstationary. Thus, this researcher concludes that the subjective element must be accounted for rather than ignored. It is evident that the subjective element will not be accounted for merely by attempting to control events in a replication of experimental conditions. The point is, that since time and space are dynamic, settings can never be identical in any operational way.

What can scientists do in view of the aforementioned arguments? This question implies a need to search for an alternative method to the established empirical scientific quantitative paradigm, which is based on the deterministic view of classical concepts of time and space. For such search, the following section examines some alternative views of the logic of scientific discovery.

Alternative Methods for Studying Events in Nature:

The suggestions for an alternative methodology put forth in this section are based on Popper's (1968) and Kuhn's (1970) logic of scientific discovery and their proposals for dealing with the subjective element in scientific paradigms. The discussion will proceed to examine the available qualitative approach in psychology and then develop a new proposal of methodology for accounting for the subjective element in research. The new proposal is used in examining the conceptual network of psychological theories and their evolution through history.

Popper (1968) examines the logic of scientific discovery and like Bridgman (1936), argues against scientific generalizations based on induction. Popper sees the inductive logic of the empirical approach as tools

which lead to infinite regression, and that the universal statements based on the inductive method are not logically justified. This first criticism is based on the fact that in open classes of objects, an infinite number of instances exist that cannot be reduced to any generalization. "No matter how many instances of white swans we may have observed, this does not justify the conclusion that all swans are white" (Popper, 1968:27).

The second criticism Popper levels against the inductive method is that the method as it appears in empirical science does not offer a clear criterion by which scientists can differentiate between scientific findings and non-scientific statements. Popper argues that there is no clear demarcation between science, mathematics and metaphysics. He says that the claim that metaphysics is nonsense because it cannot be studied by observation does not help to develop a theory of knowledge. The fact that every scientist has inspiration and uses speculations, which are basically metaphysical by nature, makes it obvious that metaphysics is not nonsense. For this reason Popper assumes that inductive logic fails to recognize that every discovery has an irrational element in the mere fact that there is a sort of "intellectual love" between the scientist and the new idea he discovers.[19]

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[19]An example of this "intellectual love" and its existence is seen in the story of the founding of the world's first psychological laboratory at Leipzig. "Sporadic psychological experimentation had been going on in physiological and physical laboratories and in private quarters for a long time. Stumpf is said to have claimed that he had a psychological laboratory in the early days, but that he 'carried it about in a cigar box under his arm.' (This is intellectual love). The box contained tuning forks. In 1875, when Wundt went to Leipzig from Zurich, the Ministerium, 'with the concurrence of the Academic Senate,' placed at his disposal a small unused auditorium in an old refectory building. In the same year Harvard University gave William James two small rooms for similar use. At both institutions experimentation was begun in 1875 in space made available, but neither institution claimed that a laboratory had been 'founded' then. Wundt's choice of 1879 as the important date began when the space assigned to him began actually to contribute to scientific progress was made for a good purpose even if it was not a 'founding' as it has so often been said to have been. E. Boring. History, Psychology, and Science: Selected Papers. Eds., R. Watson and Donald Campbell, New York and London: John Wiley and Sons, Inc., 1963:22-23. (Based on Wundt's writing in 1909).

This researcher added to "intellectual love" as a metaphysical element in discovery, the availability of social and physical conditions that promote the motivation of the scientist to pursue his investigation. This is evident in the story of Wundt's Leipzig psychological laboratory (see footnote 19). Harvard University also established a laboratory for psychological experimentation in 1879, but the distinction of being founder of laboratory experimentation is assigned to Wundt's work in his Leipzig lab. It could be argued that national pride is a factor in scientific discovery since there was evidently competition between Harvard University and Leipzig University in the history of psychology. The scientist's motivation expressed in his "intellectual love" for his work, is affected interactively with the social dynamics of his scientific community. Who knows how the psychological laboratory method would have evolved if Stumpf's "cigar box" containing his tuning forks had been a laboratory such as was made available for Wundt?

Popper argues that the result of such evidence about the existence of a metaphysical element in scientific discovery leads the empirical scientists into confusion between knowledge of psychology (and sociology, from this researcher's viewpoint) and knowledge of logic. Popper argues in a similar vein as Bridgman (1936) that an empirical basis consists of observational data which are originally perceptual in nature and are thus psychological. Bridgman (1936) describes the observational data as a problem on the basis of operational experience. In spite of these problems with observational data, scientists take them as the basis of objective conclusions. The third criticism Popper levels against the inductive method is that inductive logic is reductionist in nature. It leads the empirical scientists to be atomists and to assume that any scientific statement should be capable

of being reduced to elements. Scientists as such are positivists; they aim at verifying their hypotheses on the basis of observational data, rather than testing the hypotheses with the aim of figuring out their falsity.

In light of this criticism, Popper proposes a deductive method of testing. The whole theory of deductive method of testing aims at falsifying rather than verifying the initial statement that the scientist makes. This theory consists of the following six logical propositions:

Proposition 1:

Universal statements should be justified logically. Therefore, the initial state of building a theory is to conceive a new idea and treat it as a hypothesis or a system that needs to be tested in a way that allows for the possibility of refuting it by experience.[20]

Proposition 2:

In deductive testing the scientist has to test falsity and not verifiability. The procedure would be to test it as a system against other available statements of the same nature. Once the statement survives the logical internal and external tests, then the scientist deduces singular instances and applies the general theory to each instance. Evaluation of the power of a theory arrived at by this procedure lies in how often it survives the singular instances in experimentation (i.e., the more it proves to be not false the stronger the hypothesis). However, it should always be open to experiences that might refute its validity.

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[20]Experience is described by Bridgman (1936: Op. cit.) as the direct conscious experience which is operationally defined as the ability to understand the past events and accept future events on the basis of the analysis of relationships among various identified events that happened in the past. This is a fundamental approach to searching for predictability, but since no experience is a closed system, its description should be undertaken by using a probability concept (Bridgman, Op. cit., pp. 15-17).

Proposition 3:

Deductive testing separates the knowledge of psychology from the knowledge of logic. The knowledge of logic, according to Popper, concerns itself with investigation of patterns of thoughts, while the knowledge of psychology deals with empirical data. Thus the deductive testing method eliminates the confusing element that can possibly be created as a result of using the inductive method.

Proposition 4:

Demarcation criterion in the deductive method is not a matter of labeling metaphysical problems as nonsense and empirical science as meaningful. Rather it views empirical science as being knowledge of psychology, while metaphysical questions deal with the knowledge of logic. Thus both empirical and metaphysical science are meaningful for the theory of knowledge, since a scientist has intuition and inspiration that is metaphysical in nature but preliminary to his initial universal statement.

Proposition 5:

Experience as the basis of empirical science should be used as the basis for testing the application of validity by falsifiability. This proposition assumes that all systems should be treated as one synthetic unit; our investigation of any system is a matter of choice of focus. However, the scientist should be fully aware of the many number of worlds that are interrelated. The world of investigation is just one of the infinite possible worlds that could be tested both logically and experimentally (i.e., by experience). But here experience is considered in the singular instance, not in a universal sense as is the case with inductive logic. Experience is perceptual and thus psychological.

Proposition 6:

Objective and subjective problems are tested in the deductive method of testing by assuming that the objectivity of scientific statements lies in the fact they can be inter-subjectively tested.

Popper's criticism of inductive logic on the grounds that it leads to infinite regress, and his proposal of deductive testing as an alternative method for scientific discovery does not solve the scientist's problem of how to deal with his universe of investigation. To start with, deductive testing is linear in its procedures; it instructs the scientist to proceed from the general into the particular. However, linear logic is not coherent with the interactive relationships among the infinite interrelated subsystems in any system, especially in living ones. Secondly, deductive logic does not discuss the nature of how to arrive at the tentative universal statement that a scientist is supposed to test. Thirdly, he needs to have a clear criterion by which to assess the value of the initial statement. Questions such as whether the statement is new enough to deserve inquiry; whether it is worth the trouble of testing in terms of its feasibility or applicability; and whether there is a clear criterion for logical testing by which internal and external consistencies are tested, must be asked. Fourthly, to say that the world is multidimensional or contains an infinite number of possible logical worlds does not solve the problem. What one needs to know is how to make a choice in focusing on one of these worlds. Add to this that the deductive method of testing is not value-free (and perhaps no method is), starting from its initial stage of conceiving an idea as a new hypothesis or tentative theory and through its decision that the statement is refutable by experience. This researcher argues that negativism and positivism are like two faces of one coin. They form the harmony of the

opposites in a unitus multiplex form of conscious experience of the event in operation. This means that positivism and negativism are interactively related in a manner that is best described as a "Yin - Yang" form of Taoism.[21] The harmony of the opposites could be partially achieved by action research or a retroactive method of investigation.

This researcher views the solution that Popper gives to the "demarcation" problem in Proposition 4 as non-practical, and contends that it creates a bigger gap between the observed and the observer instead of reducing it to solve the isomorphism problem that Bridgman (1936) points out, which was presented earlier in this chapter. Science is man-made, a fact that scientists have to admit to by accounting for the subjective element instead of being done with it. According to this view scientific method as it stands for eliminating the subjective element is dogmatic rather than open in the same nature of the phenomena it investigates as they are actually happening. Science, in accounting for the subjective element, should be open in its objectives, tools and interpretations. Being aware of the psychological element in the rigorous findings of any field might help in the formulation of different ways of interpreting them. The significance of admitting to the fact that scientific findings are not "objective findings" promotes the potential of innovative research without fear of being labeled non-scientific. This brings scientists closer to the "truth" as an interplay between the physical and the metaphysical worlds, and unites them into one whole.

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[21] "The Taoists saw all changes in nature as manifestations of the dynamic interplay between the polar opposites Yin and Yang, and thus they came to believe that any pair of opposites constitutes a polar relationship where each of the two poles is dynamically linked to the other", In F. Capra, The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism, Berkley, California: Shambhata Publications, Inc., 1975, p. 114. Taoism means truth seeking after the philosopher, Tao. Yin means negative, moon or darkness; Yang means positive or light, sun.

Physics, as a prominent scientific field that is viewed by most scientists as one of the most "mature" disciplines, in its model of investigation and its tools of interpretation, does not deny the subjective element. Rather it tries constantly to find ways for dealing with this element. Although the deductive method of testing calls attention to the view of the universe as open-ended, and to recognizing the existence of infinite instances in nature, it nevertheless proposes a procedure of closed system logic. The deductive method of testing is closed because it demands a methodology which dichotomizes psychologism from logic (rationalism). In this sense it bears similarity with the Aristotelian program of scientific discovery. Though Aristotle was a positivist and Popper a negativist, in the final analysis they are both reductionistic in their view of the world.

This researcher argues that there is a gap between both the Aristotelian or Popperian approaches, and reality. "Reality" in this work is defined as the inherent property of the world, namely, as being dialectic, dynamic and transformational. The evidence for such a view is the fact that when any matter is in motion it can be transformed from one form to another and that the time-space domain has not been considered stationary in the Newtonian sense, ever since the quantum theory brought to light the evidence of particle-wave behavior. These facts are not new in nature but they are new in the sense of having been discovered by scientists who wore different spectacles and thus perceived new things by their Gestalt perceptual switch. It is with such a realization that this researcher is searching for a well-rounded logic for scientific discovery - logic that can account for the harmony of the opposites and break through the artificial dichotomies that either negativism or positivism create. The closest position to such a dialectical view is that of Kuhn, with his notion of the scientific paradigm.

The procedure for scientific discovery in Kuhn's view is two dimensional, including verifiability and falsibility (Kuhn, 1970).[22] However, the Kuhnian paradigm has been charged with being a copy of Popper's logic of discovery and Kuhn has even been discredited from any innovation.[23] Kuhn (1972a) attempts to point out the similarities and differences between his views and Popper's in a rather lengthy paper. The thesis of Kuhn's paper accounts for differentiating between the logic of discovery and the psychology of research. Kuhn (1972a) points out that he and Popper have selected the same scientific aspects to investigate, but they differ in how they perceive these aspects and in how they evaluate their significance. Both agree that: (1) scientific development is a dynamic process; (2) science is not accretion of concepts, it is rather a transformation of conceptual frames; (3) they turn often to history to seek facts; and (4) outstanding science should be viewed as revolution.

However, Kuhn argues, they arrive at these conclusions by different modes of analysis. The scheme of analysis that Popper and Kuhn use is basically the same in its structure (see figure 9 in Appendix B), but not in its functional logic. Four major dimensions are chosen to describe the scientific development: (1) science practice, (2) scientific criterion, (3) method of research, and (4) nature of revolutionary science. In reference to the first dimension, Kuhn (1972b) interprets Popper as saying that scientific practices are to be processes of testing and falsifying theories

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[22] T. Kuhn, The Structure of Scientific Revolution, (1970), is footnoted in the introduction of this work. It is viewed by this researcher as a source book for examining the logic of scientific discovery, and as such given special attention. A summary of Kuhn's work is given in Appendix A in the form of propositions. It is argued that these propositions are valuable in examining any scientific discovery.

[23] A full account of scientists' reactions to Kuhn's paradigm appears in LaKafos and A. Musgrave (Ed.). Criticism and The Growth of Knowledge. London: Cambridge University Press, 1972. (Presented in the following pages of this work).

of existing paradigms. Kuhn himself, in contrast, argues that scientists practice normal science by puzzle-solving and they make their choice of pieces for the puzzle on the basis of their commitment to the theory. Thus scientists test their abilities as scientists rather than testing a theory in a given field. The scientific criterion on the second dimension therefore is expected to be different from the Popperian criterion. Popper (1959) believes that the science criterion should differentiate science from non-science. The criterion to him is the ability of scientists to validate their theory logically by checking its internal consistency by discourse and then testing it empirically. Kuhn (1972a) views such criterion as rigid and distinctly philosophically based. He argues that only when researchers leave discourse and start puzzle-solving does science start. Prior to that, knowledge is mere argument and speculation. Thus Kuhn believes that the criterion of demarcation between science and non-science is arbitrary, and lies in normal science (i.e., puzzle-solving). Both Popper and Kuhn arrive at the conclusion that scientific language is not objective. But this conclusion is based on logical validation for Popper, while it is based on the sociological sense of paradigm for Kuhn.[24] The method of approach with which both identify as the preferred approach for scientific development is the deductive method. However, the objective of scientists, according to Popper, is to falsify rather than to verify the theory. Kuhn argues that during normal science, scientists approach research by verification.[25] He calls attention to the significant role of

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[24] See Appendix A, Propositions 2 and 8.

[25] See Appendix A, Propositions 3 and 4.

the falsification approach especially during periods of scientific crisis.[26] The best scientific approach to reach the goal of outstanding scientific discovery, according to Kuhn, is the joint approach of verification and falsification.[27] The "progress of science"[28] is felt when the crises of revolution are resolved (Kuhn, 1970), while revolution according to Popper (1959) occurs suddenly and only by means of falsification. Kuhn (1970) argues that revolution follows a scientific crisis that is out-putted by transformation. It is best described by a Gestalt-switch that mediated the scientific anomalies in a holistic perceptual transformation. Thus the output of this thorough analysis for the similarities and differences is seen in Figure 9 as showing the structural sharing areas of interest but with each being perceived from different angles: (1) According to Kuhn, scientific development is described as a dynamic process that is transformed by the psychological sense of belonging to a scientific community,[29] while Popper views such development as an output of deductive discourse for the logic of research structure; (2) normal science is the accumulated rules and facts that are practiced by scientists according to Popper, while normal science functions as a tool of articulation of science paradigms according to Kuhn; (3) the development of science from the Popperian view is the outcome of correction of mistakes by means of falsification, while the progress of science is an inevitable transformation process, from Kuhn's point of view; and (4) the new theory according to Popper is a conceptual frame of

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[26] See Appendix A, Propositions 6 and 7.

[27] See Appendix A, Propositions 7 and 9.

[28] See Appendix A, Propositions 10; 12 and 13.

[29] See Appendix B.

logical validity that is set to be falsified rather than verified. In contrast, Kuhn holds the view that a new theory or a new paradigm replaces old ones by established rules. The process of scientific development as such is continuous and never ending.

Kuhn's structure of scientific revolution was examined in an international collegium in the philosophy of science in London, 1965, and was reported (1972) by Lakatos and Husgrave. In reviewing the various presentations reported in this work, it becomes apparent that Kuhn triggers an awareness of scientific crisis in the sense he proposes (1962), and that he seems to prepare a stage for a scientific revolution.[30] This collegium can be seen as empirical evidence that lends support to Kuhnian propositions.

Toulmin (1972), argues that the concepts of normal and revolutionary science are not tenable. He bases his argument on the assumptions that: (1) "revolution" as a term is no more than a label and has no explanatory value; (2) even if "revolution" is taken as a descriptive term, it fails to delineate the nature of change as a continuous process. The second assumption is true even in the case of political change. Toulmin's evidence is based on the comparison of conditions, pre-revolutionary and post-revolutionary, where changes are evaluated as marginal. The difference between both sets of conditions is a matter of degree; and (3) revolution as described in terms of scientific community conflicts and disagreements is a natural sociological dynamic process of change. This sociological process of conflicts among the scientific community is due to disagreement between the two powers: (a) magisterial authority (dogma) and (b) the intellectual authority of an established conceptual scheme. Toulmin argues that the

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[30] T. Kuhn, 1970, see Appendix A, Propositions 6 and 7.

distinction between the two powers is necessary so that (dogma) is not generalized as a feature of scientific development.

One can argue that Toulmin's charges against Kuhn are contrary to the evidence, especially in his assertion that Kuhn's concept of revolution is not congruent with the nature of change. If one reviews carefully Propositions 8, 9 and 10, and Figures 7 and 8 in Appendix A and B, then it is readily apparent that the sociological dynamics of change are clearly dealt with by Kuhn. The response to crisis describes the stimulus, the underlying dynamics, and response ingredients in full clarity. On the stimulus level, Kuhn indicates an awareness of anomalies, exploration, counterinstances, and substitution of the old paradigm by new theory. The socio-dynamics of scientific community were described by disagreement, conflicts and resolution. Kuhn describes even the resolution and the nature of change and its dynamic of resistance and assimilations, as has also been described by sociologists and social psychologists (Chin, 1967, Gagne, 1965, Larsch and Lawrence, 1978 and Zandler, 1969).[31]

Kuhn argues that the essence of change nature lies in resistance, finding means to defend commitments and then being open to accept the change, when means are no longer available for withstanding the attack. What makes such change a revolution is the intensity and the dynamism of change. This was best described by the Gestalt-switch.[32] The degree of tension that accompanies change is a revolutionary feature, especially when its out-put energy is a drastic change. Kuhn uses the term evolution to describe the process of change as a transformation process and makes a clear differen-

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[31] See Appendix A, Proposition 12.

[32] See Appendix A, Propositions 7 and 14.

tiation between the change in process (i.e., evolution) and change in its impact (i.e., revolution). It is for this reason that Kuhn employs the two terms simultaneously. Revolution in its impact is termed a Gestalt-switch and that term is granted acceptance by Toulmin (1972). However, Toulmin is not able to see the meaningful relationship between such a concept and the underlying process for its occurrence (namely, the evolution) as described by Kuhn. Toulmin views scientific development as a process of change that is characterized by quantity, direction and selection criteria, and is affected by external and internal factors. Innovation is responsive to external factors, while the selection criterion is to be entirely decided by internal factors (professional evaluations). The direction aspect, according to Toulmin, is decided by the intractive effect of both external and internal factors.

Kuhn's contribution is described as both provisional and transitional. It has not yet been formulated as a theory of scientific discovery because it is not yet clear what criterion of scientific discovery is, a demarcation criterion is missing (Toulmin, 1972).

In general, this researcher can see value in Toulmin's evaluation only to the degree that it lends clarity to some Kuhnian concepts. Toulmin gives further clarity to the scientific characteristics that were proposed above. However, these characteristics were not overlooked by Kuhn, although they were not explicitly mentioned. Toulmin's error lies in his neglect of the transformation concept which is a keystone in Kuhn's paradigm and has the ability to solve many puzzles that Toulmin addresses. Kuhn is extremely consistent in his terminology and employs transformation to describe change and Gestalt-switch to describe the revolutionary out-put. Transformation is a dynamic process through which the sub-system concepts are re-arranged

in their positional values (Laszlo, 1972, Angyal, 1972), and the Gestalt-switch is an insight that presupposes a reconstruction of the given perceptual field.

Masterman (1972) charges Kuhn with using the paradigm concept in a multi-dimensional meaning. She says that Kuhn is poetic in his style and that his concepts are not verifiable on the empirical level. Masterman identifies twenty-one senses for Kuhn's paradigm. However, these concepts are grouped into three categories: (1) the metaphysical sense, (2) the sociological sense, and (3) the constructual sense (textbooks, tools, Gestalt figures, etc.). It is obvious that the major point on which Kuhn is charged is ambiguity.

This researcher is not surprised to see such charges especially since scientists, as Kuhn himself has mentioned, have to defend their commitments. Since the scientific paradigm is empirically linear and course-effect oriented, it follows that the metaphysical sense is to be viewed as ambiguous and as such intolerable for Masterman. However, the important question here is, could any scientist deny the existence of the subjective element in relation to his own selection of any theory or even any problem to solve? If any scientist can argue yes, he does, then Kuhn's argument on the subjective element is indeed vague. Kuhn's concept of paradigm is supported by evidence from the life histories of many outstanding scientists and even, ironically, in the embedded evidence that he was attacked on the basis of his deviance from a scientific commitment that Masterman and others hold.

Masterman (1972) does, however, point to Kuhn's originality in introducing the sociological sense of paradigm and adds her recognition of Kuhn's interest in the rise and fall of science. This interest is des-

cribed as the core of Kuhn's logic which is characterized by innovation in the sense of a "hypothetical retroductive"[33] view. This is a scientific ideal that no science has reached but every textbook in the advanced hard sciences tries to approximate. Masterman admits that the metaphysical notion of Kuhn's paradigm is clearly differentiated from normal science. However, the Gestalt-switch is not analogous to a paradigm from her viewpoint. In conclusion, she argues, "Kuhn's own account of the limits and extensibility of a paradigm is both sketchy and faulty for which he himself apologizes" (Masterman, 1972:82).

Masterman (1972) charges Kuhn's notion of paradigm with confusion. She argues that this notion does not clearly distinguish three types of science conditions: (1) the non-paradigm where there is no clear set of theories or tools to follow; (2) the multiple paradigm where science is in its mature stage of development and scientific rules would be applied in puzzle-solving; and (3) the dual paradigm which is the stage of scientific crisis where a new paradigm is emerging to compete with the previous one.

This view sounds convincing if scientific development is viewed as linear rather than a transformation process. However, this researcher argues that there is no period in the history of science that could be described as non-paradigmatic. In a certain sense a paradigm is a conceptualization frame that is prior to rules (Kuhn, 1970). It is a structure of certain related concepts that helps the individual to gain insight and understanding of a given phenomenon under focus (Stogdill, 1972).

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[33] Hypothetical retroductive is the method of testing reality by both falsification and verification at the same time, in a motion of Gestalt-switch between positive and negative aspect of the same instance.

Models, however, differ in their degree of demonstrable descriptive and predictive power. Normal science performs a useful function in that it articulates the paradigm by means of verification and falsification. Thus what Masterman calls a multiple paradigm is, in fact, what Kuhn describes as normal science which he views as a tool for the articulation of a paradigm rather than as a paradigm itself. Normal scientists observe nature vs. facts and report their observations in terms of conceptual frames that function as feedback mechanisms in articulating existing paradigms. The anomalies are reported with careful consideration. When such anomalies persist to seriously challenge the paradigm, then the paradigm becomes insecure and rules take over to pave the way for new conceptualization of events in nature. Kuhn seems to be more consistent than Masterman in his description of scientific development. Kuhn (1970) takes into account the subjective element of scientists' commitment to a general paradigm while Masterman evaluates a paradigm solely by external criteria that are imposed on the conditions under focus. Kuhn (1970) argues that conceptual frames become paradigms as a result of the perception of normal scientists of its ability to help them discover and solve puzzles.[34] The selection of such criteria is arbitrary; it is culturally and socially based. Normal scientists are the decision makers who decide whether a given conceptualization is a paradigm at a given time in the history of the science they are dealing with. This is the major point which Kuhn (1970) tries to express.

Churchman (1972) discusses at length the issue of models and clients. In short, he argues that a model is viewed as such when it is

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[34]See Appendix A, Proposition 4, and Figure 2 in Appendix B.

designed in a way that enables clients to use it effectively as a tool for solving their own problems. Thus a scientific paradigm gains loyalty and commitment from its clientele after they (i.e., normal scientists) accept it as a framework for their puzzle-solving. Kuhn (1972a) and (1972b) points out very clearly that it is normal science which gives a configuration the status of a scientific paradigm. In his (1972a) article he describes normal science as a demarcation criterion between science and non-science. He (1972b) argues, however, that the scientist's choice for a given theory is arbitrary and irrational. The major point is that anyone who accepts the concept of paradigm in its sociological sense (i.e., scientific community-commitment) will also accept that there is no scientific stage that could be termed non-paradigmatic. Thus Masterman (1972) made a logical fallacy in her classification of paradigms.

Watkins (1972) argues that Kuhn's criterion for the demarcation of science from non-science is inappropriate for discriminating certain intellectual disciplines as non-science which some scientists would call scientific. "My suggestion is then, that Kuhn sees the scientific community in the analogy of a religious community and sees science as the scientist's religion. If this is so, one can perhaps see why he elevates normal science above Extraordinary Science, for Extraordinary Science corresponds, on the religious side, to a period of crisis and schism, confusion and despair, to a spiritual catastrophe" (Watkins, 1972:33).

Kuhn is charged with unjustly labeling scientists as dogmatic in their commitments and with viewing normal science as a puzzle-solving that tests the scientist's ability to verify the paradigm or the theory instead of testing the theory itself. Kuhn views innovation as a scientific product that occurs usually during the Gestalt-switch period which

is limited as compared with the period of time needed for normal science to occur. Watkins challenges this argument on the basis that when scientists follow Popperian logic by falsifying their theories they are, in fact, testing the theories since there is always a space for the anomaly which Kuhn recognized. Kuhn's position can be taken even further with the question: How long does it take the scientific community to assimilate these anomalies so that normal science can be viewed as continuous dynamic search for understanding nature?

Kuhn's analysis of the switch to a new paradigm is also criticized by Watkins. His criticism is based on the assumption that the switch is treated as a sudden insight coming from extra scientific sources.[35] However, one can argue that Kuhn (1970) makes an explicit statement that the relative suddenness does not come overnight, when he says, "A new theory, however special its range of application, is seldom or never just an increment to what is already known. Its assimilation requires the reconstruction of prior theory and re-evaluation of prior fact, an intrinsically revolutionary process that is seldom completed by a single man and never overnight" (Kuhn, 1970:7). Kuhn does not view normal science in the same way as Watkins (1972). In fact, Kuhn equates progress in science with normal science. He says, "It is only during periods of normal science that progress seems both obvious and assured. During those periods, however, the scientific community could view the fruits of its work in no other way" (Kuhn, 1970:136).

It seems to be Kuhn's thesis to point out certain facts to the scientific community that would help them to be value-free in evaluating

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[35] Ibid., Watkins (1972:35).

their achievements. Science, according to Kuhn, has no greater potential than arts to communicate the universe. The only difference between science and non-science lies in the puzzle-solving which is in essence a perceptual subjective process. The problem with the scientific community from Kuhn's viewpoint is its continuous avoidance of the admission that a subjective psycho-social dynamic element exists in its practices and theory building.

In short, scientists according to Kuhn are subjective individuals who hold certain values, beliefs and skills of puzzle-solving that are shared by other scientists. These values and skills enable the scientist to be a member of a certain scientific community. Once the scientist no longer holds the same commitments, his membership is challenged; he either has to develop a convincing paradigm and attract followers or withdraw from the scientific community and submit to the fact that he is no longer a scientist. To reject a paradigm, he needs to be ready to present an alternative. Before he is able to do this, he experiences conflicts and scientific crisis until he is able to formulate a new theory.

The first value of Kuhn's work is the subjective element, as presented through this section and specifically the first three propositions (Appendix A). This view gives support to the phenomonological existentialist humanistic orientation. This orientation believes that there is no objective reality in any absolute sense. Reality is what we relate to through our frame of reference, in Kuhn's terms, "our paradigm" (Buhler and Allen, 1972; Frankl, 1974; Lowe, 1959).

The second value is seen in the concept of transformation which allows a space for conceptualizing the interaction of scientists with

theory as they both relate to life at a certain point in history and within a certain cultural domain. This concept uniformly fits with the multiplex logic which views the function of any system as a sub-system within a whole system in light of its two-dimensional domains of time and space (Angyal, 1941). This logic allows for openness in scientific practice. In examining the concept of normal science and its relation to rules, however, it is hard to believe that paradigms exist prior to rules at any point in scientific development. The term "prior" would appear to be foreign to Kuhnian logic. Rules and paradigms are interactive structures and cannot be separated into any sequential linear form. Though Kuhn deals with this problem in the concept of Gestalt-switch and scientific practice (1970)[36] the crisis of insecurity does not justify a fractional distinction between rules and paradigm at any space-time level. Rules are "output" elements of a given paradigm as much as they are "input" ones when they come from findings of testing the paradigm. Thus rules should be treated as simultaneously occurring in their coherent function within the paradigm of scientific practices.

The change concept and its dynamic of resistance and resolution is uniformly treated by Kuhn. The dynamic nature of change is best described by the dialectic of the conceptualization process of anomalies during scientific practice. Anomalies do not constitute sufficient conditions to give rise to a new paradigm; they need to be assimilated genuinely by scientists in examining the relationship between what they observe (facts) and truth (i.e., what actually is happening). Truth is to be viewed as abstract but existentially it exists inasmuch as we relate to it.

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[36] Appendix A, Propositions 4.4, 5.6 and 9.

The innovation of Kuhn's contribution stems from his ability to direct the attention of the scientific community to the role of the paradigm in science and to point out, with full confidence, that science has a metaphysical component, namely the commitments that scientific practitioners and researchers hold. Kuhn practices his own concepts without fear of being labeled inconsistent. He admits in the 1969 postscript written at the end of The Structure of Scientific Revolution (Kuhn, 1970) that the meaning of the term "paradigm" is not yet clear. He replaces it with the term "disciplinary matrix". This gives insight into a transformation process that Kuhn is experiencing. However, this need not be viewed as inconsistent with his paradigm logic but rather as an outcome of his previous training in the experimental research. Kuhn seems to have yielded to pressure from the scientific community and reformulated his concept of dynamic nature (i.e., paradigm) to protect his membership in a community that applauds operational definitions and classifications. A "matrix" is less challenging to mathematically oriented scientists. However, in spite of this reformulation, Kuhn retains his essential originality by identifying some of the components of a disciplinary matrix in a non-operational manner: (a) formalized components, (b) metaphysical components, (c) values, and (d) exemplars. The components that are left with no operational definitions are the metaphysical ones.

This researcher still views the term "paradigm" as a more inclusive descriptive label than "disciplinary matrix". "Paradigm" as conceived originally is an integrative term which describes conceptual frames, values, methods of research, and promises. In contrast, a "disciplinary matrix" implies a rather differentiated frame with a concrete theoretical structure that is ready to be implemented into a given science. It is

for this reason that this researcher selects Kuhn's original conceptualization of paradigm as a useful tool for the analysis of the field of psychology.

Proposal for a New Alternative for the Method of Scientific Discovery:

The core concept that emerges from examining literature on the logic and psycho-social dynamic of scientific discovery is the subjective element in scientific contributions. In view of this fact one has to choose either to continue the search for methods by which one can eliminate this element and thus drain the scientific "body" of knowledge from its "soul", or to search for a methodology that could account for such an element and accept its reality. This would mean a method by which the subjective element is treated as a systemic structure[37] in the whole system of knowledge. From the perspective of systems analysis, a structure has a function, and thus often is described as a process. Consequently, the subjective element could be defined as a progressive mechanism that has the role of integrating information, reconstructing fragmented bits and pieces of observational attributes and bringing patterns to the attention of the observer in such a way as to give meaning to what he is observing. In this sense subjective element could be taken as an organizing mechanism. A researcher, according to this proposition, needs to identify the sub-systems of this organizer (i.e., the subjective element) and see how they interact in a specific situation at a specific time for each individual researcher. This is essentially a self-analysis

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[37] Structure, according to social scientists, refers to configurations that are stable over time or patterns in the field sense (i.e., in the dynamic interactive relationships), In J. Miller, Living Systems, New York: McGraw-Hill Book Company, Inc., 1978, p. 92.

process which is proposed to be undertaken by every researcher and be reported along with his findings. This makes the findings meaningful at the "self-analysis" level of direct experience "meaning".[38] This is proposed as an alternative approach to the strict empirical method in the scientific sense. The availability of such a "self-analysis" report along with empirical findings would allow the investigator himself to see a clear relationship between himself and his findings, and it would also give the recipient of this information the freedom to make a comprehensive judgment about the validity of the given interpretation.

A self-analysis coupled with its data-partner might generate interest in the recipient to undertake a similar experience. This sharing element between the sender of information and the recipient would create a new form of energy to initiate new patterns by which the same problem could be tested. Such a dynamic process will transform the act of research into a continuous search. This dynamic transformation incorporates the newness element that Popper (1968) aims at, though his testing method through use of a deductive approach does not help in obtaining this objective, as has already been pointed out above. Research that aims at "newness" needs to deal with the universe of investigation by accounting for the subjective element. This proposition is coherent with the properties of an open system, since it allows both the investi-

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[38] Bridgman (1936) defines "meaning" problem in relation to self-analysis; see p. 43. Also, "self-analysis" appears in the literature on the history of psychology. Wundt is reported to have believed that "the subject-matter of psychology is experience - to be studied by self-observation, or more technically, by introspection, an objective, analytic observation of one's own conscious processes -- consequently, Wundt set a twofold task for himself: first, the analysis of consciousness, and second, discovering the laws of synthesis." In James P. Chaplin and T. S. Krawiec, Systems and Theories of Psychology, 2nd Ed., New York: Hold, Rinehart and Winston, Inc., 1968, p. 41.

gator and the recipient of the findings to exchange input-output energy in an interactive manner.[39] Consequently, the process of scientific searching or researching will be an interactive process of the physical and metaphysical dimensions of "reality" under investigation.

One might argue that the given proposition - transforming the subjective element into a useful tool in scientific discovery - is not new; it is practiced in clinical community psychology and is also known as the participant observation method or qualitative research method, i.e., the phenomonological approach in the social sciences. However, the methodology of normal science for qualitative research and the descriptions of these methods do not fulfill the position of this researcher's proposal, though they are close to what is proposed here. Bogdan, and Taylor (1975) produce a pioneering work in Qualitative Research Methods: A Phenomonological Approach to the Social Sciences.[40] They move from a strategic to a technical level to the point of even giving detailed instructions on how to apply qualitative approach in "participant observation". They also describe the use of personal documents. The emphasis, in their phenomonological approach, is on discovering as well as verification. Bogdan and Taylor divide their book into two parts: "How to Conduct Qualitative Research", and "Writing Up Findings". They instruct

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[39] Open systems properties are described by D. Katz and R. Kahn, "Common Characteristics of Open Systems", The Social Psychology of Organizations, Wiley, 1966, (pp. 14-29); to include: importing energy input, transformation, information processing, feedback, negative entropy, steady state, output energy, homeostasis, differentiation and equifinality. The writer will further discuss these properties in chapter 5.

[40] Robert Bogdan and Steven Taylor, Introduction to Qualitative Research Methods: A Phenomonological Approach to the Social Sciences, New York: John Wiley & Sons, 1975.

the researcher to follow specific steps, with heavy emphasis on producing descriptive data: "People's own written or spoken words and observable behavior" (p. 4). They quote Herbert Blumer, a symbolic interactivist psychologist (1975:8) to instruct the researcher,

> To try to catch the interpretative process by remaining aloof as a so-called "objective observer" and refusing to take the role of the acting unit is to risk the worst kind of subjectivism - the objective observer is likely to fill in the process of interpretation with his own surmises in place of catching the process as it occurs in the experience of the acting unit which uses it.

However, Bogdan and Taylor (1975:8) continue to argue that, "There is a real sense in which the qualitative researcher remains detached from his or her subject's perspective and their perspectives (quoting Howard S. Becker)", and added, "She or he must be able to stand back from subject's perspectives. They are viewed as neither true nor false, good nor bad. The researcher seeks not truth and morality, but rather, understanding."

It is argued here that research in participant observation is a social act, no matter how much the researcher tries to detach himself from the social setting. However, it is not even desirable to detach oneself. It is rather that element of being genuinely involved which will lead to understanding. Blumer's view is closer to reality. The alternative proposal described here would enable the researcher to draw a clear pattern of the interaction between his own perspective and that of the "others" in the participant observation, with a self-analysis of what kind of impact his perspective could have had upon those whom he is observing, and the impact of the perspectives of those observed upon his own at the moment the act is taking place. This is the major element of discrepancy between the qualitative approach as it is described by Bogdan

and Taylor, on one hand, and as it is viewed by this researcher on the other. This discrepancy becomes greater when one examines in detail the instructions of Bogdan and Taylor on the choice of research settings. "We would recommend that researchers choose settings in which the subjects are strangers to them and in which they have no particular professional knowledge or expertise" (Bogdan and Taylor, 1975:28).

Criterion of choice for research setting seems to be inconsistent with the view of accepting the subjective element and accounting for it. It is a direct and deliberate avoidance of dealing with the complexity of the phenomonological reality, and most importantly, with the nature of social symbolic interaction that happens in any participant observation at a higher level of complexity, and still exists even in the "passive" observation of the scientist of his "subjects" in a lab. Avoidance of the subjective element does not help to understand reality as it occurs, rather it is detrimental to the process of understanding. This researcher tends to accept the symbolic interactionist perspective; the "shared perspective" view of defining the social act in any social situation as a total natural event or a process of interpretation or definitions of a situation given by the actors (i.e., participants). "While people may act within the frame of an organization, it is the interpretation and not the organization which determines action. Social roles, norms, values and goals may set conditions and consequences for action, but do not determine what a person will do,"[41] Accounting for the subjective element, accordingly, requires systemic analysis of these processes of interpretation as the researcher relates to them and

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[41] Ibid., p. 15, a quotation given originally by Whitehead.

as the observed subjects themselves view such interpretations. Similar to this proposition is the view of Fisher (1970) who argues for having the testee as co-evaluator. According to their suggestion, the client and tester discuss their perspective on the testing situation.[42]

In practice the qualitative research method has been utilized in Levine's work in clinical community psychology. Levine has made a serious effort to advocate the search for "accounting for the subjective element in psychology." He makes it clear that program evaluators have to account for the internal world of their subjects. His pioneering work on evaluation by "trial" is innovative in its ambition to include all participants of the "Graduate Program of Clinical Psychology, 1976, in SUNY at Buffalo", including students, course instructors, advisors and degree evaluators. Each participant was asked to evaluate the program by answering an open-ended questionnaire. After the data had been collected, a "case" in a judicial sense was developed by the participants and articulated by law students. Then a real "trial" took place at the Law School of the State University at Buffalo in the spring of 1976. The hearings were evaluatd by a jury with interdisciplinary interests in related fields, and lawyers for each side argued their client's case to the best of their knowledge. Despite the genuine desire of Levine, et. al., to present a complete picture of the process of evaluation in their report on the trial (1976), many significant elements were dropped. For example, there is only a short description of "self-

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[42] Evaluation as a process will be discussed in some detail in chapter 4 on Counseling Model. The trend of the co-evaluator technique will be utilized within the symbolic interaction approach and in view of the research's model, "Man as an Open System". The co-evaluator technique appears in T. Fisher, "The Testee as Co-Evaluator", Journal of Counseling Psychology, 1970, Vol. 17, pp. 70-76.

analysis" on the researchers' part. Thus the overall report still does not fulfill the ambition of its originators, nor is it coherent with the proposal for this research.[43] Researchers like Levine are still bound by the dictates of their scientific community (particularly by publishers' requirements) and they suffer the paradoxical dilemma of being caught between their training and their genuine desire for innovation. This supports Kuhn's view concerning the impact of the scientific community upon innovation.

The previous discussion leads to a transformational point. A legitimate need for analyzing the theoretical foundation of psychology has been recognized and this seems to have led to a critical need for a change in the orientation of modern psychologists, both theory builders and practitioners. The following chapter is devoted to the examination of the epistemological foundations of the history of psychology as a science. The emergence of "accounting for the subjective element" in psychological research and other social sciences requires three fundamental points to be considered in relating reality to the universe of investigation: (1) the self-analysis descriptive report from the researcher's perspective at the time of researching; (2) the analysis of the observed data from the perspective viewpoint of the observed subjects; and (3) the analysis of the interactive relationship between the sub-systems of the first group of analysis and the second ones. With this descriptive data, the researcher will be in a position to give interpretations of his findings

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[43] Murray Levine, et al. "Adopting the Jury Trial for Program Evaluation." Evaluation and Program Planning. Vol 1. 1978:177-186. Levine in private communication has expressed his feelings of dissatisfaction with the comprehensiveness of the report and mentioned that the publisher wanted the material to be cut short. See also M. Levine, 1969 and M. Levine, et al., 1979.

in light of a clearly defined theory. Then the whole report is left open to the reader to interact with its totality on his own, and through his own perspective as well.

Conclusion:

The previous discussion yields the following characteristics for the closed systems logic as opposed to the open systems view:

(1) Closed systems logic views causality as a linear sequence of events in which "a" group of factors lead to "b" results. It is a cause-effect relationship in which it is assumed that natural events take place as the result of efficient causality. Teleology or purposefulness is not considered in the scheme of classical linear logic.

(2) Closed systems logic assumes that time and space are stationary in that it follows the Newtonian physical laws and its static conceptualization for time.

(3) Linear logic is the underlying logic for a reductionist approach in which relationships among given structures of a phenomenon are reduced to bonds between pairs of structures, in a sequential manner. The classification of structures in a given whole is rigid and static. This classification system is found to be against the dynamic nature of events as the result of the modern physics principle which says: Matter is in continuous motion. The reductionist approach assumes explanation of events on the basis of reducing the phenomenon into independent-dependent relationship of releta logic. It is a molecular relationship which does not account for the complexity of the subjective element in describing and explaining reality. Since reality is ontological, holistic and dynamic, the reductionistic approach is viewed as limited in its capacity to explain or describe any given phenomenon.

(4) Linear logic underlies the inductive scientific method which assumes the objective reality as its reference and makes generalizations from the number of specific instances that are viewed to be similar in their function and to have occurred under similar conditions. This researcher argues that replication of a given phenomenon is not indicative of its causality, because it is impossible to replicate the same event in two different time-space domains since time and space are dynamic.

In short, closed systems logic is characterized as linear in describing the relationship between cause and effect and between structures in a given hierarchy. It reduces the dynamic nature of the time-space domain into a stationary classical conceptualization which contradicts the ontological holistic nature of events as they take place in nature.

The logic of scientific discovery, after the discovery of particle-wave behavior which is taken as fundamental evidence for Heisenberg's principle of indeterminacy suggests the following <u>characteristics of an open-systems view</u>:

(a) Multiplex logic is appropriate for describing and explaining the ontological nature of reality including its subjective and objective features as they are interactively related in a holistic experience of any given event.

(b) Scientists can best account for the subjective element in their discoveries by understanding its nature instead of attempting to control its effect. Controlling the effect of this element is beyond the ability of scientists since subjectivity is an inherent characteristic of any operational definition for any event. The fact that the scientist has to choose his problem for investigation,

must attend to certain features of the given event, and must describe these features, makes an interactive effect between the observer and the observed, thus subjectivity has to be constantly accounted for in any scientific research. And this is why it is assumed that scientific investigation is an unending process.

(c) Multiplex logic assumes that time and space are dynamic and therefore events in time and space are relativisitic in their nature. Accordingly, any mathematical description of any phenomenon is probabilistic and not definite. Consequently, there is no way by which one can predict any phenomenon in any absolute sense, and it might not be necessary to do so. Scientists who employ multiplex logic view the events in nature as isomorphic in their relationship to the subjective world.

(d) Causality according to multiplex logic is transformational and includes efficient and teleological types of causality in an interactive pattern. The logic of an open systems view calls on scientists to account for the subjective element of their discovery and to deal with it as an inherent part of their findings. This scientific attitude helps scientists to be more open in explaining natural phenomena, not only on the basis of empirical data, but also the intuitive meaning for these data as the scientists insightfully relate to it.

(3) Multiplex logic assumes a holistic approach for scientific discovery in which the objective of scientists is both to verify and falsify a given theory. Therefore the reductionistic empirical approach is inconsistent with the nature of things when it is taken alone; it is the negativism and positivism that might help to study a given phenomenon as an interactive whole. The multiplex approach admits to the interplay between the physical and metaphysical components of the given

phenomenon in a united whole.

(f) Multiplex logic assumes a unity between the body and the soul in human nature, and therefore behavior has to transcend any of the body functions or mental processes, taken singularly or in combination. The whole of the body-mind function is bigger than the summation of its parts.

According to multiplex logic, this researcher proposes that researchers have to consider three fundamental types of analysis in relating to the universe of investigation: (1) a self-analytical descriptive report from the researcher's perspective at the time of conducting the research; (2) the analysis of the observed data from the perspective of the observed subjects; and (3) the analysis of the interactive relationship between the sub-systems of the first group of analysis and the second one. This ideal state might never be accomplished; however, it is worthwhile to attempt to approximate research in such a direction.

In short, chapter 2 yields two main criteria to differentiate the closed systems view from the open systems one. The first criterion is related to the explanatory principle, and the second one to the descriptive principle. In the explanatory principle, the closed systems view employs the contiguity principle of causality - "a" leads to "b" provided that everything else is constant, while it describes events as objective data of a certain hierarchical structure of time and space, vertically and horizontally. In multiplex logic, the explanatory principle is a unitus multiplex where the core principle of causality is the natural principle of transformation in which the objective and subjective reality are united in one whole of actual operational nature. The descriptive principle is the dynamic nature of the time-space domain for the positional value of a given sub-system in the system as a whole.

CHAPTER 3

Systems Analysis of Epistemological Foundations: Psychological Theories and Their Treatments of the Subjective Element

This chapter aims at discussing the history of psychology and its theory building and examining the fidelity of the discipline on the basis of its ability to successfully implement its claims to describe, understand (or explain), "predict" and "control" human behavior, as all these claims relate to the nature of man in reality. The question of "reality" is a basic issue which perhaps is essentially philosophical in nature, but an operational definition could be inferred from the achievements of psychological theories which strive to improve human conditions.

The type of logic of a given theory is taken in this work to represent the power of the theory to explain the event under investigation on the basis of which the prediction and control of behavior could assume a degree of reliability in application. The conceptualization of time is taken as an index of the power of the theory to describe events in nature; however, it is inferred from the previous discussion on the logic of scientific discovery, that the explanatory and the descriptive dimensions are not separate. They form a single intellectual force in the mind of a theory builder when he chooses the problem for investigation, designs the method of investigation, builds a hypothesis, reports findings and constructs interpretations of these findings.

Two types of logic are inferred from the discussion on scientific discovery: (1) linear logic which assumes "a" leads to "b" provided that everything else is constant. However, it is argued that everything is not constant, and thus such logic is described as a closed logic.

(2) unitus multiplex logic which assumes that relationships among various sub-systems in a given system are united by one principle that combines the various structures and their functions into a united whole. This logic is relativistic in nature and is inferred from Angyal's (1941:100) concept of "biosphere" which assumes that, "This realm of life includes the individual 'organism' and the environment, not as interacting parts, not as constituents which have independent existence, but as aspects of a single reality which can be separated only by abstraction". This logic is also consistent with Einstein's theory of relativity and its co-partner, quantum theory, and Heisenberg's uncertainty principle. In other words, it is a logic that is defined as an open systems logic.

Two ways of conceptualizing time could be inferred from the previous chapter to parallel the two types of logic: (1) the Newtonian classical static concept for linear logic, and (2) the dynamic concept of time in relativity theory which assumes that everything in life is in motion and thus time is relative to what it relates to as natural events take place. This last concept is taken as an index of the open systems view.

It is assumed in this work that any theory which employs linear logic and a classical concept of time is weak in its power to explain and describe events in nature, especially in relation to the human system. In contrast, a theory of multiplex logic which is relativistic in its conceptualization of time as a dynamic force in nature in relation to events, is a strong theory in its explanatory and descriptive powers.[1]

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[1] "Strong" and "weak" are descriptive terms for the power of a given theory in terms of its ability to conceptualize reality. Reality in this work is described in a subjective way inasmuch as it represents the phenomonological relatedness of the individual to his environment in a biospheric sense.

The following conceptual hypotheses are examined in this chapter:

(1) Scientific theory in the various schools of psychology presents a closed systems view rather than an open systems view.

(2) Any theory of knowledge in the field of psychology is not mutually exclusive from the cultural motif of the theory builder's time-space domain.

(3) Any theory in the field of psychology is not mutually exclusive from other theories in other fields at the same time.

(4) A theory builder is influenced by a subjective element which is uniquely associated with his own motives, training, orientation and his relation to his scientific community.

(5) The scientific development of psychological theory is a transformational process. It is assumed that no founder of any school of thought within the field of psychology should be solely credited for the new elements he brings into the focus of the scientific community at the time.

(6) Psychological theory follows the objective reference in conceptualizing mental processes; consequently it is assumed that a theory of psychology with the objective reference does not solve the mind-body problem.

The method of approach which is used for examining the conceptual web of psychology in its various schools is the systemic method.[2] The subject of investigation is the transformation process through which psychological theory has passed during its history in relation to its subject matter, methodology and conceptual web. The contribution of the

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[2] See pp. 28-72 in this work.

founder(s) of each school of psychology is presented in a summary form and then evaluated singularly and/or holistically in relation to the aforementioned hypotheses. Then, an overall evaluation of each school is given and whenever possible this evaluation is presented in relation to other schools which are relevant to the time-space domain of the schools under discussion. Thus the evaluation process is of an ontological nature and has the mechanism of progressive feedback. This is done with the aim of pointing out the transformational nature of theory building in the field of psychology. A summary of the findings and their interpretations concludes this chapter.

The Nature of Man in the History of Psychology:

History of psychology is, in many ways, parallel to the history of civilization. It is a process of the continuous search of man for himself. Literature indicates that man started to ask the question, "Who am I?" when he started to be aware of his interactive relation with his environment. The earliest men had a primitive description for their existence. The simplest form of describing man is the animistic view. According to this view, the primitive man believes that there is man within man. The "within" man is a soul or a spirit that could be either an angel (good) or an evil (bad). This view assumes the existence of a soul or a spirit as distinct from matter and possessing separate characteristics.[3] In spite of the simplicity of such a view and its impotence in rendering effective methods for modifying the individual's behavior and improving the necessary conditions for the individual's growth, it has a

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[3] M. Munn. Psychology: The Fundamentals of Human Adjustment. Boston: The Riverside Press, 1956:1.

certain validity: its simple method worked. Primitive society sought discipline by the application of corrective measures in religious ceremonies against those who were identified as "evil" people. Chaman was trusted to cure the evil by beating the maladaptive man until the "evil spirit" left his body and the "good spirit" found its way to replace the evil one. This act of beating was done in a ceremony or incantation. Thus the new behavior of the beaten person was viewed as a change, the cause of which was believed to be the expulsion of the evil spirit.[4] This view marked the beginning of a body-soul dichotomy that has persisted as a focus for psychological investigation since the Greek philosophy of Socrates, Plato and Aristotle up until modern times.

Plato's dualistic theory of body-soul assumes that the soul is an independent entity from the body. The soul comes from the super-sensible world in a perfect form and content. However, as soon as the soul enters the body it becomes distorted, as the result of the shock of encountering the body world (i.e., earthly world). When the soul is captured by the body, it starts to search for its re-perfection by the process of knowledge acquisition.[5] Knowledge, according to Plato, is not empirical. Our senses deceive us. The only true source of knowledge is deductive logic.[6] This logic is to evaluate collected data against the essence,

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[4]Appears in P. Monroe. A Brief Course in The History of Education. London, New York: The MacMillan and Co., Ltd.,1912:5-10.

[5]Ibid. Knowledge comes by dialectic which is a "continuous discourse with oneself".

[6]In A. Ford. The Story of Scientific Psychology. New York: Sears Publishing Company, Inc.,1932. It is pointed out that Plato said: "Dare we trust our senses to give us truthful knowledge concerning the character of the natural world?" Instead Plato believed in pure philosophical speculation as the only source of truth. Plato is reported to believe that, "The value of the product of pure philosophical speculation as the only real source of truth, holding that only the great idea, only the act of logical thinking, of reasoning uninfluenced by the sordid sensations of the world, can give us the real truth", (p. 2).

or the natural original reality (in Greek terms, the "physis" order (Ardley, 1959)).

The dualistic theory of Plato is similar to the primitive view of First Man except in that it does not assume a corrective measure by chaman's role of curing evil. Instead correction comes by experiencing the senses in relation to environment and by means of logical analysis. However, the theory is congruent with a master-slave morality, a value system that reflects the cultural motif of the time. Such a system is carried on into the Ideal Society of Plato in his Republic. Plato's views stand as evidence for the impact of culture on theory building and clearly show how the theorist's view of man and universe is affected by his positional value in his society.[7]

The dualistic view of man presents itself in the epistemology of psychology as a science under different terminologies: body-soul problem (Greek philosophy), physics-metaphysics of behavior, objective-subjective psychology with its methodological partner dilemma, empirical vs. phenomonological approach, and the problem of determinism vs. freedom. All these issues are in fact one issue, with a core question of whether man's nature is reducible to elements that could be studied scientifically, and thus be understood in a manner that could enable psychologists to pro-

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[7] Plato was born in Athens in 427 B.C. of distinguished lineage. He received the usual education of a high-born Athenian in athletics, music and literature. He died in 347 B.C., as a first-class scholar (In Chaplin & Krawiec, 1968:35). For further understanding of Greek society during the time of Plato and Aristotle, the reader is referred to G. Thomson, Studies in Ancient Greek Society: Volume II, The First Philosophers, London: Lawrence and Wishart, 1955. Education during Plato's time is described in racist terms. "All citizens are to share in this education alike, though slaves and artisans cannot attain to citizenship and hence to the good life. It is not possible to care for things of virtue while living the life of the artisan or the slave", In (Monroe, Op. cit.:71).

pose methods by which the human growth could be enhanced.

A review of the literature on the development of psychological theory reveals that no single theory in the history of psychology, be it a derivative theory or a system approach of a given school of psychology, denies the fact that there is the metaphysical element in man's nature. However, the question is whether there is a comprehensive model of man in the history of psychology that treats mind-body dimensions of human nature as one unit in the sense of matter-energy concept in physics.

Buchanan, in 1812 (1969:3), says:

> On the philosophy of mind philosophers have formed but two opinions, nor does the subject seem to furnish us the smallest grounds on which we could erect another. By one it is affirmed that the human mind is an independent spiritual existence mysteriously connected with the human body; whilst the other contends, that mind is merely an organic state of matter, such as constitutes the brain. The latter theory appears to be most rational, most consistent with the separate attributes and qualities of mind and matter, and with facts displayed conjointly by them in the human system.

Followers of the latter theory are materialistic and tend to view the human system as mechanical. They often explain behavior on the basis of "neurological functions"[8] or in extreme cases, they study behavior as a

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[8] J. Buchanan. The Philosophy of Human Nature: A Facsimile Reproduction with an Introduction by Thom. Verhave. Florida: Scholars Facsimilies and Reprints, 1969. In this work human nature is described and explained in terms of neurological functions. The organic theory that explains these functions on the basis of the excitability principle assumes that: (1) organic system is an organization; (2) organization, in its most literal sense, means "the adjustment of parts to each other, so as to form a regular system, and according to this meaning, it has long been used in science to signify that the composition of elements which occurs in an animal substance" (p. 5); (3) the excitability principle is found in any organic system, it is the source of all spontaneous or proper motions, and it exists in every living substance and it is not certain than that every effect must have their causes; (4) "All animal motions proceed either directly or indirectly from action of certain physical agents on the living system in which they occur; and as the action of the same principles or any of other substance does not produce the same effects, he infers, that they are not the only cause; he infers that there must be some peculiar property in vital matter itself, in consequence of which their agency produces these effects" (p. 52); (5) the nervous system is the principal source of sympathy and the medium through which it is constantly exerted; (6) every distinct part in the human system is constructed for the performance of some particular office in the animal economy to which it is adapted by its external configuration and intrinsic structure (Ibid:67).

mechanical response to the external stimulus as it is the case in the Skinnerian S-R model. Buchanan (1969:37) argues that, "The human system is a machine entirely material, composed of a great variety of elementary particles, possessing various effective energies incessantly exerted." The materialistic view of man seems to have its roots in Greek philosophy.[9] Aristotle (384 B.C.-322 B.C.), who is sometimes described as "the master of all who know"[10] defines the soul as the function of the body and argues that the body functions are the individual's behaviors that are observable and should be, therefore, measurable. The individual's behavior should be studied by observation. This is a stance that articulates the empirical trend in Greek philosophy. The inductive approach for studying behavior, or first for collecting data and later verifying it by the logical deductive approach, is a major contribution of Aristotle in the field of psychology as a natural science. "His love of science, inspired by his physician father, was tempered under Plato's tutelage by an equal appreciation of philosophy, politics and metaphysics" (Chaplin and Krawiec, 1968, p. 29). In fact, the multi-dimensional interests of Aristotle in the physical, biological sciences, psychology, politics, aesthetics, metaphysics and logic tempt the historian of various fields of knowledge to rate Aristotle as the father of modern sciences. This researcher views Aristotle as a well-rounded philosopher who could be taken as an exemplar of the interdisciplinary scientist, a dream to which system thinkers are committed to giving rebirth. Nevertheless, Aristotle's view

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[9] The account of Greek philosophy has been drawn from G. Ardley (1950:op. cit.).

[10] P. Monroe, A Brief Course in the History of Education. The MacMillan Company, London, New York: MacMillan and Co., Ltd., 1912. This source book is utilized in describing primitive animism, as well as Greek philosophy,

of man is, in the final analysis, a reductionist, deterministic, positivistic behavioristic view that motivated the modern behavioristic school to call for the establishment of psychology as a real science, free from mentalistic concepts and subjective methods.

Aristotle is reductionist because he views behavior as a function of the body and assumes that nothing goes beyond what the organism does. He views the psychological functions in relation to physiological mechanisms. Aristotle is deterministic because he assumes that everything that happens in the universe can be accounted for by definite laws of causation. His "physis" view, referred to earlier, assumes that human behavior is subject to natural laws and must, therefore, be explained in terms of causative factors lying within the individual's heredity and environment. This assumption in inferred from his scientific program that instructs the scientist or the philosopher to continue the search for the essence (i.e., the physis - natural laws that are unchangeable). Aristotle is an operationist since he instructs the scientist to check the validity of his findings by examining the validity of the operations used in arriving at these findings or generalizations. Aristotle in general is a positivist, since he assumes that the goal of the scientist or philosopher is to verify a certain hypothesis by searching for a natural principle as it exists in nature. Thus, one can see that Aristotle in his scientific view has the credo of four fundamental assumptions about the processes of nature which Chaplin and Krawiec (1968:6-9) have identified as the basic constituents of the philosophy of science: (1) natural monism, (2) mechanism, (3) operationism, and (4) determinism.

Speculations on man's nature and the ambition of the various founders of different schools of psychology to promote the status of their specula-

tions to a scientific status, or that of an autonomous science, took a long time with serious attempts and concentrated effort being made during the period of rationalism that came as a natural transformational product of the Renaissance period (a period which gave rebirth to the Greek philosophy) and was followed by the Industrial Revolution in Europe. Philosophers during the 17th century through the 19th century assimilated new information of scientific discovery in physics, chemistry and biology and accordingly sharpened their philosophical views to articulate new views on man's nature. The question of the mind-body dichotomy persists in the literature of philosophy and psychology to the present day. Quill (1972:4) points out:

> In considering the body-mind problem, one embarks upon a tradition of inquiry which many have undertaken during the long history of philosphical thought -- however, the whole issue of mind and body has been periodically discredited as a pseudo-problem and hence repressed. This latter attitude has been predominated during the last forty years, particularly in positivistically oriented "philosophies" and "psychologies". One of the increasing number of current testimonies to the fact that mind-body problem is still highly problematic is that the Minnesota Center for Philosophy of Science devoted an entire volume, entitled Concepts, Theories, and the Mind-Body Problem, to studying the issue . . . obviously men of great ability - men who formerly regarded the mind-body problem as a pseudo-issue - in response to valid criticism, now find the problem to be a genuinely substantive one.[11]

Why is it a genuine problem, to break the dichotomies between mind and body? This researcher believes that dichotomies in real everyday experiences do not exist. As one writes, for example, one uses one's body. One holds the pen in a special way, observes the movement of the hand in drawing structures of given words, constructs ideas, experiences a process of thinking in a certain direction to communicate a thought, moves one's

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[11] W. Quill, Subjective Psychology. New York: Spartan Books, The MacMillan Press, Ltd., 1972.

body in a space-time domain, experiences hunger, or perhaps pain in some part of the body, feels the humidity, temperature and light of the room in which one is located. One may at the same time shift one's focus to a beautiful scene in a country across oceans and suddenly retrospectively feel the joy of a certain group of people who might not be living in the physical world at the moment and then get depressed and experience grief but continues to think about the issue at hand. The multiplicity of this energy flow of experience cannot be accounted for by mere observation of the body functions of the writer as he writes, nor of the report of what he describes in his writings, or even to what he testifies has crossed his mind as he is writing. It is the interaction of his physical and metaphysical world that leads to his behavior at the moment, and this interaction cannot be reduced to separate units of an either/or nature of body-mind. Thus it cannot be assumed that the body causes the mental activities, or mental activities cause the body to function. In fact it seems that activities at any point involve a multiple causality of mind and body functions. The cause is beyond either of these two sets of human experience (i.e., body and mind). It relates to the biospheric dynamic nature of the individual's existence in a given environment.

Aristotle as an empiricist explains the complexities of mind in the analysis of sensory processes, on the assumption that "the mind is composed of simple ideas originally derived from sense experience", which follows the principle of association. This principle, as has been already pointed out, is a reductionist principle because it is based on the assumption that behavior is the function of the body. However, this assumption is too simplistic to account for all the dynamics of the physical-metaphysical worlds as they merge into one whole which is beyond the body

function. The same is true of its reflection in mental or other processes, as has been seen in the previous example.

Schools of Psychology from a Systems Analysis Stance:

According to Chaplin and Krawiec (1968:43),

> The term "school" as it is used in psychology refers to the groups of psychologists who associated themselves both geographically and systematically with the early leaders in the new science. For the most part, the psychologists who made up a school worked on common problems and shared a common systematic orientation . . . As psychology began to spread, either as an offshoot from the Leipzig Laboratory or by indigenous growth outside of Germany, other schools were formed, composed of psychologists with common systematic interests. For several decades, from 1900 to 1930 approximately, this was the most conspicuous characteristic of the new psychology, and it was through these schools that contemporary psychology took shape.[12]

Chaplin and Krawiec (1968) present the various schools of psychology in a table. Table 1, after Chaplin and Krawiec, presents a summary about the founder(s) of each school and is useful for presenting the history of psychology. These schools are presented in this work according to the sequence which is given in this table. However, behaviorism as an exception is presented at the very end, because of its direct impact upon psychology at the present time. The discussion is generally restricted to the contribution of the founders of each school.

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[12] J. Chaplin and T. Krawiec (Op. cit.:42). Chaplin and Krawiec's work provides a major source of information fot this section on psychological concepts in schools of psychology. Their work is both verified and elaborated by references to E. Boring. History, Psychology and Sciences: Selected Papers. New York: John Wiley and Sons, Inc., 1963. This is done in an attempt to focus on the transformation of concepts from one group of psychologists to another by pointing to the cultural and personal factors that affect psychologists at each stage. Primary sources on some schools are reviewed for the same purpose. However, it should be pointed out here that Chaplin and Krawiec's table is taken as a convenient scheme of reference for the psychologists whose theories are examined in this work. This, however, does not mean that these psychologists are the only main contributors to the field of psychology. Other psychologists who transcended the linear paradigm and made valuable attempts at conceptualizing man as an open system are presented in chapter five, and their concepts are utilized for the purpose of this work. (Chaplin and Krawiec reported other psychological theories as derivatives of the schools that are identified in

TABLE 1

THE MAJOR SYSTEMS OF PSYCHOLOGY AND THEIR DERIVATIVES (AFTER CHAPLIN AND KRAWIEC, 1968:606)

MAJOR SYSTEMS	FOUNDER(S) OR CHIEF EXPONENTS	CHIEF METHOD OF ORIGINAL SCHOOL	SUBJECT MATTER OR OBJECT OF STUDY	CHIEF AREAS OF CONCERN OF ORIGINAL SCHOOL
Associationism	Hartley and the British Empiricists	Philosophical analysis	Cognitive processes	Laws of memory, nature of learning
Psychophysics and quantitative psychology	Weber, Fechner, Galton, Binet	Quantitative measurement	Sensory processes and individual differences	Sensory processes and individual differences
Structuralism	Wundt, Titchener	Introspectionism	Consciousness	Sensation, attention, images, affective processes
Functionalism	James, Dewey, Angell, Carr	Objective experimental studies, introspection	Mind viewed in terms of its adaptive significance for the organism	Perception, learning, mental testing
Behaviorism	Watson	Objective experimentation, especially conditioning	Behavior	Sensation, animal learning
Gestalt	Wertheimer, Kohler, Koffka	Phenomenological experimentation	Mental and behavioral processes as wholes	Perception, thinking
Psychoanalysis	Freud	Free association and dream analysis	Analysis of unconscious dynamic processes	Psychotherapeutic treatment of the neurotic

British associanism is a rational school of psychology that seems to embark with an Aristotelian logic of science and to transform it by drawing from the scientific movements in physics during the 17th, 18th and 19th centuries. Hartley (1705-1757) is recognized as its founder but its seeds go back to Hobbs (1588-1679), Berkeley (1685-1753) and Hume (1711-1776).

Associanism has its chief method in logical analysis, takes cognitive processes as its subject matter, and has primary areas of concern in the laws of memory and nature of learning. Its derivatives are represented in the experimental associationism of Ebbinghaus, Thorndike and Robinson.

David Hartley (1705-1757), the founder of British associanism, is known for his work, Observation of Man (1749). In this work Hartley is assessed by Chaplin and Krawiec (1968) to have been influenced by Newtonian physical theory in viewing the vibratory action as composed of infinitely small (medullary particles) whose vibrations result in either sensation (if over afferent nerves) or movements of limbs (if over efferent nerves). Hartley considers the vibrations of ideas as simpler, fainter and more diminutive than those of sensation. The bonds between ideas, according to Hartley, are the result of contiguity. The notion of contiguity principle is the core notion in British associanism. However, each British associanist attempted to describe this contiguity principle differently. The principle of contiguity was originally given by Aristotle.[13] According to Hartley, if two sets of vibrations occur in close

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[13] According to Aristotle, contiguity is a principle of associanism and learning which holds that those events which occur close together temporally or spatially tend to be associated or learned. This definition is given in J. P. Chaplin, Dictionary of Psychology, New York: Bell Publishing Company, Inc., 1968:107.

temporal proximity, one develops the power to excite the other.[14] This physiological theory of association led to the belief that memory is defined by a physiological trace (i.e., memory trace) on the brain. According to this belief it is assumed that the stronger the association between events, the stronger the memory trace.

Hobbes (1588-1679) believes in the principle of contiguity as it was originally conceived by Aristotle. Ardley (1950:48) points out that Hobbes's contribution to the principle of contiguity comes in his Leviathan, "where men are envisaged as appetitive warring atoms, and society as built up artificially from these units by a social contract". Thus Hobbes's view of man is a political view in that it carries the theme of man as a creature of desire, a theme that has been a powerful motif with political philosophers from Hobbes's days up to modern times. This motif of post-Renaissance culture is vivid evidence for the decline of the belief in immortality. It is a sign of readiness to deal with man and the world view from a materialistic approach, to prepare scientists for an objective view of the world on the basis of physical principles. Hobbes's social contract can be viewed as a form of searching for power in human relations, rather than as a search for understanding and love. According to Hobbes a civilized society is a society that is ordered and disciplined. Hobbes's model of nationhood in Leviathan is a reflection of his view of man as an aggressive creature. Woodward (1971:45) points out that "Hobbes, who reached his conclusions by logical deduction from an atomic materialism which has long since been discarded, exaggerated

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[14] Chaplin and Krawiec: Op. cit.,:494.

the element of aggression".[15] The relevancy of Hobbes's work to psychology is tangential with the exception of his view of man as aggressive by nature and his idea that this aggressive nature could be controlled by power and regulated by discipline on the basis of the contiguity principle. Hobbes also mentioned that knowledge is empirical.

John Locke (1632-1704) extends Hobbes's principle of empirical knowledge and introduced what is a new known doctrine: Mind is a tabula raza (i.e., blank paper) upon which experience is printed. This indicates that ideas are acquired from the environment and thus there are no innate ideas, which means that the origin of knowledge is empirical. Locke further identifies two kinds of qualities for any given object, namely, the primary and secondary ones. The primary qualities are inherent in the external objects (e.g., size) and the secondary ones depend upon the mind (e.g., color). Since mind is a tabula raza, secondary qualities depend upon the experiences of the individual.[16]

Boring (1963:71) points out that Locke's doctrine of secondary qualities as well as Hartley's notion of psychophysiology (i.e., assuming the nerves as an intermediate structure that processes external information into mind) is essentially the physiological mechanism for English empiricism. According to Boring (1963) British associanism, which grew out of empiricism, constituted the fundamental synthetic principle for the new science, especially in relation to learning theories that are experimen-

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[15]Sir Llewellyn Woodward. Prelude to Modern Europe: 1815-1914. London: Methuen and Co., Ltd, 1972.

[16]Chaplin and Krawiec:Op. cit.:20, 196.

tally based. Boring (1936:150) says:

> The development of the doctrine of association, from John Locke (1690), through Bishop Berkeley (1710) and David Hume (1739-1740), . . . took up Aristotle's four principles for remembering the forgotten and made them into formal laws of association. Two ideas become associated so that the recurrence of one evokes the recurrence of the other, when the objects of the two are similar or contrasting or are together in space or in time. Ultimately it was seen that contrast is a form of similarity, since disparates do not even contrast, and that spatial contiguity is a form of temporal contiguity, since objects cannot be together in space unless they are together in time. When William James was writing his "Principles" (1890), the four laws had become reduced to two psychological ones: similarity and temporal contiguity, with the former debated and the latter pretty generally accepted. Two ideas that once occur in thought tend to recur together, either evoking the other - such was the basic law.

Another inference from Locke's doctrine is that understanding occurs only from sensation. This proposal prepared the setting for the "sense physiology" view which became prominent during the first half of the 19th century. This could be called an "elementary" view in the sense that ideas are seen as elements in a mental chemical bond.[17]

Boring (1963:224) points out that during this period, Locke's, Berkeley's and Hume's empiricism took over philosophy, establishing the ground for what later became empirical or scientific psychology. Empiricism runs to positivism, and equifinality that is inevitable since its core stems from the Aristotelian logic of scientific discovery that was described earlier as monistic, positivistic and operational.

Berkeley (1685-1753) argues that all knowledge is dependent upon the experiencing person. According to this view there is no primary quality. Qualities like shape, size and position are man-made constructs which man himself attributes to the environment. The only reality, according to

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[17] E. Boring: Op. cit.: 160.

Berkeley, is mind. In spite of this radical view of man's mind which implies that reality is subjective, Berkeley formulated the first "theory of vision" in which he describes the process of perception of depth in space in spite of the two dimensional nature of the retina. His theory of vision is still accepted in the modern psychology of perception. It assumes that the third dimension of perceiving an object in the physical world is the outcome of the physiological cues of convergence and accommodation and the psychological cues of interpretation.[18] Boring (1963) regards Berkeley's views and those of the other empiricists of the British associanism school as the start for scientific positivistic psychology, especially in relation to the physiology of behavior and the nature of sensation.

Hume (1711-1776), another British empiricist, has done away with mind. His major interest is the idea of causality. Hume believes scientific laws are fictional constructs existing only in the minds of men and that even the nature of mind and natural law are no more than ideational phenomena. Hume's views on causality destroy the very foundations of rational thought, science and psychology. Chaplin and Krawiec (1968:22) and Boring (1963) observe: "Even though Hume had done away with mind, there remained the problem of differentiating among the processes of ideation, memory and imagination, and this was explained by the doctrine of associations reducible to principles of resemblance and contiguity." However, Boring (1963:160) argues, Hume's views did have a considerable impact upon the functionalist pragmatist psychologists, as is seen in William James' and Dewey's work on contiguity principle.

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[18] Chaplin and Krawiec: Op. cit.: 126.

Among other British associanists is John Stuart Mill (1806-1878), a genius of his time who is described as a well-rounded intellectual by Himmelfarb (1978:11) who says: "J. S. Mill read Greek by age three, and assimilated a considerable body of classical and historical literature before he was eight, and had mastered philosophy, political economy and mathematics and the like by the ripe age of twelve."[19]

Chaplin and Krawiec (1968) observe that J. S. Mill's analysis of the human mind contradicted his father's views which were basically linear. J. S. Mill argued in contrast to his father that complex ideas are not a summation of simple ideas. Complex ideas according to Mill are new wholes of new quality. According to him, "The matter of a new quality emerges which may be recognized as a mere conglomeration of elements."[20]

With this stance Mill comes closer to the modern view of Gestalt psychology which assumes that the whole is different from the sum. Thus Mill in a sense prepared the ground for viewing the complexity of ideation structure in amore sophisticated manner than through traditional linear logic. However, Mill is recognized as having provided the keystone for the scientific paradigm in his four methods of experimental inquiry,

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[19] J. S. Mill. On Liberty. In Gertrude Himmelfarb, Ed., Penguin Books, Ltd., 1978. First print, Britain: Richard Gray, The Chaucer Press, Ltd., Bungay, Suffolk, set in Mon Type Garamond 1859. The peculiarities of Mill's life are described in detail by Himmelfarb. Mill was under the influence of his father's intellectual rational training until age 20, when he had a nervous breakdown. After this he came in touch with his own feelings, experienced emotions and came to realize the significance of the subjective element in the mental process. Then he started to write on the internal world of the individual, stating, "Happiness is the output of the internal culture of the individual" (J. S. Mill, Ibid.:15). This view of happiness brought Mill to the question of liberty as an act of freedom to choose.

[20] Quoted in Chaplin and Krawiec, (Op. cit.:23).

which are linear, given his Logic of 1843. Boring (1963:112-113) reports:

> Mill's first method is the method of agreement: if A is always followed by a, then A is presumably the cause of a. Mere agreement does not, however, furnish rigorous proof, although you may be limited to it when you lack the voluntary variation of events - the independent experimental variable - and are reduced to description only. For this reason the establishment of causal relations in biography, history, geology, paleontology and even astronomy is less sure than in experimental science. Mill remarked that mere agreement would indicate that night is the cause of day, and day the cause of night, since the sequence is universal, and he noted that we can be more certain that agreement indicates cause when the antecedent term in the conjunctions of events can be established at will without dependence upon other events. Mill was right in mistrusting the Method of Agreement, since the concurrence of A and a in sequence means only that both are effects of the same sufficient cause, and since if that other cause is sufficient but not necessary, it takes the Method of Difference to show that A and a are not necessary concomitants. It is for this reason that Mill suggested that the Method of Agreement is strengthened if A can be varied "at will", that is to say, if A is a freely independent variable. Such a caveat, however, actually constitutes an extension of the Method of Agreement to include the Method of Difference (when variations of A includes its elimination) or the Method of Concomitant Variation (when A is merely changed in degree). The inference causation is never safe when based upon agreement alone.
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> The Method of Difference is Mill's second method: if A is always followed by a, and not-A is followed by not-a, then A is certainly the cause of a. This is equivalent to adding the control observation: if not-A, than not-a. Mill used the word control once: 'It thus appears that in the study of various kinds of phenomena which we can, by our voluntary agency, modify or control, we can in general satisfy the requisitions of the Method of Difference; but that by the spontaneous operations of nature those requisitions are seldom fulfilled.' This use of control is, however, in the sense of a verifying check, although Mill did not make that use of the word. He recognized, however, the fundamental relation of his first two methods, speaking of the Joint Method of Agreement and Difference, which is essentially the modern scientific procedure for treating contingencies when continuities are not observed. (The third method, the Method of Residues, need not concern us. If ABC is known to be the cause of abc, and BC the cause of bc, then A must be the cause of a, even though A cannot be produced without BC nor thus a without bc).
>
> Mill's fourth procedure is the Method of Concomitant Variations. Nowadays we think of such observation as basic to all experiments and thus of Agreement and Difference as special cases of Concomitant and Variation. Concomitant variation exists when there is a series of differences, and in any pair of concomitances,

> one concomitance furnishes a comparison or control for the other. So we could get along with this method alone, if it were broadly enough conceived, except for the historical fact that the concept of control actually grew out of the consideration of the Method of Difference, which Mill's prestige established as independently important.

This researcher argues that Mill's methods stem from his rational training in Greek philosophy. It seems as if Mill has never been able to account for the nature of the "individual internal culture" he speaks about in On Liberty. Among questions which could be raised against his view of "control" for conditions that affect the independent variable are the following:

(1) How can one identify the structure of the "individual's internal culture"[21] which Mill speaks of as the source of happiness (i.e., the cause) and be consistent with the complex causality in method "4" of his logic?

(a) Can the social scientist assume that the "internal culture" is isomorphic with the external conditions and thus be able to identify its components as independent factors of what Mill calls happiness (i.e., the dependent variable)?

(b) What are the components of happiness according to Mill's view of concomitant variation and his concept of control in the sense of comparison or even in the sense of a verifying check?

This researcher argues: it takes a static system to be a recipient of external conditions, and to reorder them in a mechanical check-up, to bring about an outcome of anticipated features (of happiness, whatever happiness means). Then one can sssume such input as causality for the given output that scientists want to measure.

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[21] See J. S. Mill's argument on internal nature in footnote 19, p. 100.

(2) Systemically speaking, it seems that the concept of "new emergence" that Mill uses to describe the complex idea as an output which is bigger than the summation of the input, is in contradiction with any of the scientific methods that Mill assumes to be useful in finding the causes of a given behavior. The point is that Mill suggests these methods which could be used to describe correlations among variables, but none of these methods could be taken as a method of finding the causes for a given event. For this reason this researcher mistrusts the deductive logic of causality and classifies it as a closed system. It is a closed system in the sense that it gives circular explanations and leads scientists nowhere. Its significance lies only in its ability to quantify behavior. The question is, are the scientists really quantifying what they initially start to quantify, namely the causes and their outcome? If the answer is negative, are we not justified in saying that positivism is reductionism and thus misleading?

According to Laszlo (1972), the systems view which is in opposition to Mill's view can be summarized as follows:

(1) To have an adequate group of reality (i.e., organized events in nature), we must look at things as systems with properties and structures of their own.

(2) The systems approach does not restrict the scientist to one set of relationships as his object of investigation; he can switch levels, corresponding to his shifts in search interest.

(3) A system in one perspective is a sub-system in another. But the systems analysis view treats systems as integrated wholes of their subsidiary components and never as the mechanist aggregate of parts in isolable relations.

(4) The systems view is the emerging contemporary of organized complexity, one step beyond the new view of organized simplicity and two steps beyond classical world views of divinely ordered or imaginative envisaged complexity.

These points are reviewed here as a reminder of the systems analysis method that was discussed earlier in this work and on the basis of which this researcher continues to examine the systems of thought in the various schools of psychology. It seems that the British empiricist views do not match with the criteria of the systems view of the world. Hartley's views, for instance, are strictly physiological, his contiguity principle is unidirectional and follows Newtonian logic, a traditional logic in physics that is challenged by quantum theory. Hartley's views are atomic in their analysis of the bonds between one idea and another. In the final analysis, Hartley's view corresponds to the first method introduced by Mill - the method of agreement - which is mistrusted by Mill and by this researcher as well, though for different reasons. This researcher views the method of agreement as essentially linear. It does not correspond with the complexity of nature and it assumes an efficient causality without considering the teleological causality of the behaving system. The ideation process, from this researcher's viewpoint, is a transformational process for input from the external world, in a dynamic manner which is caused by the interaction of the physical and the metaphysical worlds of the individual. These two worlds are one world in nature and describing them as two worlds is just for the lack of a single term to describe both worlds without hurting the concept of multiplex energy flow. Such a term might exist in the oriental cultures since they tend to hold the belief that life after death is not separate from life before death

and that both the physical and the metaphysical worlds are present in man's mind at any point.[22]

The British empiricists' dualistic problem in their view of man and universe and its associated epistemology, is also clear in Hartley's split view of the properties of objects as being primary and secondary qualities. Though Locke identifies secondary qualities by experience, to him the knowledge of any object is in the final analysis empirical - mind is a tabula raza. This is a clear stance in which the metaphysical world is completely erased or is thought of as non-existent.

Berkeley took the other extreme of Locke's view and did away with the physical world by assuming that reality is mind. Hume, in contrast, destroyed the concept of mind and causality and treated them as fictional. Hume did away with mind, but for different reasons from those given by Locke. Locke retains the concept of "mind" but sees mind as a tabula raza - a concept that implies the physiological structure of the brain and thus it is physical. It is clear then, that the British empiricists oscillate between the physical and metaphysical worlds, at best they treat these two faces of one coin as separate entities and thus as dualistic; at worst they accept one and completely deny the existence of the other. According to such views, man is never treated as a whole unit but rather his mind is reduced to elements that the British associanists want to structure in bonds of sequential order - in terms of the contiguity principle.

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[22]The Chinese speak of "Tao" as the unity of yin/yang (i.e., matter/energy). Appear in Capra (Op. cit., 1975). Arabic language has the term "Madrehiet El-Kawn", meaning Mada + Ruh (= Madrehiet, i.e., matter and spirit), El Kawn means universe and is used to describe the individual's existence and/or the universe. This finding is evidence for the impact of the cultural motif upon the epistemology of language structure and upon the trend of scientific thought. Unfortunately, both Chinese and Arabic rhetoric are viewed as mystic and non-scientific.

It seems that the concept of causality is the core question of the scientific paradigm, which is based on the British associanistic epistemology and on its co-partner, Aristotelian logic. This researcher argues that Hume's view of causality as fictional in the minds of men is an extreme position to take. However, such a view may be partially justified if it were to be directed against the linear logic that underlies the scientific methods described by Mill. These scientific methods, whether the method of agreement, the joint method of difference or the concomitance variation of control, are linear. They are Aristotelian in their epistemology, in the sense of efficient, not in the sense of final, causality. The efficient causes are described by Aristotle as forces that push objects from behind in a sequential manner and the final causes are forces that pull the object to its equifinality.[23] The scientific methods tend to avoid dealing with the final causes and search for the first type of causes. Thus a situation is created by assuming confidence in Newtonian classical concepts of time and space, which proves to be incongruent with the dynamic nature of events as it was described earlier.[24]

It seems that the British empiricist associationism school is concerned with efficient causality and tends to overlook the final causality or what Buckley calls the teleological causality. This researcher agrees with Buckley (1968) that the British

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[23] W. Buckley (Ed.). Modern Systems Research for the Behavioral Scientist. Chicago: Aldine Publishing Company, 1968:xvi. This work points out that the efficient causes are the ones which are considered by scientists while the final causes which represent the purpose of behavior or the teleology of systems are not considered in scientific methods.

[24] See the previous discussion on the logic of scientific discovery, quantum theory, pp. 38-40, 47-49.

empiricists' views have a limited capacity to explain the dynamic behavior of human beings (p. xvii). Teleological causality in Aristotelian philosophy is also limited. It explains motions of material bodies, both living and non-living, as a consequence of displacement of bodies from their "natural" positions. What is the natural position of a given body? According to Aristotle the natural position is the place of the object with or in the "element" of natural elements from which it is composed. Thus the natural position of a stone is the earth (i.e., the original element of stone) and therefore throwing a stone from any position will inevitably lead the stone to fall back to earth.[25] (Later it becomes known that the object comes back to earth because the gravity forces of the earth are in opposition to the gravity force of the stone). However, Aristotle's argument is that causality is both efficient and teleological. Neither the traditional concept of efficient causality nor its co-partner, teleological causality are coherent concepts in accordance with holistic dynamic views. The traditional efficient causality that Hume seems to refuse and to call fictional is the sequential causality that pushes the object to be in motion. It assumes that A leads to B provided that everything else is constant (i.e., a control method is necessary to account for separating the independent variables from other variables that have confounding effects). However, in view of this research nothing is constant, neither in the experimental sense nor in the Newtonian sense of absolute concept of time and space. Thus, the argument is that efficient causality exists only in a form of motion where energy is never separated from matter. Quantum theory (see the previous discussion on Heisenberg in

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[25] Buckley (Op. cit.,:xvi).

Bridgman, 1936, Capra, 1975 and Banesh Hoffan, 1947) indicates that efficient causality exists in the capacity of the particle to be in motion and/or in its momentum in a space-time domain, the range of which is not determined by its position in relation to the nucleus of its observed field by any means of definite measures. The anticipation of the particle's momentum and especially the subparticle's momentum in a given field is beyond prediction by means of micro-measurements. It is that peculiarity of the particle-wave behavior that changes the efficient causality from its traditional sense into the modern sense of assuming probability. However, probability still does not explain causality in its actual sense, since it is only hypothetical. The concept of efficient causality could be taken in the relativistic sense provided that it is not separated from the pull force (i.e., the teleological causality) which could be outside the behaving organism.

The interactive unitus of the space-time domain with the observer's system is basic to the concept of causality in this work. The point is that the observed system (i.e., the material object in living or non-living systems) is indivisible from the observer's system at any point of mental activity. This is a transformational process that underlies any act or behavior of human systems. Einstein realized long ago that there are cases when the observer moves with a high velocity with respect to the observed phenomena. Capra (1975:164-65), reporting on Einstein's view, says: "In such a case observers moving at different velocities will order events differently in time . . . In high energy physics, where events are interactions between particles moving almost at the speed of light, the relativity of time is well established and has been confirmed by countless experiments. The relativity of time also forces us to

abandon the Newtonian concept of an absolute space-time . . . there is no absolute space independent of the observer."

The relativity of spatial specification says that the position of the object in space can only be defined relative to some other object. Einstein recognized that temporal specifications are also relative and depend on the observer. However, the whole concept of relativity theory is based on the discovery that all space and time measurements are relative (Capra, 1975:164).

It is apparent from the foregoing that the independent variables which Mill aims to identify are not, in fact, separable in any free sense from the confounding effect of other factors including the observer's interactive impact upon the observed system. Thus the faith of social scientists in the scientific method based on Mill's logic seems to be in need of alteration, or to be questioned. The scientific method based on Mill's logic does not stand the challenge of the quantum theory, the indeterminacy principle, or the relativity conceptualization of time and space. The established relativity of time and space in modern physics indicates very strongly that, "Space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality."[26] This researcher further argues that even the union of time and space does not form an independent reality. Reality at any point is interdependent and it exists only in the "biospheric" sense of Angyal's (1941) concept of life.[27]

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[26]Capra, (Op. cit.:168). Capra is quoting M. Minkowski's lecture given in 1908. This shows that the dynamic concept of time in relation to space was urgent since 1908.

[27]See previous discussion on pp. 28-29.

In view of the previous discussion, it is apparent that causality is a unitus multiplex. This means that as space and time are united in one force they are also interactively united with the observer. According to this view causality is not fictional; it is a truism. Living systems, especially the human system, are not aimless; they are teleologically motivated. The human being has a purpose(s) to live for; he has a goal to achieve in his movements at any point. Man as such is constantly moving towards his equifinality and this is what constitutes the pull-force (i.e., the teleological causality). Man may or may not be aware of his equifinality but equifinality itself is inevitable (though not in any fatalistic sense). The fact that human beings have intentions that they can identify or relate to, and that these intentions push them to act in special ways, means that there are efficient causes. However, since there is a final condition that relatively terminates the variations of acts as one whole, or brings about a form of steady state for such a whole, a teleological causality exists along with the efficient causality.[28]

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[28] Examples of the unitus causality of multiplex nature, where both efficient and teleological forces are interactively related at any point in man's life, are evident from Mill's life. Mill is reported to have had multi-dimensional interests. The most significant training for his later intellectual endeavor came from his study of Greek philosophy. Mill tended to follow the rational paradigm of logical analysis most of the time. This is an intellectual behavior that is caused by efficient causality (i.e., sequential kind of reinforcement in past history with a positive feedback from his father's training). However, the chain of efficient causality breaks at a certain age (i.e., around 20). Mill became interested in emotional life and started to write on the internal culture of the individual. However, it was the equifinality of his overall training that brought out his Logic in a linear form (see previous discussion on pp. 100-103). The argument is: if one follows the efficient causality along one would never be able to predict that Mill would write "On Liberty" though one might have predicted the possible contribution of Logic. But in an open system of logic analysis, a prediction of the two kinds of contributions (i.e., open logic of Liberty and closed logic of Logic) could have been possible. This is the view of Yin/Yang for the nature of the hyman system and the emergence of harmony between the opposites.

The thesis of this argument is that the efficient causes, if taken separately from the final ones, are misleading in the final analysis. They predict the future on the basis of past events in a sequential deterministic manner. The sequential process of efficient causality is based on the assumption that any step is caused by the occurrence of its preceding step and that the previous step is both necessary and sufficient for the prediction of the successive step to occur. It is argued that this logic ignores the dynamic relationships among the previous steps as a totality and moreover, that it expels the role of the pull force in the teleological sense. Consequently, it is maintained that the sequential logic in the Aristotelian sense and its rebirth in the British associationistic principle of contiguity is extremely linear and is not coherent with the multiplex principle of dynamic causality (i.e., the union of efficient and teleological causality in one force at every point of transformation).

Causality in its dynamic sense is an ontological force of united pull-push forces. The union of pull-push forces creates the energy principle, which is here called the unitus multiplex principle. In short, causality is the energy principle of the unitus multiplex nature of the pull-push union, which is the logic for the explanation of the union of physical-metaphysical dimensions of any event. This view of causality accounts for the subjective element in describing any operational phenomenon. The causality principle as such is coherent with the alternative scientific method that is proposed in this work.[29]

The psychophysics and quantitative psychology school selects

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[29] See previous discussion on pp. 71-78, 80.

sensory processes and individual differences as its object of study. The chief method employed by psychophysics is quantitative measurement. Thus the derivatives of this school are the factor analysis techniques and cybernetic theory. Ernest Weber (1795-1878) is the founder of psychophysics and his co-founder Gustav Fechner (1801-1887) the articulator of the psychophysical principles. The work of Weber and Fechner at Leipzig had significant impact upon the founder of quantitative psychology outside of Germany, such as Galton in Britain and Binet in France.[30] Weber carried over the experimental methods of physiology to the investigation of psychological problems. Weber's experiments were done on the sensory processes especially on the sense of touch and the kinesthetic sense. The most outstanding finding of Weber's experiments is the constant ratio between the just-noticeable-difference (j.n.d.) and the standard stimulus which is found to be 1:40. This constant ratio is the result of extensive experiments on lifting-weights. These experiments were extended later on the two points threshhold on the surface of skin. However, the results of these experiments were never formulated by Weber. Weber, Fechner and other sensory psychologists saw the significance of their work in pointing out the physiological basis of behavior quantitatively, especially in relation to the neurological theory of behavior. (Chaplin and Krawiec:175) say: "In the days of Weber and Fechner any psychologist would be considered a poor experimentalist who allowed the subject's attitudes, needs, values or similar O factors to affect the experimental results."[31]

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[30] J. Chaplin and T. Krawiec, (1968:Op. cit.).

[31] "O" factors are organismic ones. These factors refer to the cognitive structure of the individual's internal world. Theorists who employ O factors are referred to as S-O-R psychologists (i.e., stimulus mediated by organismic factors to bring about the response).

The psychophysics scientific community's orientation indicates a strong faith in the control[32] measures that scientists use to identify the independent variables as free variables from confounding elements. This cultural motif is a reflection of Mill's "Logic" for scientific discovery (i.e., eliminating the subjective element). It follows then that the psychophysical orientation is based on linear logic for similar reasons pointed out earlier. The experimental orientation requires an apparatus that can measure the relationship between two sets of conditions assuming that A leads to B provided that everything else is constant. Such orientation would inevitably lead to quantifying the observation mathematically. This is what Fechner does in articulating Weber's j.n.d. in a mathematical equation which shows that a constant measure for the j.n.d. is possible (i.e., exists in reality and is measurable by absolute units in measurements). The equation states $\Delta/R = K$, where Δ/R is a stimulus increment, K a constant, and R the standard stimulus magnitude.[33]

Fechner's equation is consistent with the thinking of the scientific community at the time and with his own training in medicine and later in both physics and mathematics. The emphasis on measuring the constant

[32] E. Boring (Op. cit.:123) points out that control is used in three senses: "Control in the sense of restraint has always been used in experimentation to keep conditions constant and is thus an essential part of the experimental method. Control in the sense of guidance is involved in causing an independent variable to vary in a specified and known manner and is thus also essential in experimentation. Control in the sense of a check or comparison, the original meaning of the word, appears in all experimentation because a discoverable fact is a difference or a relation, and a discovered datum has significance only as it is related to a frame of reference, to a relation." These three senses are used in psychophysics as a school of experimentation.

[33] See Chaplin and Krawiec (1968) and Boring (1963) for details on the mathematical arguments concerning Fechner's equation. However, it should be noted here that Weber's law currently has gone through several points of transformation and has been further developed to include response processes to a point that its linearity is completely challenged by experiments on weak, medium and intensified stimulation. Experiments of this kind gave the evidence that Weber's law of j.n.d. is only applicable to average stimulation while it fails to describe the two extremes of stimulation intensity.

factor in discrete units is a heritage of Newtonian logic. However, Fechner is concerned with the problem of physical and metaphysical worlds. His solution to this problem is given in his identical hypothesis which assumes that mind and body are identical. Chaplin and Krawiec and Boring view Fechner's solution for the body-mind paradox in his identical hypothesis as a sign of humanistic orientation. However, this researcher argues that Fechner's view of mind-body as identical is similar to Aristotle's view of behavior as the function of the body. Such views are static since they do not account for the emerging outcome of the interaction between the individual as a whole and his environment. Such emergence includes within it a metaphysical dimension which is beyond the identical hypothesis and in effect is not constant. Consequently it is not surprising to find that Fechner uses the constant concept, since he assumes the "identical hypothesis" to be true. The ratio between a stimulus increment, Δ/R, and the standard stimulus R, and their outcome in a constant measure K, is consistent with the identical hypothesis. Thus Fechner's equation is coherent with his epistemological scheme of analysis. The question is, can the scientist assume that the tools of measurements which Fechner uses are valid in the sense that they measure what they claim to measure? Is there really a standard stimulus in the objective static sense? Is it true that all j.n.d. are equal? Boring (1963:128) points out that: "The measurement of j.n.d. and the business of counting up j.n.d. to measure a sensation met with the question: How do you know that all j.n.d. are equal? And indeed, when measured by certain other scales, j.n.d. may turn out not to be equal." The "identical hypothesis" which is viewed as an attack against materialism, ironically enough has led to the objectivication of the spiritual world by measuring

sensation. In fact, "Fechner attacked the ramparts of materialism and was decorated for measuring sensation" (Boring, 1963:129).

The problem with Fechner's contribution is not with its original view of man's nature, nor with the denial of the spiritual subjective element. In fact Fechner gives serious consideration to the dilemma of materialism vs. spiritualism. Though his interest is tempered by his scientific orientation, this pursuit of the spiritual element in life could have had a different outcome if the scientific setting of that time had been different.[34] Fechner, in fact is aware of the restraints that the scientific deterministic attitude can impose on any attempt to capture the essense of the spiritual world. His concern is evident in his satiric writings on the scientific deterministic attitude as reported by Boring (1963). However, Fechner's equifinality is to take the materialistic position and further articulate its mathematical measurement.

Fechner's measurement for sensation by discrete units is ample evidence of how the epistemological foundation of a given theory decides its equifinality. Once the theory builder assumes an "identical hypothesis" for body and mind, it is implied that these two entities are parallel, equal on the basis of certain measurement techniques that are

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[34] E. Boring, (Ibid.:129) points out that, "The case with Fechner goes like this. Sensory threshholds had been determined as much as a hundred years before Fechner. The physiologists were already experimenting with sensation - Johannes Muller with specific nerve energies in 1826, Ernst Heinrich Weber with tactual sensibility in 1834. To contemporaneous thought Herbart had contributed the notion of measurement of ideas, while denying the possibility of experimenting on them, and he had made Leibnitz's concept of the threshhold well known . . . It was in this setting that Fechner had on 22 October 1850 his important insight about measuring sensation and relating the measures of sensation to the measures of their stimuli."

taken as standard (i.e., constant and static). This would inevitably lead to overlooking the interactive nature between the system we are measuring and the system of measurement. In Fechner's case "sensation" as a process - a system that he measures - is assumed to be static since it is measured by means of external stimulus "weight-lifting" which is static, relatively speaking, compared to the dynamic nature of man's sensation. Measuring sensation by static means also requires elemental analysis in which sensation is reduced to "elements" and the summation of these elements make up the whole. This position is a positivistic reductionist position that contradicts the evidence for the dynamic holistic nature of any system, be it on the micro level of particle-wave behavior or the individual's behavior in the environment or the macro level of cosmological relationships between planets or in international relationships. Relationships between systems are dynamic, thus they cannot be treated on an identical basis in any form of static measurements. The most one can hope to do is to report events in a probabilistic fashion, but not in constant figures as it is the case in reporting j.n.d. by Fechner's equation for Weber's law. Fechner recognized the complexity of sensation by considering the difference between "constant" error and "variable" error[35] but his equations are not taken as arbitrary by experimental psychologists but rather as rules for solving their problems of investigation in measuring the reaction time of the individual for a given stimulus.

In short it is argued that the "identical hypothesis" which is given by Fechner is a static view that assumes a static existence of what is called "standard stimulus," and a static existence of "stimulus" incre-

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[35] An experimental error is continuous and in one direction. The subject either constantly overestimates or constantly underestimates. Variable error means the deviation of a measure from the mean.

ment, regardless of the interactive relation of the observer with such stimuli as he acts upon them. This position is viewed in light of the relativity view of time and space as a deterministic, positivistic reductionistic position that is not coherent with the dynamic nature of sensation which Fechner attempts to measure. Thus Fechner cannot be identified as a humanistic theory builder on any basis that this researcher takes as criteria of humanistic psychology (i.e., psychology that accounts for the subjective element rather than doing away with it). The measurement problem of Fechner's systems analysis is its embarking on elements analysis measures which reduce the sensation from a psychological process into a physicalistic perspective that "has done away with teleological causality" (Buckley, et al., 1968:xvi). In the final analysis one can see that psychophysics is the offspring of the British empiricist associanistic school. The former is a psychologism of the latter's epistemology which in turn is deep rooted in Greek philosophy. However, the significance of Fechner's work is his demonstration to psychologists that sensations could be measured. This has activated the trend for quantitative psychologists to measure individual differences and their various attributes.

Boring (1963) points out that the history of measurement in psychology and those activities that eventually become quantitative psychology, fall into four independent historical categories:

(1) The history of psychophysics that may have started one hundred years before Fechner's work, when psychologists tried to measure sensitivity and attempted to discriminate among the capacities of various senses.

(2) The history of emphasis on reaction time which started with astronomers who tried to measure and take account of the personal equation in the observation of stellar transits. At this time scientists also discovered the galvanic electricity and electro-magnets that had made chronographs and chronoscopes available to determine individual differences in reaction times.

(3) The history of quantitative measurement of learning and remembering was started by Ebbinghaus in 1885. His work was stimulated by Fechner and was continued by Pavlov's 1903 study on conditioning at the turn of the century, which led to the excessive interest in experimental psychology. Skinner's work on operant conditioning in 1930 closely followed in this tradition.

(4) The history of measurement for individiual differences by means of mental tests which started with Galton's work in 1869. This trend was parallel with the impact being made by Darwin's Theory of Evolution. The initial efforts of Galton in devising simple mental tests were later promoted vigorously by James Cattell in 1890. Binet's tests of intelligence came just after these initial efforts, and thereafter the testing of individual differences became the primary concern of modern psychology in America.[36]

Interestingly enough this trend towards the quanitifcation of psychology was coupled with the emergence of statistical method from the work of

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[36] Boring, (1963:140-158).

Quetelet and his concept of the normal curve in 1835. The normal curve had been used earlier by mathematicians who applied it to the distribution of measurement and errors in scientific observations. However, Chaplin and Krawiec (1968:517) point out that until Quetelet demonstrated that anthropometric measurements carried out on unselected samples of people typically yield a normal curve, the law had never been applied to human variability. Quetelet used the Flemmish phrase "I'homome mopen" to express the fact that most individuals tend toward the average or center of the normal curve and fewer are represented near the extremes. Galton later became interested in Quetelet's applications of the normal curve and greatly extended his work. Galton also established a laboratory to enable him to conduct large scale testing of individual differences. Galton invented various statistical tools, among them the median, the standard score, and the method of correlation. However, his development of the method of correlation remains the greatest contribution to quantitative psychology. In fact, modern statistical techniques for establishing the validity and reliability of tests, as well as the various factor analytic methods, are direct outcomes of Galton's discovery. For example, the symbol "r" is taken from the word regression to recognize that the origin of correlation (r) is Galton's discovery of the tendency toward the mean in the inheritence of human traits.

This short description of the history of quantitative psychology suggests the following points:

(1) No one scientist is exclusively responsible for any trend of thought or approach in psychology.

(2) Quantitative psychology is the product of the various sciences in the eighteenth and nineteenth centuries in Europe and America. Thus psychology is not autonomous from any of the fields of physiology, physics, statistics or mathematics. In fact, even astronomy played a role in promoting qualitative psychology.

(3) The nature of man is a keystone issue which has been inspirational for the theory building of major contributions in the field of psychology. A clear example of such effort is seen in Fechner's work and his identical hypotheses for the solution of problems of mind-body and the spiritual-materialistic world.

(4) The emergence of quantitative psychology in Europe seems to give support to the concept of positional value. One can see clearly that Germany has a leading positional value in psychological contribution. Germany's neighboring states, first Britain, then France and Belgium, transformed the German contribution and later the European work inspired Americans who had been students at European universities, to develop contributions of their own.

(5) It seems that Pavlov's work cannot be seen as separate from the whole trend of quantitative psychology. This demonstrates the interactive relationships among various countries in Europe at the time, and signifies the emergence of a counter contribution in America. Skinner emphasized the model of operant conditioning in contrast to the classical conditioning that is contributed by the Russian physiologist.

In short, there seems to be historical evidence for the importance of the political power of a given country in the acceptance of a given theory and also that theory builders are products of their own cultural motifs.

This, in general, is evidence that science is not objective in any absolute sense. However, one would need a lifetime to point out the detailed relationships between the political system of a given country and the scientific contributions of its scientists. Moreover, one might suspect that World War I might have had an impact upon the movement of quantitative psychology. However, it is outside the focus of this work to deal with this question.

Returning to the discussion of the history of psychology, a third school that appears in the nineteenth century is structuralism. This school uses introspective techniques to study the consciousness of the individual. Its chief areas of concern are sensations, attention, images and affective processes. The founder of structuralism is Wundt, and its chief exponent is Titchner. William Wundt (1832-1920), a German scientist, started his education in medicine and physiology and became the founder of structuralism as the result of his interest in mental activities. Chaplin and Krawiec (1968:41) state that, "Wundt believed that the subject matter of psychology is experience - immediate experience - to be studied by introspection, an objective, analytic observation of one's own conscious process. The primary aim or problem of psychology is the analysis of conscious experience into its elements." Moreover, Wundt is known for being the founder of experimental psychology.[37] However, his contribution to psychology goes much deeper than the mere founding of the first laboratory. His systematization and organization of psychological trends of his time contributed much to the synthesis of various views, especially in physiological psychology. His views on the introspective method, and on the task

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[37] See page 50, footnote 19, in this work.

of systematic analysis for the conscious experience remains a special contribution. In the first place, Wundt attempted to analyze consciousness, to point out that consciousness is composed of interrelated elements, and that the synthesis of these elements follows certain laws. Though Wundt treated consciousness like a chemical compound and concentrated on the mental process as a content rather than an act, it was the equifinality of Wundt's work to be reductionistic. According to him, mind is reduceable to elements which cohere in some lawful way.[38] These mental elements cohere by the principle of association. This view relates to the theory of learning by association and in itself contributes to the thinking theory, especially since Wundt's work was directed to the analysis of mental contents. Moreover, the emphasis on studying conscious experience by introspection brought structuralism to the treatment of emotions as adaptive mechanisms to the environment. This is the case since introspection creates awareness of environmental conditions. According to Wundt, awareness is a necessary condition for this adaptation to occur.[39]

Titchener (1867-1927) did work which is Wundtian in spirit, methods and even in types of problems of investigation. Titchener was British by birth, German by educational training and American by scientific reputation. Titchener's work is viewed by most historians of psychology as representative of the major tenets of structuralist psychology in American psychology.[40]

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[38] Chaplin and Krawiec (Op. cit.:42).

[39] Ibid.: 91, 351, 470.

[40] This is seen in Boring's History of Psychology and Science, and in Ford's The Story of Scientific Psychology, and Chaplin and Krawiec's Systems and Theories of Psychology.

Literature review (Ford (1932), Boring (1932) and Chaplin and Krawiec (1968)) on Titchner's contribution to psychology could be summarized in the following points:

(1) The monistic view of science

Titchener holds the belief that all sciences have the same subject matter, namely human experience in relation to natural phenomena. Each science takes one phenomenon as its focus of investigation. Psychology, therefore, is a field that relates to general sciences, be it physics, biology, chemistry or any other science.

(2) The subject matter of psychology and its method

The subject matter of psychology is the conscious experience. Since this experience is a private affair it can only be observed by the experiencing person. This technique of observation is called introspection.[41]

(3) Content of conscious experience

Conscious experience is composed of three major mental elements: (a) sensation, (b) images, (c) affective states. Each of these elements has three main attributes: (a) quality, (b) intensity, and (c) duration. These elements and their attributes are the sources of all higher mental processes.

(4) Chemistry of mental elements

Mental elements are analogous to chemical elements, in that both could be classified and grouped. The attributes of elements make the dis-

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[41] William James is reported by Ford (Op. cit.:19) to have treated this method of introspection with a good sense of humor. "How are you going to be able to think about the thing you are thinking with? It sounded suspiciously like a man trying to lift himself with his own bootstraps, or trying to look directly at his eye with his eye. How are you going to be able to think and at the same time watch yourself thinking?"

tinction between one element and another. For example, quality is the first attribute of sensation, that enables the psychologist to give a special name to a given sensation process. The intensity of such quality differentiates the degree of such quality in a given element and its clarity characterizes this sensation in terms of its place in consciousness. The position of sensation in consciousness decides its dominance, whether it is in the foreground or background of the mental experience. Duration of any element (in that case, sensation) describes the temporal course of this element. It describes the sensation's rise, poise and fall in the process of consciousness.[42]

Titchener continued to hold the aforementioned views until his death. He refused to accept any evidence or arguments against the introspective method, even when the functionalist school of psychology became very active during the last ten years of his life. Titchener in his last days became a coin collector, and became less interested in psychology.[43] Such a peculiarity in Titchener's life is a good example of an extreme case of scientist's resistance to change. Kuhn (1970) describes such resistance by saying, "...if the paradigm is one destined to win its fight, the number and strength of persuasive arguments in its favour will increase. More scientists will then be converted, and the exploration of the new paradigm will go on. Gradually the number of experiments, instruments, articles and books based

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[42] J. Chaplin and T. Krawiec. Systems and Theories of Psychology. This work, referred to earlier, treats Titchener's work all through the topics that relate to mental activities and draws all its information from the primary source, E. B. Titchener. A Textbook of Psychology. New York: MacMillan, 1910.

[43] Ibid.: 81.

upon the paradigm will multiply. Still more men, convinced of the new view's fruitfulness, will adopt the new mode of practicing normal science, until at last only a few elderly hold-outs remain. And even they, we cannot say, are wrong. Though historians can always find men - Priestley, for instance - who were unreasonable to resist for as long as they did, they will not find a point at which resistance becomes illogical or unscientific. At most they may wish to say that the man who continues to resist after his whole profession has been converted, has ipso facto ceased to be a scientist."[44]

Titchener's resistance to change, in a way, does not make him a non-scientist, inasmuch as his method continued to receive attention from scientists. Psychologists in the early 1920's point out the limitations of Titchener's method and developed an alternative method which is known as the experimental introspective method. Chaplin and Krawiec (1968:45-46) criticize Titchener's introspective technique in two main points: (A) The technique cannot be applied in the study of animals, children and mentally disturbed people; (B) Introspection techniques create a problem when one tries to observe emotional consciousness. Titchener did, however, have solutions for these problems. In the first case, he maintained, psychologists could study these subjects by introspecting on their parts (i.e., by means of "empathy," by which he means a form of introspection, since it could be done by conscious experiencing). The second problem, though admittedly difficult, Titchener said, could be solved by the use of retrospection. Titchener

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[44] Titchener's resistance to change could be viewed as an extremist kind of resistance in view of the fact that the functionalist school of psychology was so active in the 1920's, as it would be presented in the short coming discussion. Especially that by then Carr had established a whole scheme of reference for studying the mental activities in terms of their functions rather than in terms of descriptive analysis as Titchener did.

assumes that a scientist whose calm attitude is disturbed in certain instances of laboratory work, is capable of restoring such attitude. Hence, he argues that the scientist facing such instances can restore his scientific attitude and be able to recall and consciously describe his mental activity by using introspection again (i.e., retrospection).

This researcher's counter argument to Titchener's solutions is two-fold: (1) Empathy involves new mental elements that are inherently within the private consciousness of the empathizer, especially since empathy includes interpretation of what one observes. This makes introspection on the part of others a distortion of actual conscious experience. (2) Retrospection is a form of recalling which includes an unavoidable problem of forgetting. The argument is, unless one is dealing with recalling static items of limited instances of numerousness (i.e., equal to his span of apprehension = 8 digits) it is difficult to believe that retrospection could be equivalent to introspection. However, the introspection technique involves recalling. Introspection is defined as a form of internal observation. The question remains: Is it possible that one can think and at the same time observe one's thinking process? It is conceivable to believe that there is a necessary process of recalling before internal observation occurs. Therefore, in the final analysis, there is no introspection in the process of thinking. What is called introspection is in fact retrospection. Finally, one might ask the question: What is the value of describing the content of conscious experience if we don't know the function of such experience in our process of adaptation to the environment?

The problem with the structuralistic system of psychology lies in its emphasis on describing the mental elements objectively while its means of

studying such elements is mainly subjective. Titchener (1910:268) even aimed at studying conscious experience by means of introspection and assumed that it is possible to train psychologists to do so experimentally. It is clear that Titchener's aim and its epistemology have internal inconsistencies on one hand, and are inconsistent with the nature of experimental training. One cannot expect a conscious experience, which is by nature a private experience, and at the same time train the individual to experience it in a prescribed way (by experimental training). In other words, it is unlikely to train one on how to experience his world privately (to introspect).

It seems from the previous discussion that the structuralist school was facing a similar problem to the one other schools (such as the associationism and psychophysics schools) were facing. This was the problem of dealing scientifically with the physical and metaphysical aspects of mental activities (i.e., by objective techniques), without misunderstanding the nature of these activities as they occur. The associationistic school reduces mental activities to chains of events and the psychophysical school introduced techniques of measurement for human sensations as association takes place between external stimuli and sensory response. The structuralistic school utilized these efforts by introducing the chemical analogy to mental activities. Thus all these schools, in essence, avoid dealing with the dynamic nature of mental activities. Still the archconceptualization for the nature of man is based on the assumption that man is a reactive organism and knowledge is empirical. The problem still lies in the nature of mind-body uniting. None of the schools, so far presented, have dealt adequately with the mind-body problem (i.e., in a multiplex logic or internal consistency).

Similar arguments against Titchener's view of mind are given by Ford (1932:20-21), especially in relation to the mind-body problem. He says:

"Titchener merely held that there is a consciousness and there is a body, the facts of each of which are separately observable, but the relationship can never be known and must always remain a purely speculative problem which should not concern either psychological and physical science, whose duty is to pursue only facts, not metaphysical hypotheses. Titchener might be described, therefore, as a negative dualist, one who believes in both the mental and physical nature of man, but is content to omit any assumptions of causality between consciousness and body."[45]

In conclusion, structuralistic psychology failed to deal with the dynamic nature of mental processes. It also failed to solve the problem of"isomorphism"between what it aims to observe and what is actually observed. This failure can be attributed to the following reasons:

(1) The emphasis of structuralistic psychology on the content of conscious experience rather than on its function (i.e., the relationship between the structure of mental elements as a whole process with the process of adaptation to the environment.

(2) The emphasis on the introspective method as the only method for describing mental elements without any clear operational definition for the act of introspection.

(3) The reduction of psychological phenomena to "conscious experience" and the analogy between the content of conscious experience and chemical elements. The analogy cannot be related to the interpretations of the level of chemical function. In other words, while chemistry identifies elements and describes, the chemical reactions in formulating

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[45] In Ford's The Study of Scientific Psychology, Titchener is described as having built an immense chemistry of consciousness. This method is criticized by the functionalists on the basis that it splits the individual's mind into a system of function and an observer for such function, p. 22.

a compound, the structuralistic view identifies the elements without any further study of the nature of their reactions in formulating a chemical compound (i.e., a mental process).

(4) The failure of analogy between chemical elements and mental elements led to a contribution that is essentially descriptive rather than explanatory. This contribution lacks the ability to deal with causality of behavior, a condition which develops misleading conceptualization and a lack of understanding of the nature of mental process. Therefore it is argued that any theory of knowledge that lacks the causality view is crippled. In fact, such "knowledge" does not have a core for any practical analysis (i.e., for explanation).

(5) The avoidance of dealing with causality led to the drastic ignorance of the relationships between body functions and mental processes and to the overlooking of the significance of the interaction process between the individual and his environment in the formulation of "mental elements".

Because of these limitations in the structuralistic psychology this researcher reviewed literature on the functionalistic school in order to see how this school deals with these limitations. Table "1" shows that the functionalistic system of psychology has chosen to deal with mind in terms of its adaptive significance for the organism as the subject matter of study. The chief areas of concern for the functionalists are perception, learning and mental testing. The method of study for these areas is the objective experimental method of introspection. However, introspection which is employed in the functionalistic school is different from that which was employed by the structuralists.

Ford (1932:23) defines functionalism as a theory of psychology that deals with mental process as a natural accompaniment of the evolution of physical processes. He points out that functionalism looks for causation of mental events in the physical growth of the nervous system. However, the physical growth of the nervous system is not the original cause of mental functions, it is rather the mechanisms of heredity that are the vehicles of the process of evolution.

Such a definition suggests that functionalism does not treat the mind without considering the body, nor does it solely describe mental activities as a structure of mental elements. In fact, functionalism concerns itself with the causes of mental activities as well as with adaptive functions.

The questions that are relevant to an examination of the conceptual web of functionalism are the following:

1. What is the nature of mental process according to functionalism?
2. How does functionalism view the principles of learning and adaptation in relation to mental activities?
3. Are the principles of adaptive behavior endowed with linear logic or with unitus multiplex logic?

Chaplin and Krawiec (1968:47) consider functionalism as having been influential in American psychology from the mid 1850's to contemporary times. However, functional psychology reached its peak and was given its most definite form at the University of Chicago during the third decade of this century, especially in the writings of Carr, who was the chairman of the psychology department during the 1920's. His work, Psychology: A Study of Mental Activity,[46] is a primary source for answers to the aforementioned questions on functionalism.

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[46] H. Carr, Psychology: A Study of Mental Activity. New York: Longmans, Green, 1925.

Carr's views can be summarized as follows:

1. The nature of mental activity

Mental activity is a dynamic process that includes acquisition, fixation, retention, organization and evaluation of experiences, and the utilization of all of these in the guidance of conduct. Accordingly, mental activity is viewed in terms of its utility in adaptive acts. It is for this reason that Carr is considered a functionalist. He views mental activity as not mutually exclusive from body functions. Carr, as well as other functionalists such as James and Dewey, consider the function of the nervous system as a significant mechanism for the processes of mental activity. Carr (1925:17-18) says:

> We shall describe the nervous system as a mechanism for mental acts. 1. The nervous system conducts impulses from sense organs to muscles and glands. It is a device that translates sensory stimuli into movement of an adaptive character. 2. It offers potential avenue of connection between each sensitive point in the body and each functional group of muscles. 3. It permits of motor coordination - the stimulation arousal of a large group of muscles by a single stimulus. A large degree of motor coordination is obviously involved in every act of the organism in reference to its environment. 4. A group of stimuli, each affecting a different sense organ, may cooperate in initiating a single response. In other words, an organism can react to a complex sensory situation. 5. The nervous system permits of a high degree of variability of response, - the ability of an organism to vary in its response from time to time to the same stimulus. Without this the organism would not be able to learn. For learning involves a modification or change of behavior on the basis of previous experience. In more general terms the nervous system makes possible a highly variable and coordinated type of behavior in response to any group of sensory data.

It is clear from this quotation that the nervous system plays a significant role in determining the type of response the individual makes to any group of sensory data. This suggests very strongly that mental activity, as a psychological act, involves both mind and body in the undertaking of any task. This stance is contrary to the structuralist view which does not

deal with body functions in describing the mental content. However, though Carr admitted that mind and body are involved in any given task, he maintained that the attainment of an ultimate solution to the mind-body problem is a task for philosophers rather than psychologists (Chaplin and Krawiec, 1968:49).

According to Carr, mental processes are accompanied by motor activities which are adaptive acts for a behavioral situation. Thus mental activity is defined in terms of conscious experience and motor acts. Therefore the method for studying mental activity includes: 1. An introspective technique for studying the conscious experience, and 2. an objective method for studying the motor aspect of mental activity. However, Carr emphasized the objective observation method more strongly than the introspective techniques. Such emphasis moves functionalism closer to physiology and the study of animal organisms and makes neurology a core discipline for the study of the individual's behavior. However, the interest of functionalism in examining the impact of the environment upon the individual's behavior led Carr to point out the significance of utilizing other behavioral disciplines for understanding mental activity. Some of the behavioral disciplines that Carr utilized are anthropology, sociology and education. This interdisciplinary approach makes functionalism a monistic discipline in its subject matter as well as in its tools of interpretation.

2. Principles of learning and adaptation

Learning, in Carr's Psychology, is dealt with in a very general way. Carr more or less lays down the broad principles of learning as a process of adaptation or adjustment which is inferred from observing tension-reduction

in the individual organism. Learning, according to this view, is a process of problem-solving in behavioral situations. Learning as such is an adaptive act that includes two stages: (a) a preparatory stage of attentative adjustment, which involves selection of relevant stimuli to make efficient perception, and (b) a response stage which is the adaptive act itself. The adaptive act starts when a need is felt and ends when that need is satisfied. This is why learning here could be viewed as a form of adjustment.

Adjustment problems, according to Carr (1925:87), are caused by the following conditions: (a) lack of environmental means of satisfying motives; (b) lack of motor abilities which are necessary to deal with the sensory data in the behavioral conditions; (c) the existence of conflicting tendencies in the individual's repertoire at the moment of solving the problem, such as the simultaneous endowment of fear and curiosity. The individual can deal with the adjustment problems adequately when the four following factors are efficiently utilized: (1) a high level of motivation, (2) a similarity of the situation with previous ones, (3) a capacity in the individual to learn, and (4) a repertoire of previously learned adaptive behavior. In Carr's (1925:89) words:

> The problem is solved by means of available persistent and analytical attack in which the organism tests out all these modes of behavior that have been of service in meeting similar situations in times past. The hungry rat tries out all its established ways of securing food, . . . In solving a problem, organisms thus react in a manner that is relevant to the situation, for the world is so constituted that acts that are adapted to one situation are usually appropriate to similar situations. . . In fact, any given problem is solved only insofar as the organism employs an attack that is relevant to the particular situation. An aimless type of reaction will never achieve success.

It is clear that functionalists do not accept trial-error learning, since learning to them is not done at random or without aim. Though Carr

recognizes the law of effect as a law of learning, his definition differs drastically from that for Thorndike's law of effect.[47] The law of effect according to Carr (1925:92-93) refers to the fact that "the fixation and elimination of acts must be explained in terms of their consequences." According to this view, all acts alter the sensory situation, and sensory stimuli exert some effect upon the subsequent behavior of the organism. Consequently, successful and unsuccessful acts can be differentiated on the basis of these effects. In the first case, the resultant sensory stimuli tend to reinforce, direct, and continue the act until the objective is obtained, while the resulting stimuli from the unsuccessful acts operate to inhibit or discontinue the mode of attack.

Carr introduces two types of association principles of learning: (1) the explanatory ones, and (2) the descriptive ones. However, his emphasis is more on the former ones because they explain the relationship between an event and its antecedent. Carr maintains that there are two explanatory laws: contiguity and assimilation. These two laws explain the origin of association. He states the law of contiguity as follows (1925:103): "Whenever two mental events are experienced together or in immediate succession, they thereby become so related that thereafter the presence of one will tend to arouse the other. However, these conditions must be frequently repeated in order to establish any very effective connection between the two acts."

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[47] Thorndike, in 1913, defines the law of effect in terms of satisfying state of affairs; he says: ". . . When a modifiable connection between a situation and a response is made and is accompanied or followed by a satisfying state of affairs, that connection's strength is increased. . . By satisfying state of affairs is meant one which the animal does nothing to avoid, often doing things which maintain or renew it" (In, L. F. Shaffer and E. J. Shoben, Jr. The Psychology of Adjustment (2nd ed.), Boston: The Riverside Press, Cambridge, Massachusetts, Houghton Mifflin Company, 1956:130).

The character of associations is determined roughly by three general conditions: (1) The acquisition by means of perceptual motor association which result from the nervous system's functions. Successful motor associations are inferred from the satisfaction of the organism's motivating needs and appetites. However, association, here, is not solely dependent on the conditions of the nervous system, but on the type of organism and the character of its environment. (2) The sensory stimuli and its interactive condition with the organism. "All objects that are frequently experienced together must necessarily become indirectly connected by virtue of the fact they are associated with the same response" (Carr, 1925:104). (3) Socialization conditions under which the individual learns his social skills and has developed his mental abilities by the significant others. These conditions provide the individual with previous experiences which have a nture of social association (e.g., symbolic acts).

The law of assimilation is defined by Carr as all-inclusive, broad enough to encompass virtually everything that may be subsumed under "learning". According to Carr, this law is similar to the law of generalization phenomenon. It is the law which explains the over-all role of cognitive factors in the process of learning. Carr (1925:350) maintains,

> We are. . . so constituted that these responses (successful responses which are discovered in the process of solving a problem) will be evoked by, and be utilized in reacting to, any similar situation which may be subsequently encountered (assimilation). This automatic application of the fruits of past experience to new situations that arise is conducive for the most part to a successful type of response, and any occasional misapplications are quickly corrected in the give and take experience. In later development this process is carried on in a more reflective manner known as generalizing . . .Such a type of organization, thus, endows an individual with the ability to utilize his past experiences in reacting to novel situations in a very economical and effective fashion.

This conceptualization of learning brings Carr to the S-O-R orientation. In fact, Carr presents a rather lengthy discussion on the concept of the "self" and its complexity and points out that sensory stimuli are mediated by the cognitive structures of the self in any learning situation.

Carr (1925:357) says: "We may also regard our own acts from the standpoint of their personal consequences, and guide our conduct in the light of this knowledge. We frequently regulate our conduct on the basis of such considerations as health, personal safety, social prestige, and professional advancement. We may likewise regard our reactions to the world as an expression of the self. We perceive an act as something which we are doing, or think of it as something which we have done or intend to do in the immediate future."

The modification of S-R formula into S-O-R does not apply to the definition for the reflex. Carr (1925:381) defines a reflex as "a motor response to a sensory stimulus in which the connection between the stimulus and the response is mediated by innate neural conditions." Thus, the difference between typical cognitive behavior, where sensory stimuli are mediated by "O" factors, and a reflex lies in the conditions where mediation takes place. It is clear from the above definition that the reflex is not mediated by previous experiences or motivational conditions and the perception of the self. The reflex is "mediated" by innate neural conditions which clearly indicates that reflexive acts are involuntary and reactive. In contrast, cognitive acts such as discrimination, thinking, organization and evaluation are mediated by previous experiences, attitudes toward objects and the self, and mental abilities. Moreover, cognitive acts are also processed and affected by the physiological conditions of the organism.

Carr concludes his discussion on learning with a consideration of the problems of transfer, association and habit by relating these processes to his over-all scheme of learning as a problem-solving process that brings about the adaptive act. Transfer involves the utilization of previous experience in confronting the new sensory situation and modifying the habitual modes of behavior. Association is strengthened as the result of three factors: (a) frequency, (b) recency, and (c) primacy. Habit is inferred from the automatic nature of habitual behavior. Habit strength, according to Carr, depends upon four factors: (1) the number of repetitions of an act, (2) the constancy of environmental conditions under which a habitual act is performed, (3) the degree of pasticity and flexibility of this habit in relation to the individual's repertoire, and (4) the degree to which competing activities have been eliminated.[48]

Functionalistic psychology in general is characterized by its empirical orientation in studying learning, and its study for verbal learning in particular. The fact that functionalism is interested in verbal learning makes this theory attractive to modern psychologists, for verbal learning is a distinct trait of human beings. Another reason for the continuing popularity of functionalism is its ability to offer theoretical explanations for research findings (Chaplin and Krawiec, 1968:287).

3. Emotions, sensations and perception in functionalism

The functionalist treatment of emotions and sensation, especially in Carr's work, is somewhat limited, and perceptual psychology is examined in the context of the learning process. Carr views emotions as psychological

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[48] Carr's Psychology, p. 107.

constructs that are inferred from the behavioral situations in which they occur. Carr (1925:278) says:

> We wish to suggest that the various emotions can be readily identified and defined only in terms of the behavior situation in which they occur rather than on the basis of their organic composition. In other words, an organic readjustment is identified as fear primarily because it is aroused in connection with our flight from an impending danger, while this same organic reaction would not be so labelled if it occurred in connection with a different type of behavior.

Moreover, Carr considers the distinguishing feature of emotional state is its occurrence in cases where there is a lack of adequate outlets. In other words, once the individual begins to react to a situation the emotional response dies away. This view is consistent with the concept of utilizing the psychological processes in performing an adaptive act.

Carr views sensory processes as significant in their role at the first stage of interaction with the environment. Sensation is a necessary prerequisite for the collection of sensory stimuli from the environment. Sensations are static, they are only important as adjunct structures to mind. They raise awareness of, or turn attention to, sensory stimuli in the environment. This is the extent of Carr's observations on sensation (Carr, 1925:134).

Perception is a dynamic process that is necessary for the second stage of the adaptive act (i.e., the occurrence of the adaptive response). Perception is a process that depends on previous experiences, motivation and individual's readiness at the moment of response. Perception follows the same laws of learning as does a mental activity. Thus perception is an important topic to Carr but only inasmuch as it is utilized in the adaptive act, which is the product of mental activity as a whole.

In short, one can see that Carr's functionalistic views are essentially pragmatic. Mental activity is treated in terms of its function of producing an adaptive act. The over-all conceptual system of Carr's work is coherent, dynamic and holistic. He makes a serious attempt to theorize interactive relationships among the various dimensions of mental activity. Thus the functionalistic view could be taken as a model for an open system orientation which views man in relation to his environment. It is clearly an interactive, cognitive, empirical approach. However, it cannot be taken as a social interactive approach, though it does make some mention of social conditions which affect the adaptive act. This is because it does not identify the role of "others" in the evaluation of the consequences of a given response. The openness of Carr's system is evident in the following aspects:

1. The view of mental activity as a dynamic process that involves body and mind.
2. The view of the adaptive act as purposeful. This is a property of an open system (in systems terms, the equifinality). This is a view of teleological causality that is identified in this work as a characteristic of living systems, especially human systems.
3. The view of previous experiences as a repertoire mechanism for importing input rather than a determining factor in the adaptive act. Previous experiences can be viewed as evaluative mechanisms (in systems terms, transformational mechanisms for feedback purposes).
4. The view of sensory stimuli could be taken as an information input which is also a characteristic of an open system.
5. The view of response consequences (law of effect), as reinforcers for the adaptive act, could be taken as a feedback characteristic of

man's nature which is also a property of an open system.

6. The law of assimilation also underscores the similarities between the functionalistic view of man and man as an open system. This is especially relevant since assimilation is described in a way that is very close to the concept of transformation. Transformation is considered a main characteristic of an open system.

However, several of Carr's views do not fit the conceptualization of man as an open system. These views are typical characteristics of a closed system. Examples of closed system characteristics, inferred from Carr's systems view, are the following:

1. The concept of an adaptive act as a process of tension-reduction. This view is a static one which describes the homeostasis of the human system in terms of physiological functions without relating it to the ontological nature of the growth motives which are necessary to maintain the steady state of the dynamic nature of living systems.
2. The law of contiguity is a static law that is based on linear logic, as was pointed out earlier in the discussion about the associanistic school. Connections in an open system do not follow relata logic (i.e., "A" relates to "B" in one direction). Open system connections are based on multiplex relatedness which requires a core point of relation for the whole system while simultaneously any point is relating temporally or spatially with its neighboring points.
3. The emphasis on objective techniques more than the introspective techniques reduces the holistic nature of mental activity into elements or behavioral acts that are not truly representative of the holistic nature of a psychological activity. Such techniques impair the dynamic

nature of an open system which was described above. The empirical approach is quantitative; it assumes that the whole is the summation of its parts. In contrast, open systems are qualitatively and quantitatively bigger than the summation of their parts.

4. Finally, though Carr (1925:95-96) says, "It is maintained that the consequences of an act are experienced after the act is completed, and hence it is illogical to assume that these factors can causally influence what has preceded them", he employed the contiguity principles to explain problem solving. This means that the causality scheme of functionalism is epistemologically linear in its logic and thus it deviates from the holistic view of man as an open system, which Carr has attempted to establish.

In conclusion, functionalism could be viewed as a pioneer school of psychology in its attempt to view man as an open system. It is hypothesized that the transformation of functionalistic views into a social interactive model will bring them closer to the nature of man as an open system. Three more schools are still to be examined in this chapter: (1) the Gestalt, (2) the psychoanalytic, and (3) behaviorism. Though the Gestalt school is assumed to be closer to the open systems view, the two other schools will be examined in more detail since they seem to dominate current psychology more than Gestalt does. However, the focus in psychoanalysis will be on Freud's work and equivalent attention is given to Skinner's work in examining behaviorism.

Gestalt School of Psychology

Table "1" shows that the central subject matter for the Gestalt school are the mental and behavioral processes as wholes. Its chief areas of

concern are perception and thinking, and the chief methodology of the original founders of Gestalt is the phenomenological experimentation approach. The founders of this school were three German psychologists, namely, Wertheimer, Kohler and Koffka. The derivatives of this school are identified in the field theory of Kurt Lewin and the organismic holistic theories of Goldstein and Maslow. In this presentation, the literature review is directed toward examining the conceptual systems of Gestalt originators (i.e., Wertheimer, Kohler and Koffka). The derivative theories will be discussed later; Maslow's theory will be presented in chapter four in relation to mental health practices, and Lewin's field theory is presented in chapter five as a special example of open system theories.

It is worthwhile to remember that all of the schools of psychology which have been discussed so far, associanism, psychophysics, structuralism and functionalism are inclined to be empirical in their views of mental processes. Empiricism is seen as a fundamental methodology of psychology. The desire to measure the external world was first articulated by the associanistic British school, and the question of adaptation arose only later in functionalistic psychology. An objective stance was always the main reference point for empiricism. It was Titchener's (1910) structuralistic perspective that extended the British associanistic theory to include the elements of conscious experience. But Titchener still emphasized the importance of the objective stance for understanding and describing the mental elements in conscious experience. The psychophysics school was also empiricist to the extent that Fechner even solved the mind-body problem by proposing his identical hypothesis. No doubt, sensation processes were the

key concepts in the whole empirical paradigm. Man is viewed by understanding the ways by which his senses operate in order to conceptualize the external world. Basically, the empirical paradigm is concerned with the physiology of behavior, especially the function of the nervous system in relation to sensation. Broadly speaking, one can say that empirical psychology has ignored the metaphysical component of man's nature, and reduced mental processes or conscious experiences to elements that are connected or associated according to the principles of contiguity which are spatial - and thus linear - in their nature. The functionalists were the only ones who started to suggest a kind of approach that takes into account the dynamic nature of mind in relation to body. However, this school was trapped by the objective reference in spite of its serious attempt to study the dynamic nature of man. The concept of utilizing psychological processes in achieving successful adaptive behavior is a good example of the use of the objective reference. The causality of the empirical views is mostly efficient causality that is embedded in linear logic. This generalization is applicable to all the above mentioned schools with the exception of the functionalists who pointed out the significance of teleological causality. However, even the functionalistic school, in the final analysis, was tempted to explain behavior by employing the contiguity principle of association which is both linear and spatial.

The Gestalt school felt no need to explain the objective reference inherent in perception, for the Gestalt psychologists held that objects are given as such; they are wholely and immediately within an individual's experience. Objects, according to the Gestalt psychologists, do not come into existence by associative synthesis. This view is a nativistic one that stands in opposition to the empirical view of objective reference.

The Gestalt conceptual web

To understand the basic concepts that are offered by Wertheimer (1880-1943), Kohler (1887-1967), and Koffka (1886-1941), the three founders of Gestalt psychology, one needs to recall that the Gestalt school is the first important manifestation of the influence of physical field theory in psychology. It was developed in the years immediately preceding World War I, at a time when new viewpoints were also being developed in physics and chemistry. This period began with the formulation of the concept of electromagnetic fields in the nineteenth century and culminated with the introduction of Einstein's powerful theory of relativity in the twentieth century. It was inevitable, considering the basic unity of all sciences, that the new theories which were being formulated in other areas would also have an impact on modern psychological thought (Hall and Lindzey, 1970:209).

1. Isomorphism:

The chief founder of the Gestalt school is Max Wertheimer, whose basic argument is that a perceived object is determined by the total context or configuration in which the object is embedded. Wertheimer's work, Isomorphic Relation Between Seen Movement and Cortical Short Circuit, published in 1912, provides clear evidence of the influence of the work which was being done at the time in physics, chemistry and neurology. Max Wertheimer wanted to see the relationship between what happens in short circuits, as described by brain research, and the excitability principle as it related to the phi-phenomenon (or perceived movement). The phi-phenomenon is defined as an apparent movement between two points of excitability, that are alternately set on at an appropriate interval. The phi-phenomenon

makes it possible to sense the continuous transfer of excitability between the two points as a continuous flow of excitability in the area between these two points and around them. Max Wertheimer described the conditions under which the cortical short circuit occurs, based on the findings of brain research, in the following manner:[49]

(1) When a central spot "a" is stimulated, a certain area surrounding it is physiologically affected.

(2) When two locations "a" and "b" are stimulated, then the areas around both would be affected. Moreover, the stimulation process for the "a" and "b" areas is predetermined.

(3) In the space between the two points that are stimulated ("a" and "b"), a specific transfer of stimulation or a cortical short circuit might occur:

A. When "a" has been stimulated and then after a given short time, the closely related place "b", a kind of physiological short circuit from "a" to "b" would appear.

B. If the effect in the area around "b" were to appear when the intensity of the effect around "a" was at the high point of its course, the stimulation would flow over between "b" and "a". The direction of stimulation is determined by the fact that "a" and the effect around "a" are there first. The closer the proximity between the two places, "a" and "b", the more favorable are the conditions for the occurrence of the phi process (i.e., apparent short circuit of stimulation).

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[49] Max Wertheimer. "On The Isomorphic Relation Between Seen Movement and Cortical Short Circuit", in R. Herrnstein and E. Boring, (Eds.). A Source Book in the History of Psychology. (trans. by D. Contor), Cambridge, Massachusetts: Harvard University Press, (1968, 3rd pr. 1965: 259-261).

(4) The optimal conditions for the occurrence of the phi-phenomenon are:

A. The time "t" should be short between the excitability of the two points of stimulation area.

B. The effect around "a" has reached sufficient intensity at the critical moment (i.e., the onset of the excitability of the successive point).

C. The effect around "a" and "b" begin too soon together to render the possibility or the availability of a short circuit.

(5) The repetition of a strong transfer in a definite direction is followed by the negative after image of seen phenomenon.

(6) The phi-phenomenon, with successive exposures gives rise to a single continuous event. This is the bridge to seeing persistent real movement; continuous diminution of the distance corresponds directly to the physical real relations of real movement.

(7) In real movement there is a great range of optimal times. This fact may be explained on the basis of the principle: the shorter the "distance" the larger the range of optimal "t" times.

Wertheimer concluded that the intervening space between "a" and "b" is favorable to the occurrence of the phi-phenomenon when such space is in a stage of excitability at both points "a" and "b", with a short interval of time between them. The effect of stimulation, and stimulation-transfer, is spatial; "the effect in the area around a place that has been stimulated should be stronger near the place itself" (Wertheimer, in Harrnstein and Boring, 1968:260).

It is clear from the above description that Wertheimer treats the phi-phenomenon on the basis of physiological processes. However, it seems that the fusion area of excitability could be apparent (it feels real though it is not).

In the structuralistic views of Titchener and Wundt, the phi-phenomenon could never exist, for the elements of conscious experience, according to the structuralists, are all objective realities. Mental elements, according to structuralists, are one-for-one points of correspondence with the external stimuli. So, the fact that the phi-phenomenon occurs in the area between two points and around these two points in spite of the objective fact that stimulation was applied only at the two points ("a" and "b") proves that stimulation could occur in the area in which there was no external stimuli.

This researcher believes that the phi-phenomenon provides the most convincing evidence against the tenets of the structuralistic view of mental elements, and, in effect, against the associationistic school that uses the association principle to explain the nature of mental processes. The association principle assumes that all knowledge is empirical (i.e., has objective reference). However, the phi-phenomenon gives psychologists the evidence to assert that knowledge is isomorphic, and that isomorphism is not a form of one-for-one correspondence between "objective reality" and the psychological experience of it. If the argument of those advocates of objective reference were correct, then the short circuit could never have occurred except if a stimulus is applied at every point in the area between and around "a" and "b" points.

Kohler's views on isomorphism, given in his Gestalt Psychology (1920), (Herrnstein and Boring, 1968:261-264),[50] give more support and elaboration to Wertheimer's perspective, especially that the optic-somatic field

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[50] Wolfgang Kohler, "On Isomorphism", (1920), In Herrnstein and Boring, (Eds.), A Source Book in the History of Psychology, (trans. by D. Contor), Cambridge, Massachusetts: Harvard University Press, (1968, 3rd pr. 1965: 261-264).

(i.e., physical field) is in correspondence with the phenomenal field. However, the correspondence is viewed, like it was viewed by Wertheimer, as holistic and not as one-for-one correspondence. Kohler describes the properties of the visual field (optical somatic system) and the general properties of the phenomenal field and concludes that both fields have similar general properties. In other words, the general properties of the phenomenal field correspond to the general properties of the optical somatic system.

General properties of optical system:

Kohler (1920) in (Herrnstein and Boring, 1968) identified the following properties of the optical system:

(1) The physical and psychophysiological Gestalten must in principle be everywhere entirely dependent upon local conditions and their total moments (influences) must conform to the total topography. In other words, the field has a structure and order that depends on a definite complex of conditions, including, (a) the total configuration of the stimulus on the retina in a particular case, (b) the histological condition of material properties of the optical somatic system, and (c) the conditions attributed primarily to the variable conditioning of the nervous system and secondarily to the vascular system.

(2) The visual field has a suprageometric constitution that is dynamically real. This means that, though the visual field is spatial in the relationships between its objects, the total configuration of all objects is perceived with a third dynamic dimension, which is suprageometric (i.e., integrates the spatial relation into one whole which has depth dimension).

(3) The visual field has the property of inner unity throughout its sub-units. This unity is an evidence of the dependency of the smallest units on the conditions of the entire system. However, dependency is a function of distance, so that the "moments" are more influenced by the conditioning forms in the region to which the given small areas belong and by those in the surrounding areas, than by the topography of more distant parts.

(4) Just as with physical Gestalten, the specific articulation of limited regions is not noticeably dependent on the details of form in other regions. It is rather the "total moments" of such regions that influence one another. Thus, the specific regions can be relatively independent without impairing the context of the form in the entire system. It is like the concept of systems within systems. These units within the system are considered narrowly circumscribed units and given the term spatial Gestalten. However, Kohler maintained that: "No matter how the spatial articulation of the psychophysiological Gestalten may be otherwise constituted, it indicates in any case the specific type of distribution of the intensity of a situation or process and therefore of the density. Under proper conditions, the intensity of energy in different regions can be very different. Here too, however, it is the entire complex of conditions in the system that are decisive" (Kohler, in Herrnstein and Boring, 1968:263).

In short, visual systems in their sub-structures could be viewed as spatial Gestaltens, but no matter how independent the spatial Gestalten are, it is the entire complex of conditions in the system that decide the visual field.

The general properties of the phenomenal field are described by Kohler (in Herrnstein and Boring, 1968:263):

"(1) Phenomenal optical fields appear as self contained, coherent unities and always have suprageometric properties. Particular phenomenal regions never appear entirely as independend "parts". In this, they correspond to the moments (influences) of the physical Gestalten.

(2) Phenomenal unity involves order and structure and the specific articulation of the phenomenal fields (the correlate of the state in the physical Gestalten) represents a 'supra-summative property of the visual field which approaches the corresponding reality in experience, as, for example, in the filling out of the field with colors.

(3) Without impairing the unity of the field as a whole, phenomenal unities of limited regions may appear in it. These unities are specially firmly contained in themselves and are relatively independent as compared with the remainder of the field.

(4) Strong, closely knit regions - 'Gestalten' in the narrower sense - are especially apt to set themselves off clearly from the remaining background of the optical field when there are proper conditions for the given stimulus complex."

One can see that Kohler's treatment of the isomorphic concept is closely related to the field concept in physics and particularly influenced by the relativity principle in considering the time and space concept. Locations are treated as relative conditions and as absolute, and time is implicitly described in its relation to the complexity of conditions. The concept of suprageometric relation and suprasummation are holistic and dynamic concepts. However, the energy concept is not operationally defined

in Kohler's Isomorphism. Later in this work Kurt Lewin's elaboration of the field theory will be discussed and further definitions of the field in topology and dynamic psychology will be considered. Since the tenet of Gestalt psychology is the concept of configuration of objects in the field where it is embedded, then one can see the value of the isomorphism concept in developing a holistic approach in psychology. However, it is not explicitly stated in the description of the isomorphic phenomenon given by Wertheimer and Kohler whether space and time are a priori in nature. One might suspect that Gestalt psychology is an outcome of the Kantian nativistic or idealism philosophy in its view of time and space as a priori in nature, in 1781, and on Critique of Pure Reason, 1881.[51]

Broadly speaking Kant argues that time and space are subjective patterns of pure perception and they are the mold into which experience fits rather than the structure into which it is fabricated. In other words, space and time are not derived from external experience. Kant's metaphysical exposition of space and time is based on four points: (1) There exists mind and there exist objects in the external world; (2) The objects have matter and form. The undefined empirical aspect of the object is called "Phenomenon"; (3) Knowing the form aspect of a given phenomenon comes through a faculty of sensibility and this is the recipient of the external world whose function is intuition.[52] However, intuition is a priori to any

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[51] This is based on reviewing I. Kant, "On The A Priori Nature Of Space", 1781, in Herrnstein and Boring (Eds. and trans.), Ibid: 132-135, and Kant, "On Critique of Pure Reason", (Ibid: 586-589).

[52] Intuition is defined by Kant as a way by which the individual reaches objects of knowledge directly. This form of knowledge is the ultimate material of all thought. Intuition occurs only when the object is given through a certain affection of mind. This faculty of receptivity receives representations, according to the manner in which we are affected by objects. This faculty is called sensibility. It is the faculty that alone supplies us with intuition (In I. Kant, "On Critique of Pure Reason", In Herrnstein and Boring, (Eds. and trans.), Ibid: 586-587).

external objects. Thus any form of knowledge goes back to the sensibility which is a priori in its nature; (4) Since the form of matter is in the sensibility, space and time are a priori in nature. These two aspects form perception, thus perception is also a priori.

Kant (in Herrnstein and Boring, 1968: 132-33) describes space in holistic terms. He says:

> Space is not a discursive at general conception of the relation of things, but a pure perception. For we can be conscious only of a single space. It is true that we speak as if there were many spaces, but we really mean only parts of one and the same identical space. Nor can we say that these parts exist before the one all-embracing space, and are put together to form a whole; but we think of them as in it. Space is essentially single: by the plurality of spaces, we merely mean that because the space can be limited in many ways, the general conception of spaces presupposes such limitations as its foundation. From that it follows that an a priori perception, and not an empirical perception, underlies all conceptions of pure space. Accordingly, no geometrical proposition, as, for instance, that any two sides of a triangle are greater than the third side, can ever be derived from the general conceptions of line and triangle, but only from perception. From the perception, however, it can be derived a priori, and with demonstrative certainty.

In light of such logic, Kant came to the conclusion that "It cannot be sensation again through which sensations are arranged and placed in certain forms. The matter only of all phenomena is given to us a posteriori, but their form must be ready for them in mind a priori, and must therefore be capable of being considered as separate from sensations" (Ibid: 587). This view on the "form" of matter (phenomenal), led Kant to believe that the form is pure reasoning; and since the form is a priori in mind, it is called intuition. All knowledge is, therefore, intuitive and not sensational. The only empirical reality in nature is matter, and matter without a form (which is a priori) is a phenomenon or undefined.

Similarly, Wertheimer in On Object As Immediately Given To Consciousness[53] and Kohler in On The Insight Of Apes[54] argued against the objective reference of perception. Both assert that external objects are spontaneously and immediately perceived as "wholes". Wholes are given in conscious experience. Wertheimer argues that wholes are given in their individual entireties. He (Herrnstein and Boring, 1968: 202) says: "I stand at the window and see a house, trees, sky. And I could, then, on the vertical ground, try to sum up: there are 327 brightness (and tones of color). Have I '327'? No: sky, house, trees, and no one can realize the having of '327' as such."

To explain, Wertheimer says (Ibid: 203): "Where a number of stimuli are simultaneously effective, a corresponding (just as large) number of single experiences is generally not present for human beings, there is not the one, the other, and the third experience, and so on. Rather there are experiences in larger areas with definite contrasts, definite unities, definite separations. . . The inevitable result, which is only spontaneous natural one, is normally expected".

This definite result, according to Wertheimer, is the holistic perception. To say that holistic perception is definite and inevitable, implies that perception is a priori, but the concept of experience is vaguely expressed in Wertheimer's argument. It could be taken to mean that knowledge is empirical (i.e., learning the external events as they are), or

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[53] M. Wertheimer, "On Objects As Immediately Given to Consciousness," (1923), In R. Herrnstein and E. Boring (1968, Op. cit.: 201-203).

[54] W. Kohler, "On The Insight of Apes," 1917. In R. Herrnstein and E. Boring (1968, Ibid.: 569-578).

intuitive, or, even, perhaps, both. Though Kant is an idealist nativist, he explicitly differentiates between the empirical experience and the intuitive one, by introducing the difference between the object as an undefined matter (or phenomenon), and the object as defined by a form which is a priori in nature. However, one might take the concept of immediacy in perception as sharing a similarity with Kant's view of perception as a priori.

Based on Kohler's experimental work with apes, the insight concept asserts that the mind is capable of more than association of elements:

(1) An ape learns relations among stimuli, not only the connections between stimulus and response.

(2) Apes can modify their behavior merely by perceiving a situation in a novel way and not only as a result of the effect of their actions. This is unlike the functionalistic view that learning occurs as the result of response consequences.

(3) Learning happens by insight, which is characterized by an abrupt break in the smooth, continuous course of previous behavior. This insightful learning brings genuine solution to a given problem, a process that corresponds as a whole to the structure of a situation and to the relation of its parts to one another. The abruptness and wholeness of insightful solution sharply distinguish it from practical solution which usually consists of putting together by chance, single and separate parts of action.[55]

Criterion of insight:

According to Kohler, insight is the solution that emerges from a complete survey of the entire structure of the field. Such solution

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[55] Ibid: 570.

involves the type of behavior that from its very beginning arises out of the learner's consideration for the structure of the field in relation to a single and definite course of action toward the desired objective. Thus, insightful behavior is intelligent, it is never accidental. A solution never emerges from disorder or blind impulses. Insightful behavior is purposeful and structurally holistic, it is not the result of accidentally arranged parts as the chance theory - trial and error learning - claims.

The role of chance in insightful solutions:

In general, Kohler does not accept the concept of chance in intelligent behavior. However, chance might be useful only "as an aid - a fairly strong one, to be sure - which led him (Sultan)[56] at once to insight" (Kohler, in Herrnstein and Boring, 1968: 572). However, in spite of the fact that Kohler insisted on describing learning in terms of intelligent behavior or insight, he submitted that no psychologist can explain how insight occurs.[57] This makes the concept of insight fairly ambiguous. Though insight is described as a sudden solution which follows a pause after a survey of the entire situational structure, it is not clear whether this suddenness is exclusively from chance factors or even the previous experiences. The theory of insight does not accept that learning could occur by chance. Neither does it accept that past experiences shape one's behavior toward a solution. However, Kohler has been forced to find a way by which he can describe the role of chance as well as that of previous experience.

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[56] In his article, "On Insight", Kohler describes the experiments he performed on an ape, Sultan. Sultan was placed in a cage after having been deprived of food for some time. Two sticks (sometimes more) were placed on the cage floor, and food was placed just outside the cage, but within sight of the ape. The insightful solution came when the ape suddenly joined the sticks together in order to make one stick which could be used for pulling the food inside the cage. In Kohler, (1968:570).

[57] Ibid.: 575.

According to Kohler, previous experience plays a role only when it is formed accidentally and then selected by success. Though any insightful act could be relevant to some previous experience in which the learner has used similar tools to solve a problem, it does not follow that the learner reproduces these previous acts without insight.[58]

In conclusion, Kohler argues very strongly that the theory of chance does not explain the intelligent behavior of the chimpanzees. However, the theory of insight does not claim that insight improves the intelligence of the individual. Moreover, Gestalt theory does not explain insight in terms of cause-effect. It simply describes behavior as it occurs on the basis of interpreting the insightful act as a holistic solution. It is the act of figuring out the structural relationship between the learner's needs or objectives and the entire structure of the situation. Interpretation is viewed as a limitation of Gestalt theory. Though, the Gestalt description appears coherent with a view of man as a dynamic system, it does not tell us how we can discriminate between an insightful act and an accidental act. The demarcation criterion given by Kohler is ambiguous, especially in that it involves interpretation and includes a role for accidental and previous

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[58]Kohler says: "I take it for granted that every chimpanzee above a certain very low age has had some such experience: he will have seized a branch in play, scratched on the ground with it and so on. Exactly the same thing is frequently observed in small children less than a year old; they too have had their "experience" with sticks before they use them as implements to pull toward them things that they could not reach otherwise. By no means, however, does this fact prove that children become accustomed to the use of implements in the mere chances of play, and quite without insight, reproducing the action again without insight at two, four or twenty years of age, nor should such a solution follow for the chimpanzee, whose test stick is not the first he ever held in his hand." (In Kohler, "On The Insight of Apes", in Harrnstein and Boring (Eds. and trans.), Ibid: 577).

experience on the basis of interpretation rather than on the basis of any convincing grounds of "operational definition."[59]

However, the Gestalt view does have a practical value in pointing out that association is not a matter of one-for-one correspondence, but rather is isomorphic in terms of suprageometric properties. This descriptive value is based on the evidence of the phi-phenomenon. The problem with the insight concept in Gestalt psychology is that it does not deal with the nature of external objects as they relate to the nature of the inner world. It is for this reason that Kant's concept of the a priori nature of perception in time and space is less ambiguous, because it identifies the aspects of external reality (matter and form) and decides that form is a priori in nature. Kant's view suggests the interactive nature between the individual and the environment in conceptualizing - or knowing - the world around us. In contrast, the Gestalt view does not attend to the aspect of external objects in more than its structure.

But since Gestalt psychology proposes that perception is not aimless, it has to identify the laws by which the individual can achieve his goal of reaching a successful solution. In other words, once a theory describes behavior as purposeful, it is inevitable that it will also say that behavior is lawful. The principles of perceptual organization are given by Gestalt psychologists to fulfill their conceptualization of perception as a purposeful act without any logical gaps.

Principles of perceptual organization:

In essence all principles of perceptual organization are derivatives from the two basic concepts discussed above: (1) the concept of isomorphism,

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[59] For "operational definition", see pp. 42-43 in this work.

and (2) the concept of insight. Chaplin and Krawiec (1968) present the Gestalt principles under several headings. These principles could be summarized as follows:

A. Gestalten law: the fundamental law which states that all perceptual experiences arise as Gestalten or molar configurations which are not mere aggregates of sensations but are organized into meaningful wholes. The whole is "something else than the sum of its parts."[60]

1. Wholes emerge as the result of an innate principle of organizing perceptual fields according to figure-ground relationships. The figure (i.e., Gestalten) stands against a ground as the result of four organizing factors: (1) proximity, (2) continuity, (3) similarity and (4) closure. In fact these four factors function in the same manner and toward the same goal, which is to organize the elements of the perceptual field into one whole.

2. Perceptual reorganization of the field into one whole is the underlying principle for insightful problem-solving. Wertheimer, Kohler and Koffka observed that solutions to problems are hierarchically related. Thinking takes the form of perceptual reorganization of the problem in a series of hierarchically related solutions which tend to become increasingly more specific. It is assumed that all elements of the solution are in the subject's perceptual field.

3. Problem solving follows principles of perceptual organization (i.e., Gestalten law). Thus an insightful act is characterized by direction of "centering" and "focusing", and of filling "gaps", in seeking better Gestalten. The speed with which the solution is found is related to the fixity of the perceptual field, motivational

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[60] K. Koffka, Principles of Gestalt Psychology, New York: Harcourt Brace and Company, Inc., 1935:176.

factors, and the subject's previous training, in the sense of transfer. According to Gestalt, "A high degree of transfer to similar problems may be expected if the subject is allowed to work out his own solutions to cognitive problems" (Chaplin and Krawiec, 1968:372). However, the final solution tends to occur as a sudden reorganizing or transformation of the perceptual field. Kohler, as pointed out earlier, insisted that any previous experience is selected insightfully and not by chance or as a matter of trial-error learning.

B. Law of isomorphism: This states that neural organization is in a one-for-one correspondence with the physical stimuli. However, the neurological functions are dynamic in reconstructing the percepts. Thus, nothing in the physical world is in complete correspondence with the psychological world.

1. Isomorphism frees psychology from treating the percept as nothing more than the collection of sensation from which it arises.

2. Isomorphism permits us to see objects as objects and to maintain perceptual constancy which includes size, brightness and color constancies. This principle holds that alterations in the observer's location in relation to percept do not alter his perception to that percept. The individual tends to substitute for alteration that occurs in the sensory stimuli, spontaneously. This is why the perceptual world is relatively stable. If our psychological perception were in complete correspondence to the sensing process, the world would be chaotic.

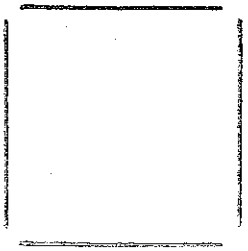
3. Isomorphism is not acquired. Even a child who has not yet acquired the concept "table", could recognize a table as an object. A table is perceived by the child as a whole figure against a ground.

C. Sub-principles of the law of isomorphism: These principles are called principles of perceptual organization or laws of primitive organization. They are presumed to describe the inherent features of human perception.

1. Figure-ground: this principle is in essence a Gestalten law; but it is mentioned here to emphasize the fact that a figure stands against a background for it has contour, depth and solidity. These properties, however, are not characteristics of the physical stimulus-object, but rather characteristics of the psychological field. What brings these characteristics to the psychological field is the focus of the observer at a given time. For example, if an object is not under focus, it becomes part of the "ground" and lacks contour, solidity and depth. The figure-ground perception is a form of spontaneous and native organization that does not depend upon learning.

2. Law of prägnanz and closure. This is a principle of organizing the perceptual field in a meaningful way, or as wholes which depend upon the simultaneous contribution of both present and past experience and all the organismic factors (O) under which the individual experiences the perceptual field. The principle of prägnanz holds that perception takes the "best" form possible under the closure circumstances. Prägnanz and closure make, so to speak, good Gestalten. For example, in Figure 2 four disjointed

FIGURE 2



lines are perceived as a square. This also follows the organizing factor of continuity. The principle of closure gives symmetric form to the perceptual figures.

3. Law of transposition: This states that because the Gestalten are isomorphic they may undergo extensive changes without loss of identity. This principle is inferred from Kohler's findings on the response of the ape's different shades of light. The ape was exposed to two shades of light and dark stimuli with "A" as the light and "B" as the dark stimulus. After the ape learned to respond to the "B" as darker, a new stimulus was presented ("C"). "C" is darker than "B". This response to "C" was given by the ape in the new instance, in spite of it having previously learned to respond to "B". This response to "C" was spontaneous and provides evidence that transposition occurs regardless of what is previously learned. Such evidence is used against the logic of the behaviorists who would argue that first the response to "B" should be extinguished and then a response to "C" is established as the result of altering the reinforcement. Chaplin and Krawiec (1968:146) point out that the principle of transposition holds true in the sense of perceptual constancy to the same percept regardless of the changes in the arrangement of elements, but only as the relative spatial and temporal relationships are preserved.

4. Principle of equilibrium: This states that the perceptual field and its underlying isomorphic field are dynamic wholes. These fields, like a magnetic field, tend to be directed toward equilibrium. Also, as in the case of magnetic field, disequilibrium occurs when

new forces are introduced into the field. In this case the whole field undergoes a reorganization of forces until equilibrium is re-established. This is a principle of stability, for it is a fundamental characteristic of percepts to tend toward stability and to remain as stable as (psychophysical) conditions permit (Chaplin and Krawiec, 1968:147).

D. The physiology of perception: Wertheimer's observations on the phi-phenomenon in the cortical isomorphism, which was previously presented, shows that cortical isomorphism has properties that correspond with the phenomenal field. Thus one can see that the physiological functions, especially the neural ones, behave according to Gestalt principles that are discussed above. This view contrasted the machine-like behavior that the structuralists and associanists (and, as we will see later, the behaviorists) assume for the behavior of the nervous system. The machine-like behavioral view is based on the assumption that there is one-for-one correspondence between the sensory field and the cortical field, a view that is seen by Gestalt psychologists as static. Gestalt insists that on the basis of the phi-phenomenon nature, isomorphism is dynamic. To the Gestaltists, cortical processes are analogous to fields of electrical force. This is clear in the principle of equilibrium, principles of perceptual organization and principles of problem solving. Gestaltists support this argument on the basis of Kohler's and Wallach's experiments in which they showed the figural after effect, the behavior of which is isomorphic in the cortex (Chaplin and Krawiec, 1968:159).

Evaluation of the Gestalt view in systemic analysis:

In view of the previous presentation one can see that Gestalt views tend to be more dynamic than the associationistic, psychophysics and structuralistic views. They are, however, functionalistic in pointing out that behavior is purposeful and that learning would not occur without aim. Moreover, one can see that Gestalt views tend to be more nativistic than empirical. In this sense, they differ from functionalism. The Gestalt school studies conscious experience, and in a way employs introspection especially in describing what happens in insight learning. But Gestalt psychologists oppose the structuralistic approach to introspection. The Gestalt concept of wholeness and isomorphism, which subsumes a supra-geometric perceptual structure for any percept, is a radical overthrow for the "elementic" view of structuralists. In this way the Gestalt rejection of the "chemical elements" of the one-for-one view favored by the structuralists is an important step towards the view of man as an open system. However, the Gestalt views still lack clarity about several properties of an open system:

(1) How can one explain the perceptual organization principles that Gestalt proposes? Especially noticeable is the absence of any mention of the nature of the organizer.[61] It is not enough to say that perceptual organizers are primitive factors and they are inherent in the individual. What is primitive and what is not primitive requires a demarcation line. Gestalt psychologists seem to be satisfied by pointing out that what is not learned is primitive. The Gestalt theorists say that learning is insight and that insight is perceptual. The problem is that insight is neither clearly differentiated from chance learning, nor are perceptual principles viewed

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[61] In fact, Wundt's assimilation hypothesis as an attempt to describe the organizer was refuted by K. Koffka after he examined its merit. He says, "No part of this hypothesis has been verified, three of its constituents are by the very nature of the hypothesis unverifiable, viz., the primarily aroused sensations, the reproduced images and the process of fusion," Koffka (1935:105) concluded his argument by saying, "We have eliminated a whole net of hypothesis . . . the interpretation and the experience hypothesis."

in terms of learning. This makes Gestalt logic circular and ambiguous.

(2) Gestalt psychology bases its conceptual web on the field concept in physics. Such analogous theorizing does not help to explain, for example, why behavior is "isomorphic". It is merely descriptive. The Gestalt theorists say behavior is isomorphic. It is true that the evidence is clear in the phi-phenomenon, but why is it so? No explanation is offered. Osgood (1974:186) says: "We are not told by Kohler how a pattern of direct currents in the visual brain elicits those responses in vocal muscles which constitute saying 'circle' or 'square'." This criticism is very significant in the sense that isomorphic concept does not deal with the symbolic nature of the percept. How do we label what we perceive and why we perceive things in the isomorphic way is a problem.[62] The reference to the "O" factors might solve the problem. It is inevitable that the original work of Wertheimer, Kohler and Koffka would be transformed by later theorists who would try to deal with the problem of motivation among other psychological factors of a symbolic interaction nature, and try to address such gap in Gestalt psychology.

(3) The hierarchical concept of problem solving which is offered to describe the dynamics of productive thinking, contradicts the very foundation of the Gestalt fundamental law of wholeness. It was inevitable that it would produce such inconsistency because there is no clarity on the nature of relatedness among the various units of a given whole. To say that the whole is perceived suddenly and immediately, and then to fragment the whole into specific units and arrange these units hierarchically, would lead to

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[62] C. Osgood, "A Behavioristic Analysis of Perception and Language as Cognitive Phenomena", In W. Buckley and A. Rappaport (Eds.). Modern Systems Research for Behavioral Sciences, Chicago: Aldine Publishing Corp., 1974: 186-203.

the conclusion that accidental learning, which Kohler strongly opposed, does in fact, exist. If the Gestaltists were consistent in their holistic view, they would have to employ multiplex logic and see the value of the feedback concept in the cybernetic sense. This is a property of an open system which has no mention in the Gestalt scheme.

In conclusion, one can see the progress of psychology from straight empirical linear logic to a transformational point of recognizing the holistic nature of perception. However, such a holistic view has not yet been articulated in a well-rounded coherent logic that is capable of explaining such view. In view of this, it is not surprising that the Gestalt emphasis on purposefulness initiated new interest in the study of the "O" factors in learning and that this same point has drawn the attention of social psychologists to the study of the dynamics of groups in terms of "field forces", or in terms of organizing principles. Gestalt psychology has an ample potential for group psychology, psychology of learning and may be personality (i.e., inasmuch as personality is defined in terms of what the individual holds: beliefs, attitudes, interests and so on). The main thrust of Gestalt psychology has been its persistence in describing perception as a dynamic holistic psychological process. The major gap has been the reduction of dynamic wholes into "spatial Gestalten". This researcher believes that an integrated reorganization of Kantian philosophy and Gestalt psychology might develop a real multiplex view of human nature, an attempt that seems to be inevitable in developing a model of man as an open system. However, this attempt would not exclude the utilization of other theories for the same purpose.

The Psychoanalysis School:

This school is known by its founder Sigmund Freud (1856-1939) who began writing on psychoneurotic symptoms and related issues in 1895 and continued to contribute to the field of psychology until 1939. Hall and Lindzey (1970:32)[63] point out that "Freud's psychological writings fill twenty-four volumes in the definitive, standard English edition." In view of this fact, this researcher has chosen Freud's Complete Psychological Works[64] as a primary source for understanding Freud. However, other references are also reviewed for a more comprehensive view of Freud's psychoanalytic theory.

This review of the literature on Freud's theory is directed toward understanding the following issues:

(1) Freud's view of man as given in his: (a) theory of conscious-unconscious process in psychoneurotic hysterical cases and the interpretations of dreams, (b) theory of sexuality, and (c) theory of personality.

(2) Freud's psychoanalytic method as a therapeutic technique and a method of investigation for understanding human nature.

(3) Whether Freud's personal life had an impact upon his view of man.

(4) Whether the psychoanalytic theory parts in its logic from the linear logic of the empirical paradigm of psychology.

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[63] C. Hall and G. Lindzey. Theories of Personality. (2nd ed.). New York: John Wiley & Son, Inc., 1970. This work presents Freud's psychoanalytic theory of personality (pp. 29-72).

[64] S. Freud. The Standard Edition of The Complete Psychological Works. J. Strachey (Ed. and Trans.), Vol. VII: 1901-1905. London: The Hogarth Press and Institute of Psychoanalysis, 1975 (1st ed., 1953). This volume includes clinical picture, three essays on sexuality and other works.

I. Freud's View of Man's Nature:

A review of the literature suggests that Freud views man as having inherited energy which directs him to extend himself toward the goal in his environment. Man has to learn to control his neurotic tendencies and to sublimate his aggression by means of a mastery motive. A normal healthy person learns how to adjust to his environment by satisfying his needs and resolving his neurotic unconscious tendencies by bringing them to the conscious level of his mental processes and thereby correcting them in a rational manner. The individual's behavior is controlled by unconscious forces that are developed during childhood. In that sense, childhood decides adulthood. Bruner (1963:466) comments: "Freud's image of man was thoroughly secular, its ideal type was the mature man free of infantile neuroticism, capable of finding his own way."

A presentation of Freud's views on hysterical neurosis, interpretation of dreams, sexual theory and personality theory will show whether Bruner's (1963) statement is justified. It will also show in consequence how Freud has a pessimistic pathological image of man's nature.

The nature of the unconsciousness in hysterical neuroses:

Freud's clinical observations on neurotic cases[65] yield the following

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[65] This case appears in Freud's Complete Psychological Works, (Ibid.: 15-63). The case describes and analyzes a young female patient's mental stream of thought. Dora was a woman of eighteen who was handed to Freud by her father in 1895. Freud was asked to treat Dora's somatic symptom of irritation in her mouth cavity. Her father had previously been treated by Freud, when Dora was 14 years old, for somatic symptoms. Dora's mother is reported to have had hysterical symptoms which manifested themselves in her involvement with cleaning the house, taking care of children and in her cold sexual relations with her husband. Several relatives of Dora were also reported as suffering from hysterical neuroses. This case has raised the question of whether hysterical neuroses are hereditary or acquired. Dora complained that her father had sacrificed her for his love affair with a woman called Frau K. Frau K.'s husband, Herr K., tried to make love to Dora when she was 14, and kissed her on her lips. Dora reported disgust, instead of pleasure and asked her father to protect her. The father did not believe her. Herr K. did not admit this had happened, and Dora began to suffer from somatic symptoms after this experience.

inferences in regard to the nature of consciousness in neurotics. In summary, the major points are as follows:

(1) Hysterical neuroses are defined by their symptoms which involve the participation of a psychical and somatic origin. Usually these symptoms have three major causes: (a) a psychical trauma, (b) a conflict of affect, and (c) a disturbance in the sphere of sexuality.[66]

(2) Any hysterical symptom has more than one meaning[67] and serves to represent several unconscious mental processes simultaneously. These meanings are motivated by forces of repressed normal sexuality, and strengthened by unconscious perversive activities.

Freud (1975:62-3) describes the dynamics of the unconscious process in relation to consciousness in the following way:

> I believe. . . that Dora's supervalent train of thought, which was concerned with her father's relations with Frau K., was designed not only for the purpose of suppressing her love for Herr K., which had once been conscious, but also to conceal her love for Frau K., which was in a deeper sense unconscious. The supervalent train of thought was directly contrary to the latter current of feeling. She told herself incessantly that her father had sacrificed her to this woman, and made noisy demonstrations to show that she grudged her the possession of her father, and in this way she concealed from herself the contrary fact, which was that she grudged her father Frau K.'s love, and had not forgiven the woman she loved for the disillusionment she had been caused by betrayal. The jealous emotions of a woman were linked in the unconscious with a jealousy such as might have been felt by a man. Gynoecophilic currents of feeling are to be regarded as atypical of the unconscious erotic life of hysterical girls.

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[66] Dora had the somatic symptom of mouth cavity. (1) The psychical trauma was caused by her first experience of Herr K.'s unexpected kiss. She had viewed him as an uncle. (2) Dora experienced a conflict of affect in relation to the kiss since she experienced disgust instead of pleasure. (3) Dora experienced a disturbance in the sphere of sexuality; she reported pleasure on the upper part of her body. This suppressed the original feeling of Herr K.'s erection pressed against her lower area (or genital zone). (Freud, Ibid.:15-63).

[67] Ibid.:47.

This quotation shows the following dynamic patterns of thought and the dynamic relationships between conscious and unconscious processes:

A. Unconscious thought moves in the opposite direction from conscious thought.

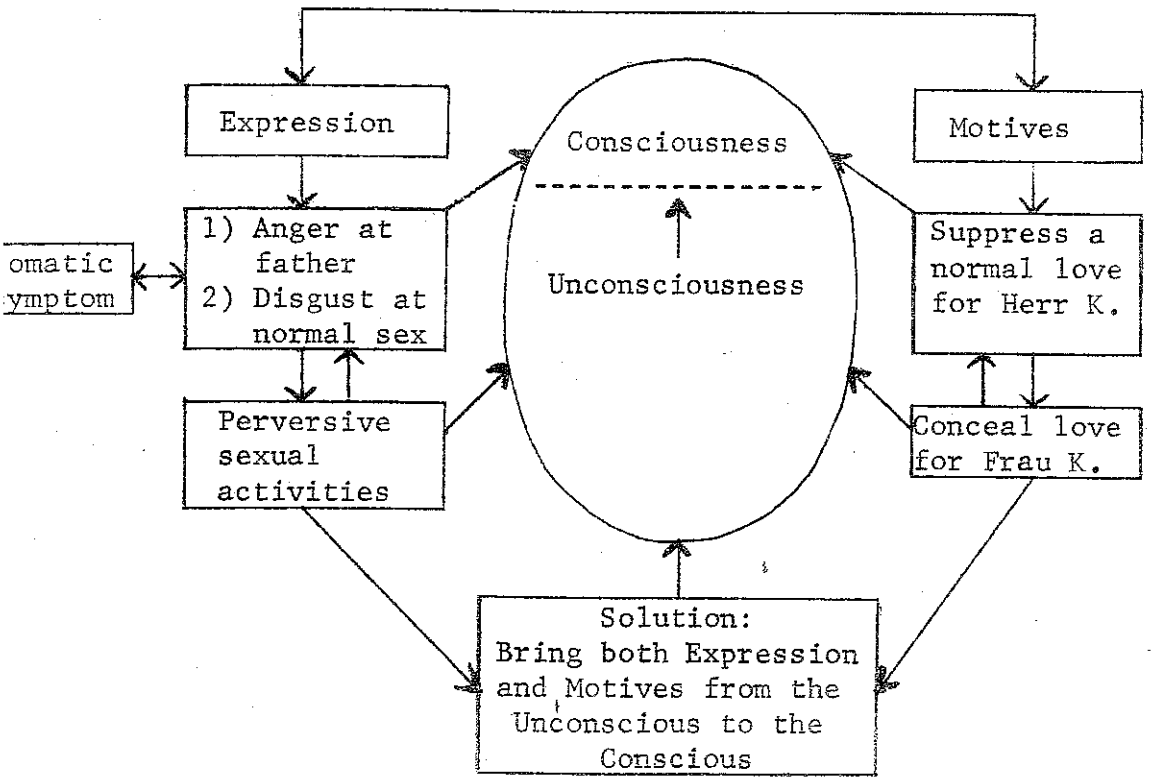
B. Conscious expression is motivated by unconscious forces.

C. Hysterical neurotic girls are homosexual.

D. The real feelings or thoughts of the individual who relates to a traumatic experience are repressed in the unconscious.

It is on these bases that Freud made the assumption that somatic symptoms would be cleared up when unconscious "thoughts" come to the level of consciousness (Freud, 1975:41). Figure 3 shows the dynamic relationship between conscious and unconscious processes as they relate to the structure of thought and to their underlying motives.

FIGURE 3
Conscious and Unconscious Processes in Dora's Mind



(3) The origin of hysterical neuroses lies in the parent-child relationship and the child's observation of the relationship between his parents.

In short, Freud views the conscious and unconscious forces as a pair of opposites that form the mental processes. The unconscious forces represent the underlying motives for man's behavior and in this sense the conscious part of mind is **impinged** by the forces of unconsciousness. The hysterical symptoms are viewed as manifestations of the deeper forces of the unconscious processes. They have psychical and somatic origins, have more than one meaning, and could be cleared up by bringing the unconscious to the conscious level. This is achieved through therapeutic treatment, which assumes that, by free association, a patient could be helped to rearrange the course of events in his past experience and fill in the gaps that are caused by repression. In this regard Freud (1975:39) introduces the rule of the psycho-analytic technique: "It is a rule of psycho-analytic technique that an internal connection which is still undisclosed will announce its presence by means of a contiguity - a temporal proximity of associations, just as in writing, if "a" and "b" are put side by side, it means that the syllable "ab" is to be formed out of them."

This is Freud's first explicit statement that expresses the continuity of the linear logic of the British associationistic school. With this kind of logic, and adopting the associationistic principles, Freud proceeds to develop his Interpretations of Dreams.

Freud wrote Interpretations of Dreams in 1900 and pointed out that, "Every dream is a wish which is represented as fulfilled, the representation acts as a disguise of the wish as a repressed one, belonging to

the unconscious, and that except in the case of children, dreams only an unconscious wish or one reaches down into the unconscious, has the force necessary for the formation of a dream" (Freud, 1975:67).

According to Freud, hysterical neurotic dreams[68] are to be treated by (1) getting the complete text of the dream from the patient, (2) identifying the symbols in the dream, (3) identifying the gaps in the dream's text concerning time and place, and (4) working with the patient to fill in missing pieces by interpreting the meanings of the symbols - mostly in sexual terms.

The basic assumption in making any interpretation is that a dream is limited to a single form, to the representation of wishes. In the neurotic case, the wish is related to an instinctual sexual wish which has been suppressed. The content of a dream is usually composed of events that have no logical sequence in time or place. The dream is viewed as a mechanism which is unconsciously motivated to express a wish as fulfilled. However, this wish which appears as fulfilled in the dream is the opposite of what has happened in reality.[69] Freud views

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[68] Freud (1975) deals with three dreams which Dora had related during her psychoanalytic treatment. Freud treats these dreams by using the contiguity principle in the same way as he treated the free association talks. The major rule which he used is the psychoanalytic rule of filling in the gaps by using the associanistic principle (p. 197).

[69] A sample of Dora's dreams (Ibid.:64-69): "A house was on fire. My father was standing beside my bed and woke me up. I dressed quickly, mother wanted to stop and save her jewel-case, but father said, 'I refuse to let myself and my two children be burnt for the sake of your jewel-case.' We hurried downstairs, and as soon as I was outside, I woke up." Fire symbolizes sexual excitation. The jewel-case is woman's virginity. Therefore, Dora wished her father to protect her from Herr K. This wish was fulfilled in reality. The place is not the house; it is the lake on which Dora was first kissed by Herr K. The time is forgotten but symbolized by "before" and "after". Before the fire Dora was "sleeping" (i.e., before the kiss she was not aware of her sexuality, after the kiss she woke up). As Freud explained it to Dora: "For that reason, in the dream, you chose a situation which was the opposite - a danger from which your father is saving you" (Ibid.:69).

dreams as helpful sources of understanding the unconscious motives, experiences or mental processes of the neurotic individual. They help the therapist to reach into the patient's past exepriences which have been repressed for a long time. Accordingly the interpretations of dreams is another method of bringing the unconscious to the conscious.[70]

Freud identifies the transference phenomenon as a natural outcome of psychoanalytic therapy.[71] By this he means the entering point at which the unconscious is transformed into the conscious. Moreover, the interpretation of transference is viewed as much more difficult than dream interpretation. While the therapist has the full content of the dream from the patient, in the case of transference the therapist has to find connections among the various aspects of the case history and the act of transference itself. Thus the content of the transference act, unlike that of dreams, is beyond what the patient says at the moment. Once the therapist can make connections between transference acts and the previous events in the history of the patient, and brings them to the attention of the patient, the cure would follow (Freud, 1975:116-117). It is clear that psychoanalytic technique is based on finding connections among events and that these connections are mostly based on therapists' interpretations rather than on what is actually happening in the client. From

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[70] In M. Jahoda, Freud and the Dilemmas of Psychology, London: The Hogarth Press, 1977, it is pointed out that Freud treated dreams seriously because he saw them as a bridge to general psychology. Jahoda (Ibid.:37) adds, "In the first paragraph of Freud's preface to the first edition of The Interpretation of Dreams he notes the similarity between dreams and neurotic symptoms. Dream interpretation became the royal road to the unconscious, of both patients and others."

[71] Freud defines transference as follows: "They are new editions or facsimiles of the impulses and phantasies which are aroused and made conscious during the progress of the analysis; but they have this peculiarity, which is characteristic for this species, that they replace some earlier person by the person of the physician" (Ibid.:116).

this perspective, one might say that the psychoanalytic approach is not scientific in the traditionally-defined empirical sense.

Freud's theory of sexuality:

The general picture of Freud's theory of sexuality is presented in Figure 4. The figure is drawn on the basis of the presentation Freud gives in his Three Essays on Sexuality which were originally written in the period between 1901 and 1905 (Freud, 1975:135-243). The significance of this contribution lies in three areas: (1) the view of sexual instinct as a libido or psychical energy that has qualitative and quantitative qualities;[72] (2) the identification of childhood as the first stage of sexual development. In this connection Freud delineated a new area in sexuality which he calls infantile sexuality; (3) the examination of sexual aberration in terms of perversion and inversion and the relating of these abnormal patterns of sexuality to the sexuality of neurotics. In short, Freud's sexuality theory is dynamic, developmental and therapeutic. It is also related to his personality theory in terms of the structural components of the sexual instinct and its relationship to the personality structural components.

Components of sexual instincts and their function in normal and aberrative sexuality:

The sexual instinct is viewed by Freud (1975:168), "As the psychical

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[72] Freud (1975:217) sees the libido as a qualitative attribute in the sense that it is the psychical energy that underlies mental processes. Freud points out that qualitative sense should be differentiated from the libido in its quantitative sense. The quantitative sense describes the libido as a variable force which could serve as a measure of process occurring in the field of sexual excitation. "In distinguishing between libidinal and other forms of psychical energy we are giving expression to the presupposition that the sexual processes occurring in the organism are distinguished from the nutritive processes by a special chemistry."

representative of endo-somatic, continuously flowing source of stimulation as contrasted with "stimulus", which is set up by single excitations coming from without. The concept of instinct is thus of those lying on the frontier between the mental and the psychical."

Freud sees instinct as having four main components: (1) the source of stimulation, (2) the aim which is defined by bodily activities which remove the sexual excitation or the organic stimulus, (3) the erotogenic zone which is the organ concerned with the sexual excitation - the genitalia, and (4) the object, which is usually represented by the opposite sex. However, Freud (1975:181) points out that, "Instinct is not directed towards other people, but obtains satisfaction from the subject's own body. It is "auto-erotic." This is especially the case in infantile sexuality. The child's lips operate as erotogenic zone while he is sucking the breast of his mother or its substitute.

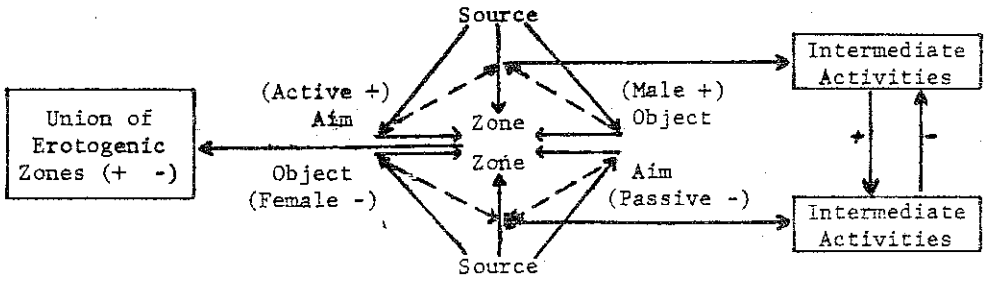
Normally the sexual object of a man is a woman and the sexual object for a woman is a man. Figure 4 - A shows normal sexuality is expressed in the union of the erotogenic zones of the two sexes. The male is represented in the figure by (+), while the female is designated (-). Masculinity, according to Freud, is characterized by an active aim, while femininity is characterized by passive aim. However, the passive and active characteristics of the sexual aim can exist in the same person whether male or female and thus the same person could be active and passive simultaneously. However, the male's sexual activities are dominantly active and those of the female are mostly passive. Freud was originally tempted to use the hermaphroditism[73] anatomical findings to

[73] Anatomical research has found that in rare cases both sexual apparatuses exist side by side fully developed. Such cases represent true hermaphroditism. But far more frequently, anatomists have found that both sets of sexual organs exist in an atrophied condition. These findings are significant in facilitating the psychologist's understanding of normal development (Freud (1975:141).

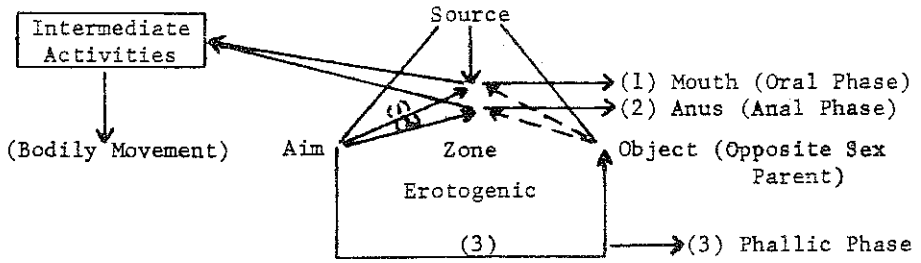
FIGURE 4

Patterns of Sexual Instinct

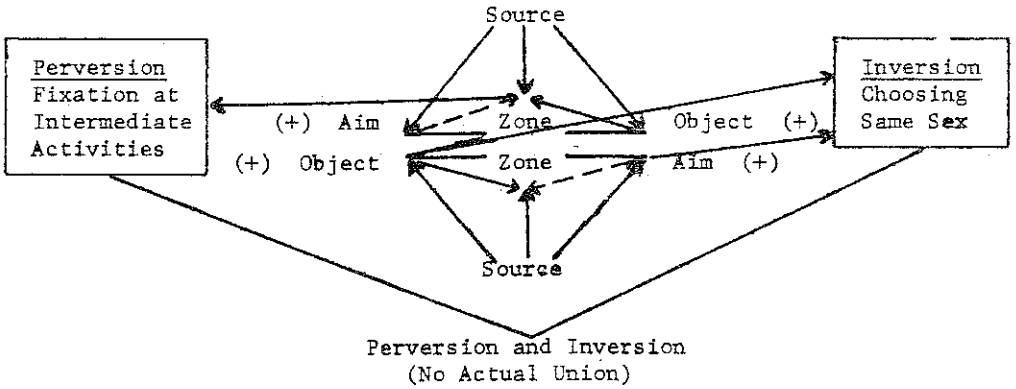
4.A -- Normal Pattern of Sexual Life



4.B -- Infantile Sexuality



4.C -- Aberration in Sexuality



explain this phenomenon, however he decided against this on the basis of his findings in the case of inversion and perversion in the neurotics and was satisfied with the explanatory power of the concept of bisexuality as it is defined by the degree of activity or passivity, and that psychologists have to deal with the affect of the sexual instinct in the course of its development (Freud, 1975:143-144).

Freud's view of the psychological differences between the sexes is pointed out by Jahoda (1977:74-75) in relation to Freud's lecture on femininity:

> Freud distinguishes three aspects relevant to the study of sex differences: the biological, the psychological and the cultural. -- Instinctual drives . . . are not sufficiently described by their aim; the ways and means of reaching this aim are equally important. In pursuance of the biological aim the identification of male/active and female/passive breaks down. Both sexes can adopt either an active or a passive stance. Other secondary biological sex differences appear in varying degrees - in contrast to the activity of the sperm, the passivity of the ovum - in both sexes. The recognition of these additional biological factors leads Freud to assert that human beings are, to varying degrees, biologically, psychologically and culturally bisexual.

Aberration in sexuality:

Freud identifies two types of aberrations in sexuality and defines them in relation to the dynamics of the instinctual sexual forces. The first type, which he calls "inverts", is identified in relation to the object. Their pattern is described as inversion. The second type of aberration occurs in relation to the aim or the sexual activities that are directed toward sexual satisfaction. According to Freud's classification, any individual who deviates from the normal pattern of sexual satisfaction, whether in object choice and/or sexual aim, is considered abnormal. However, Freud (1975:136) points out that the number of inverts is considerable and there are difficulties in establishing the

precise figure. Freud's concept of normality, therefore, cannot be a statistical[74] one. Instead, it is an adjustive psychoanalytic concept, in the sense that anyone who does not adjust to his instinct in the usual pattern as described in (Fig. 4:a) is not normal.

The inverts according to Freud (1975) are of three types: (1) The absolute inverts whose sexual objects are exclusively of their own gender (Fig. 4:C). The opposite sex to the invert is never considered. It may arouse sexual aversion in him or her, or leave the invert cold. The absolute inverts stop at intermediate sexual activities and are incapable of carrying the sexual act on to genital union. (2) The amphigenic inverts who are bisexual in their sexual object. Thus these inverts lack the characteristics of exclusiveness. (3) The contingent inverts who develop under certain external conditions such as war or imprisonment. These inverts use the object of their own sex to derive sexual satisfaction and some of them reach the point of having a "sexual intercourse" with the sex object.

The self concept of the inverts differs from one individual to another, regardless of the type of inversion. Some view their behavior as natural and insist that it is as legitimate as "normal" behavior.[75]

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[74] Shoben (1957) points out that the normal concept in the statistical sense follows directly after Freud's theory of personality. The normal individual is the one who scores average or above on the personality inventory. However, it is difficult to assume any criteria for normality within a statistical scope. Within every culture, and even within every group, what is seen as normal and statistically valid could be seen as abnormal from the perspective of another culture or group (E. J. Shoben. "Toward the Normal Concept of Personality". American Psychologist. Vol. XII, 1957: 183-189).

[75] The view of inverts accepting themselves is supported by E. Sagarin. Odd Man in Societies of Deviants in America. Chicago: Wildrangle Books, 1969. In this work, Sagarin gives a full account of the Homophile Organization in America in which homosexuals organized themselves after the Second World War. The homosexuals in this organization express their deviancy freely. Sagarin reports that homosexuals view themselves as normal and their act as legitimate.

Others rebel against their inversion and view themselves as suffering from a pathological compulsion (Freud, 1975:137). Inversion can start at any stage of the individual's development, but in most cases the disposition begins in early childhood. Freud argues that inversion is not innate, except in the case of the absolute inverts group. In fact, Freud (1975:140) asserts, "We . . . are forced to a suspicion that the choice between 'innate' and 'acquired' is not an exclusive one or it does not cover all the issues in inversion." The fact that inversion is partially acquired encouraged Freud to believe that inversion is curable. He attempted first to find a cure through hypnosis and later, after he had lost faith in hypnosis, through use of the psychoanalytic therapy of free association and dreams interpretations.

The aim of sexual instinct and choice of objects towards which such aim is directed by the invert, led Freud (1975:148) to conclude: "It seems probable that the sexual instinct is in the first instance independent of its object, nor is its origin likely to be due to its object." Instances of inversion where children and animals are the chosen sex objects, are also reported by Freud. He viewed these instances as sexually immature processes. These observations led Freud to believe that sexual impulses are the least instincts that are controlled by higher mental activities. Thus he says, inverts are usually abnormal but not necessarily so (Ibid.:149).

Deviation in relation to sexual aim:

Normal sexual aim usually includes the union of the genital zones of the two sexes (see Fig. 4:A). Freud calls deviations from these acts, perversions. Intermediate sexual activites, which normally culminate in genital union, include looking at, touching and kissing the opposite sex.

Though these intermediate activities bring pleasure and intensify sexual excitation - which should persist until the final sexual aim is attained - if they were to persist they would be called perversions.

According to Freud (1975:150), "Perversions are sexual activities which either (a) extend, in an anatomical sense, beyond the regions of the body designed for sexual union, or (b) linger over the intermediate relations to the sexual object which should normally be traversed rapidly on the path towards the final aim."

Freud makes no mention of creativity in the sexual act or in sexual excitation. He only recognizes a "fetishism" in sexual excitement which occurs because of the presence of certain items which belong to the sex object. Fetishism is viewed by Freud as over-valuation of the love object. It seems that "love making" or, in Freud's terms, sexual activities, are body movements that are not stimulated by any form of imagination or higher mental processes. This view splits the affect from the intellect and reduces what Freud calls "union" to a mechanical act. This seems in many ways a stimulus-response model. It is also a kind of analysis that splits mind from body. The validity of this view will become more apparent in the discussion of Freud's personality theory. One might suspect in reading Freud's discussion of aberration in sexuality, that any creative act in sexual excitation - not to mention excitation by intellectual power - is a form of perversion. The whole argument communicates a biological model with a "psychical" energy that is extremely mechanical in its nature and exclusively biological in its source.[76]

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[76] Freud points out that the sexual instinct has to struggle against certain mental forces which act as resistence, and of which shame and disgust are the most prominent (Freud, 1975:162). This recognition of the role of the mental factor should have led Freud to see the opposite side of a pathological attitude and to recognize how creativity, ethical principles, attitudes could promote the sexual act to a real unity of mind and body of both individuals involved in the act. But unfortunately this was not the case in Freud's theory.

The types of perversions that are treated as special are (1) masochism and (2) sadism. These two types parallel the active/passive nature of sexual aim with a higher degree of intensity. Sadism is mostly found among males (activity) and masochism among females (passivity). The sadist enjoys inflicting pain, and in some cases, mutilating the love object. In this sense sadism is active, while masochism reflects a passive attitude toward sex (Freud, 1975:159). This perversion is viewed as a representation of the bisexuality concept which was discussed earlier. In normal cases both sadism and masochism are found in the same person and they could be viewed as pathological only when either has the characteristic of exclusiveness (p. 161).

Freud's view of man is based on his observations of neurotic behavior. Thus it is inevitable that he portrays an image of neurotic nature and that he should see every human being as neurotic in some way. Even normal men, in his view, have perversions since they engage in intermediate activities. Moreover, inversion is almost inherent in the normal man, since sexual instinct arises independent of the object (see previous discussion).

The manifestation of the sexual instinct in neurotics was described in Dora's case. In Freud's discussion of the theory of sexuality, he further emphasizes that: (1) symptoms of neuroses constitute the sexual activity of the patient; (2) these symptoms are substitutes for impulses of sexual instinct; (3) the symptoms are forms of intensification of resistence against normal pursuit of sexual satisfaction. This resistence is a conflict of affect represented in disgust and shame; (4) neurotic symptoms are seen in underdeveloped sexuality which is characterized by exclusiveness and rigidity; and (5) all these neurotic symptoms which

are both inversions and perversions of sexuality could be cleaned out by bringing the unconscious to the conscious level of mental processes as was done with Dora. Finally, Freud (1975:165) points out that hysterical cases have two groups of conditions that predispose its occurrence: (a) the individual's own progressive maturity, and (b) the external circumstances of his life.

Psychosexual development and the role of infantile sexuality:

Freud (1975) identifies three main periods during which infantile sexuality is developed. The first is the oral period, during which sex has not yet been separated from the ingestion of food; nor are the opposite currents within the activity differentiated. The zone of sexual excitement during this period is the lips membrane or the mouth and the aim is expressed in sucking. However, as he grows older, the infant completely forgets this sexual experience. Freud calls this infantile amnesia, and recognized its significance, saying (1975: 175-176), "It may be said that without infantile amnesia there would be no hysterical amnesia". The second period is the anal phase during which the zone of sexual excitement becomes the anus and the sexual aim is the activation of the anus membrane. The third period occurs between ages three and five when the child begins to be interested in the opposite sex of his parents. Figure 4:B illustrates the dynamics of the sexual instinct components during childhood. The figure shows how the source of excitement spreads around intermediate aims and does not seek genital unity. This interest in parents and the attraction to the parent of the opposite sex coupled with a view of the other parent as a rival, Freud termed "Oedipus Complex."[77]

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[77] "Originally, Freud used the term 'Oedipus complex' to refer to the boy's desire for the mother and 'Electra complex' to refer to the girl's desire for the father. More recently, psychoanalysts have used 'Oedipus complex' to refer to both sexes" (Chaplin, 1968:331).

Children between ages three and five have their own way of gathering sex information. Their interest in knowing about sex life is instinctive in the sense that it is universally observed among children. They question adults about genital areas, differences between the sexes, and where babies come from. Children at this age have their own theory of sexuality, about the sexual organs in boys and girls. They view girls as being castrated. In this way, according to Freud, girls develop the complex of castration and penis envy. Freud (1975:195) points out that this theory of sexuality is consistent with the biologists' view of the female clitoris as a substitute for a penis (except that children do not see the clitoris). Children who observe an act of sexual intercourse tend to view this as a sadistic activity. Such an experience predisposes a subsequent sadistic displacement of the child's sexual aim.

These three childhood periods of sexual organization are followed by a latency period which is characterized by sublimation. During this period, between age six and puberty around age twelve, the instinctual sexual forces are diverted wholly or in part from their sexual use and directed to other ends. Some unexpected sexual acts might occur during this period and Freud views them as interruptions of the sublimation pattern of this period.

The latency period is followed by the puberty stage. At this point a transformation occurs to the infantile sexuality concerning the aim and object of instinct components in relation to the source and the biological development of the zone component. Sexuality at this stage progresses into a normal pattern and in most cases the four components of sexual instinct are now normal in their unity towards the satisfaction of sexual need by genital union (Figure 4:A). According to Freud

(1975:207), "A normal sexual life is only assumed by an exact convergence of the affectionate current of both being directed towards the sexual object and sexual aim." This psychical transformation, in which the object becomes the opposite sex and the aim is the discharge of the sexual product attracted toward reproduction, is accompanied by a biological transformation. Both internal and external genitalia are developed. This is accompanied by mental development and the individual now remembers his sexual activities. As a child his sexuality has been characterized by amnesia.

The nature of sexual excitation is dynamic; the pleasure that accompanies it gives rise to a need for further pleasure (Freud, 1975:210). However, the fact that pleasure seeks further pleasure while excitation creates tension which remains until the discharge of the sexual product occurs, was a puzzle to Freud. He tried to explain it by the "chemical theory of excitation,"[78] but he added, "The truth is that we can give no information on the nature of sexual excitation, especially since - having found the importance of sex glands in this respect has been overestimated - we are in the dark as to the organs to which sexuality is attached."

If Freud admits that he is "in the dark as to the organs to which sexuality is attached," how can one then accept his aberration theory of sexuality which is based on a concept of normality in relation to the sexual organs and the union of genitalia, whether in relation to inversion or perversion? If Freud were aware of such a limitation of the chemical

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[78] This theory says there are special chemical substances which are produced in the interstitial portion of the sex glands. These are taken into the bloodstream and cause particular parts of the central nervous system to be charged with sexual tension. This tension is removed by the sexual product (Freud, 1975:115). However, Freud continued to believe that sex hormones are influential in sex excitement.

theory in explaining sexual excitation, he would have to abandon his emphasis on the biological frame of reference and look for some forces beyond the biological structures.

Freud had to find a solution for this puzzle in the nature of sexual excitation or any pleasure seeking in the process of instinctual satisfaction by formulating a metapsychology of dynamic nature. Freud's ambition to formulate a metapsychological theory is best represented in his theory of personality.

Freud's theory of personality:

A literature review of Freud's conceptualization of personality generates a dynamic model of a structural-functional nature. Figure 5 represents this feature of Freud's theory of personality as well as its interactive feature.

The structural-functional feature is presented in view of the fact that Freud (Hall, 1970) identifies three major structures of personality that are interactively related in their functions as the individual interacts with the environment. These three structures are (1) the id, (2) the ego, and (3) the superego. Since the id is the original component of personality which is differentiated over time (developmentally) into the two other components, a matrix is viewed as the most appropriate figure for representing these three components.[79]

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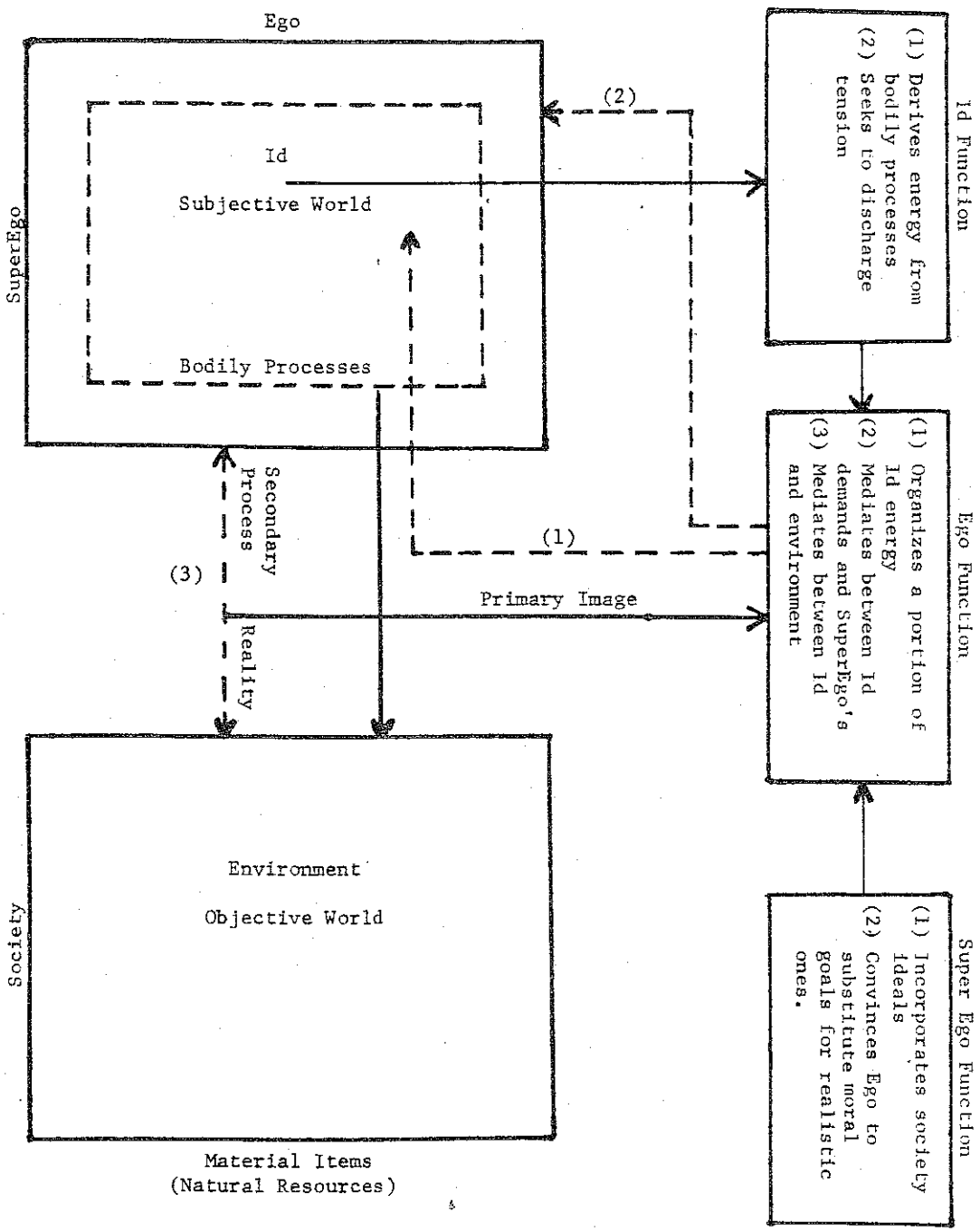
[79] A matrix could be seen as having limited potential for representing the dynamic relations among the three components. But if one tried to see it as a cross sectional slice of a box, then the depth dimension would be added. It is also necessary to read the figure with the geometrical understanding that any two sides of a square are equal and parallel. Thus when one reads ego on the upper side of personality structure, then the parallel side is also ego. The same is applied to superego and to the two sides of the environment: the social and the material items' sides. A three dimensional model could also be used for illustration, but then the figure would become too complicated to read, especially when each dimension is viewed as a structure and a function. The process of input - throughput - output becomes extremely complicated in presenting Freud's views. Arrows show the direction of energy from structure to function.

FIGURE 5

Personality Structures and Their Functions:
Conflict Model of Personality (After Freud's Theory)



Each structure has a parallel function(s). The whole theory is an attempt to represent an image for man as "a dynamic system subject to the laws of nature" (Hall and Lindzey, 1970:217).

The id according to Freud represents the subjective world of the individual. It incorporates all the psychical energy that relates to any instinctual force. It consists of everything psychological which is inherited and present at birth. It is called by Freud, the true psychic reality, "because it represents the inner world of the subjective experience and has no knowledge of objective reality" (Hall and Lindzey, 1970:32). The id is in close touch with the bodily processes (designated by a square of broken lines inside the box of personality structure in Figure 5). The id represents the pleasure principle.

The ego is a differentiated portion of the id and represents the structure of the realistic world; in Freud's terms, the reality principle. The superego represents the incorporated principles of society, which is the structure of moralistic goals in the individual's system. The id, ego and superego function in an interactive manner, and accordingly Freud believes that one system rarely operates to the exclusion of the other two.

The functions of these structural components of personality are shown in Figure 5 in which it is seen that the id has two main functions, namely, (1) to derive its energy from the bodily processes with which it is constantly in touch, and (2) to seek tension reduction by finding ways to discharge the energy that is originally derived from the bodily processes. These two functions are usually met directly before the ego is developed. It is the nature of the id, not to tolerate increases of energy, and to be in an uncomfortable state of tension when its needs are not met. The energy increases in the id, in a form of tension, either as internally

produced tension or as a result of external stimulation. The id operates by following the pleasure principle and this is usually accompanied by two processes: (1) the reflex action which immediately reduces tension, and (2) the primary process, which is a subjective experience of tension. This is a complicated psychological process in which the id forms an image of an object by which it can remove the tension. It is a kind of hallucinatory experience in which the desired object is present in the form of a memory image which is called wish fulfillment. But since fulfillment is not accomplished by images, a secondary process develops, and when this occurs the structure of the ego begins to take form.

The structure of the ego comes into existence because the needs of the organism require appropriate transactions with the objective world of reality. At this point the first demand is made upon the ego (demands are represented by heavy lines in Figure 5). The first demand comes from the id in the form of an image for an object that the individual needs for satisfying his instinct. So, the ego takes that portion from the id and attempts to differentiate it from an actual perception of that object as it exists in the outer world. He differentiates between image of object and its actual reality by using the senses. The senses match the image of food and its reality which takes the form of sight and/or smell of the food in the case of hunger. The solid line coming from the subjective world, or the id, to the ego function and to the environment, is received by the ego to be transformed into the actual reality in the dotted line 3, which indicates a selectivity of material items from the objective world and a matching process between the items that are selected and the primary image of these items in the subjective world. Thus the secondary mental process that is undertaken by the ego is the process by which it

mediates between the subjective inner world of the individual and the external reality in the objective world. This secondary process represents the reconciliation by the ego of the two forces coming from the subjective world and the objective one. In short, the relation of the ego to the id is first to organize that portion of the id function which is then represented by the increase in tension and to seek resolution for reducing this tension by bringing real items from the environment to satisfy the needs that are stimulated in the id.

However, the ego still has to deal with another force coming to its functional from the superego which incorporates moralistic goals (i.e., ideals and norms) from society, and tries to convince the ego to substitute the realistic goals with these moralistic ones. This relation with the superego is represented in Figure 5 by a solid line, the transformation of which is represented by dotted line no. 2. This transformation line represents the resolution between the conflicting demands of the id and the superego.

Freud described the dynamic interaction among the three components of personality in The Dissection of the Psychical Personality (1932). This description is quoted by Johada (1977:66): "The poor ego . . . serves three severe masters and does what it can to bring their claims and demands into harmony with one another. These claims are always divergent and often incompatible. No wonder that the ego often fails in its task. Its three tyrannical masters are the external world, the superego and the id."

The description of the ego function in relation to the demands of the three tyrannical masters of the id, superego and the external world seems to be interactive and dynamic in nature. This could be viewed as

an outcome of Hall and Lindzey's (1970:35) observation that: "Freud was brought up under the influence of the strongly deterministic and positivistic philosophy of 19th century science and regarded the human organism as a complex energy system, which derives its energy from the food it consumes and expands it for such various purposes as circulation, respiration, muscular exercise, perceiving, thinking and remembering."

In fact, Freud's deterministic view of man's nature is evident in his description of the ego as poor -- and a servant of three tyrannical forces, in none of which the ego is left any freedom to make a choice of its own free will. There is no free will in Freud's conflict model of personality. There is only a compromise or an adjustive role in the hands of the ego. The ego is normal when it is able to maintain the homeostasis between the external and the internal worlds of the individual. In that sense, Freud's view of man is deterministic. Freud himself admits to this fact by saying (1956:192): "As the general result of the preceding separate discussions we must put down the following principle: Certain inadequacies of our psychic capacities . . . and certain performances which are apparently unintentional prove to be motivated when subjected to the psychoanalytic investigation, and are determined through the consciousness of unknown motives."[80]

These unknown motives of the individual become known by using the psychoanalytic technique in reorganizing mental life temporally and spatially by following the natural laws of associations. The main

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[80]This appears in S. Freud. Psychopathology of Everyday Life. London: Ernest Benn Limited, 1956 (1st pub., 1914). The thrust of the work is to point out how the individual forgetfulness in everyday life is motivated by unconscious forces, which are originally conscious, and all are aiming at protecting the ego from being viewed as irrational either by society or by himself. Forgetting is an ego defense mechanism.

subject matter of the psychoanalytic theory of personality remains the study of unconscious forces of mental life which was discussed earlier. In essence one can see the relationships between the function-structure of personality and the function-structure of mental life. These two groups of function structures are also consistent with the function structure of instinctual components. Thus if one wants to see this internal consistency of Freud's theory on mental life, sexuality and personality, the three previous figures (3, 4, 5) must be reconstructed into one comprehensive figure. Figure 6 has thus been constructed to show the personality structure in relation to the mental life and instinctual components.

FIGURE 6

Personality Structure in Relation to
Mental Life and Instinctual Components

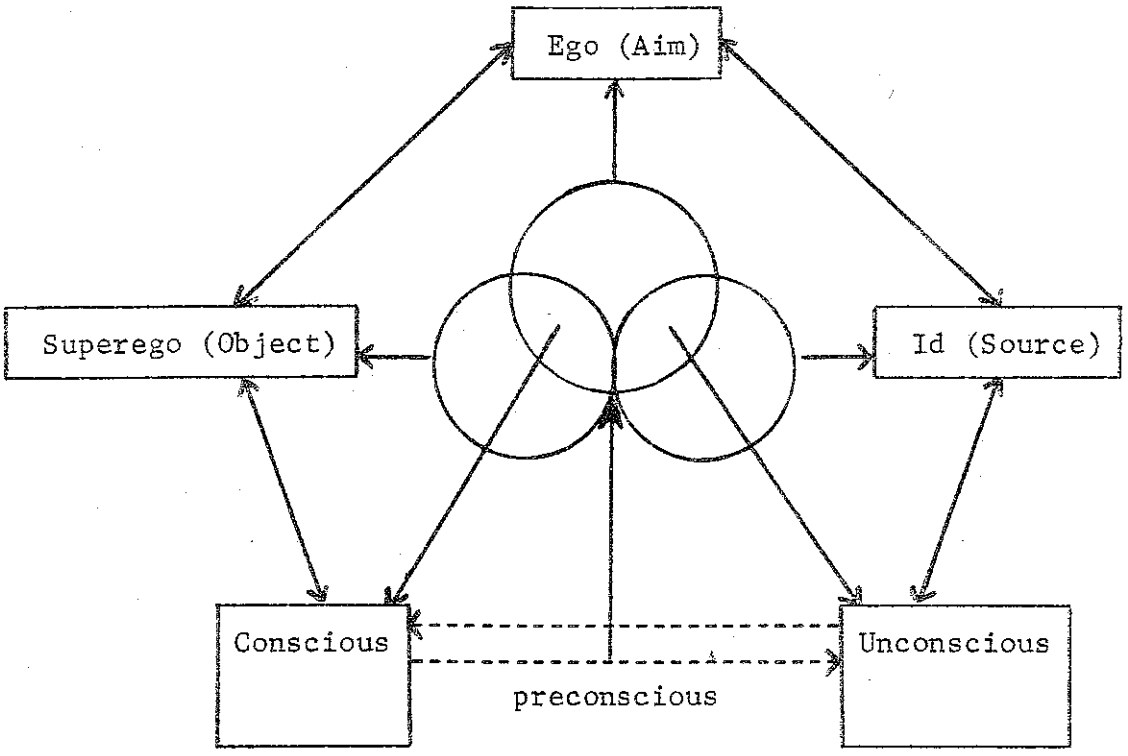

Figure 6 shows the interdynamic relationships among the various components of instinct in relation to the personality structure and as both related to the structures of mental life. The interrelated nature of the various hypothetical structures conceptualized by Freud is the result of psychic energy. Freud's conceptualization of psychic energy that underlies the dynamic relationships among the various structures of personality is described by Hall and Lindzey (1970:36):

> Energy may be transformed from one state into another state but can never be lost from the total cosmic system; it follows from this that the psychic energy may be transformed into a physiological energy and vice versa. The point of contact between the energy of the body and that of the personality is the id and its instincts.

In short it is seen that in Freud's view, instinct is a quantum of psychic energy. Moreover it represents a measure of the id's demands upon the ego and the demands of the unconscious upon conscious mental life. The power of instinct as represented in the id is seen in its reflex action in demanding an immediate satisfaction, and in creating a primary image of the given object for the achievement of such satisfaction. The components of instincts are related to the personality structure as seen in Figure 6, on the basis of the previous discussion, in the following fashion: (1) The source is related to the id in the sense that the id is the energy which is produced internally or which is externally stimulated in the same manner as the source of instinct is defined. (2) The aim represents the body movement towards instinctual satisfaction - in search of object, in this sense it is analogous to the ego whose function is to mediate between the demands of the id and the available elements in the environment by using the sensory organs and matching external reality with subjective reality (i.e., primary images). (3) The object in its relation

to the source of the instinct and its aim, is chosen by the ego on the basis of the demands of the superego. In that sense the object is related to the superego as it is mediated by the ego functions. Sexual aberrations could also be viewed in light of these interdynamic relationships as an outcome of the ego's failure to serve the demands of the id and the superego on the one hand, and the actual reality on the other. It is this failure of the ego that creates conditions for the unconscious processes to control the conscious ones. This failure, therefore, is to be manifested in a somatic manner, since the psychic energy could be transformed into physiological energy. Thus the solution of any given conflict has to be based on interpreting the source of this conflict in the unconscious after seeing the relation between the somatic symptoms and the repressed motives in the unconscious structure of the mental life. This solution is achieved, according to Freud, with psychoanalytic techniques as was discussed in Dora's case. In the final analysis one can see that Freud's personality theory is an interactive, dynamic and comprehensive theory which utilizes structure-function(s) analysis for the psychological conflicts that the individual experiences in maintaining his internal and external equilibrium. The model, as such, is a conflict model, but no matter what the source of the conflict may be, the resolution has to rest on the compromises that the ego makes between the pleasure principle and the reality principles, both of which are viewed by Freud as determined. Thus the individual has no freedom in solving these conflicts. The individual's whole life is determined by the heredity factors and the environmental ones. The individual is potentially neurotic, since his personality core is the irrational id, thus he cannot become normal unless he follows the dictates of the society

by incorporating the ego-ideals rationally. It is clear from the previous presentation of Freud's theory that there is no mention of any form of creativity in the mental or sexual life of the individual. He has conceptualized a straight rational model that is positivistic in its view of causality, especially insofar as the process of bringing the unconscious to the consciousness level has to follow the associationistic principles of contiguity in terms of rearranging the psychological event temporally and spatially in a sequential and linear way.

II. Freud's Psychoanalytic Techniques:[81]

Freud's psychoanalytic techniques are the outcome of his view of man inasmuch as his view of man was developed on the basis of his observations of his patients, using these techniques. In this sense, one can safely assume that the psychoanalytic techniques form a method of investigation for studying man's nature.

Freud began treating neurotic patients in the early 1890's on the basis of his understanding of neurology as a branch of medicine. Later he studied hypnosis with the French psychiatrist, Jean Charcot, for one year, and used it with his patients. However, by 1895 Freud had become dissatisfied with the efficacy of hypnosis and turned to a new method. This was the talk-out technique which had been originated by Breuer. Freud and Breuer worked together on the conceptualization of a psychoanalytic technique which lets the patient talk freely in search of associations between what the patient says and his unconscious process, with the aim of curing the somatic symptoms. However, the two men soon parted views on the significance of sexual conflicts in hysterical neurosis.

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[81] The psychoanalytic techniques are examined in this chapter because they are part of a founder's contribution. Thus, other techniques which have not been classified as part of psychological foundations are presented in chapter four for different purposes.

While Freud saw sexual conflicts as the cause of neurosis, Breuer was more conservative. After this, Freud worked alone.[82]

Freud's psychoanalytic technique includes a goal, a procedure and certain rules with which the therapist must comply in order to achieve the therapeutic goals. The goals of psychoanalytic techniques are mainly adjustive in nature. Adjustment is the final goal of the therapeutic treatment, and it is manifested in the removal of the somatic symptoms and in the ability of the patient to deal rationally with his environment. According to Freud, adaptive behavior follows the patient's awareness of his unconscious processes, or in other words the process through which the unconscious becomes conscious (Freud, 1975).

Ford, et.al (1965:162) correctly points out that Freud's goal in psychoanalytic technique is to reduce the negative affect which maintains the avoidance of actual thoughts by repression. Freud assumes that when the repressed thoughts are brought to the patient's awareness as he free associates, the treatment becomes efficient. However, though the patient may become free of some conflicts, he will never be completely free from conflicts with his environment, since he lives in a society where his impulses and the demands of his psychical energy will frequently clash with societal norms.

The procedure of psychoanalysis starts with a contract between the patient and the therapist. Both agree on the time and the place of future meetings as well as the responsibility of each one in those meetings. Usually the patient attends daily, six days a week although with less severe cases Freud found three times weekly to be adequate.[83] The

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[82] Hall and Lindzey (Op. cit.:30-31).

[83] Dora's case was treated on a regular schedule of six days a week for six months (Freud, 1975:op. cit.).

formulation of this contract is the first condition for the therapeutic treatment. The second condition pertains to the therapist's training and knowledge. The therapist must be trained to have a theoretical understanding of behavior from a psychoanalytic viewpoint. Freud's training indicates that the best way to learn psychoanalytic techniques is to undergo psychoanalysis. It is assumed that going through psychoanalysis helps the therapist to develop good memory and keen observational powers.[84] The third condition is to ensure that the patient will not be affected by the therapist's responses. In a typical psychoanalytic meeting the patient lies upon a couch. He is instructed to report whatever goes through his mind, and to never leave anything out because it may seem to be unpleasant. This instruction is a fundamental condition for free association. The behavior should be emitted by the patient, and the therapist has to avoid the possibility of acting like a stimulus in order to make the patient elicit a response. Ford, et.al (1965) points out that the conditions of the therapeutic relationship in psychoanalysis are set up to: (a) give the patient undivided attention and interest; (b) maintain complete neutrality, both affectively and intellectually concerning the conventional morality of the patient; (c) make complete observations of all responses given by the patient in order to be able to select the avoidance responses which the therapist could help the patient to transform into positive responses during the treatment.

It is clear from these conditions that the therapist's role in the psychoanalytic technique is an active one. He instructs the client on

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[84] Hall and Lindzey (1970:op. cit.) point out that Freud practiced self-analysis on his own dreams and his own behavior throughout his life from 1897 until 1939. Freud used to reserve the last half hour of each day for this activity (p. 61).

how to free associate and how to sit or lie on the couch. Freud describes the patient's role in relation to that of the therapist by saying: "It is easy to make the patient into discipline, but therapy succeeds only if what the patient is told to look for in himself corresponds with what actually does exist in him" (Ford, et.al, 1965:176).

The psychoanalytic techniques are diagnostically oriented, however, diagnosis does not depend on tests and measurements or any standardized personality inventory. It depends completely on the data given by the patient during free association. Freud's major technique employs exploration followed by interpretation. The timing for interpretation depends on the manifestation of the avoidance aspect of the conflict in the patient's disruptive behavior such as forgetting or confusing the sequence of time and places as he is reporting events. As such avoidance responses begin to occur, Freud begins to identify them, informs the patient of them and explains why they are occurring. In short, the therapist uncovers and identifies the patient's resistence. The therapist has to continue to point out avoidance responses, until the patient finally recognizes and acknowledges them. Then follows a period of examination and discussion with the patient as to the significance of these avoidance responses. This period is one of working through, during which the patient discovers the approach or positive responses with which the avoidance responses conflict.

Acting out is also part of the psychoanalytic technique, during which the patient emits responses toward the therapist. This is known as transference, which is a particular kind of resistence.[85] Freud believes

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[85] See previous discussion on dream interpretation in Dora's case, pp. 171-172.

that by acting out the patient is helped to identify the origin of his conflict and to work out a solution to modify his responses. The solution is reached by the patient himself through making the unconscious conscious. The technique is basically a diagnostic one. The therapist diagnoses the problem and directs the therapeutic situation in a way that helps the patient to act freely and to see himself within a new frame of reference of his aggressive and love responses, which he formerly inhibited.[86]

Freud describes (1975:12) the psychoanalytic technique:

> Work of analysis started out from the symptoms, and aimed at clearing up one after another. Since '1895' I have abandoned that technique, because I found it totally inadequate for dealing with the finer structure of a neurosis. I now let the patient himself choose the subject of the day's work, and in that way I start out from whatever surface his conscious happens to be presenting to his notice at the moment. But in this plan everything that has to do with the clearing up of a particular symptom emerges piecemeal, woven into various contexts, and distributed over widely separated periods of time.

This quotation describes the therapeutic situation and the way by which the data is collected. However, data have to be interpreted thorugh following rules. Freud (1975:12-13) asserts that, "I have as a rule not reproduced the process of interpretation to which the patient's associations and communications had been subjected, but only the results of the process." The free association on the part of the patient is a ruleto meet the assumption that the fine structure of a given thought is not separated from its processes. The second rule deals with how to make

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[86]The primary source for understanding Freud's psychoanalytic technique is Freud's Complete Psychological Work (1975). A secondary source is reviewed for the same purpose, namely, D. H. Ford, Urban and B. Hugh. Systoms of Psychotherapy. New York: Wiley Ltd., 1965. Ford, et. al., is recognized as a good reference for developing theoretical structure of Freud's psychoanalytic techniques which are given in his complete work, especially on the clinical picture.

interpretation. Freud (1975:39) says: "It is a rule of psychoanalytic technique that an internal connection which is still undisclosed will announce its presence by means of a contiguity -a temporal proximity of associations, just as in writing, if "a" and "b" are put side by side it means that the syllable "ab" is to be formed out of them."

It is clear then that the psychoanalytic rules are of an open-closed nature. While in the first rule the technique is completely open (free association), in the second rule the interpretation is completely closed. It follows the norms of rationality in its most linear and deterministic sense by using the principles of association. This second rule has its origin in the British associanistic school which does not recognize the natural causality of events in any way.

Freud's search for "gaps" in the sequence of reported events, which he accomplished by observing the patient's avoidance responses and attempting to bring these gaps to the patient's attention by discussing them and trying to reconstruct the patient's stream of thought, is inherently misleading. According to systems analysis, the process of reconstruction of any system usually brings out a new system. This happens because every system is composed of sub-systems that function according to their positional value in the system as a whole.[87] Hence, when the patient's flow of reported events is analyzed and grouped according to spatial and temporal associations on the basis of assumptions that the psychiatrist works out during the sessions, it is inevitable that the new picture is a different one from that which the patient actually experienced. It is argued here that, had the patient freely arrived at

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[87] See p. 6 and p. 27 in this work on Angyal's views of systems analysis and his concept of "positional value".

the reconstruction of his reported system, without any participation from the therapist, then the therapeutic relationship could fairly assume efficiency. But since the therapist assumes an active role in identifying the gaps, informing the patient of their meaning and discussing their possible relations, one might suspect that the solution that is arrived at through psychoanalytic techniques is a false one. At its best the solution could be viewed as a treatment that is given by the therapist and not something arrived at by the client himself. This view justifies Patterson's (1973) classification for psychoanalytic techniques as therapist-centered. By this he means a technique which has an instructional, rational, adaptive goal for maintaining status quo instead of self-discovery and growth.[88]

Freud's psychoanalytic approach starts with the ambition of developing a comprehensive model of a multiplex nature with a new focus on the metapsychology, but it ends up being as closed as any empirical system. This happens simply because Freud is caught by linear causality in that he adopts the associationistic principles of the British empiricists. The question remains, how could a conceptualization of man as a system of energy lead to a closed approach in viewing the dynamics of such energy?

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[88]C. H. Patterson. Theories of Counseling and Psychotherapy. (2nd Ed.), New York: Harper and Row, 1973. This work identifies psychoanalysis as a rational model and presents its basic tenets as the genesis for almost all techniques that were developed after Freud. The variation of other models transforms Freud's negative image of man into a brighter image. The new transformation allows more freedom for man to choose, a shift that has eventually led into a client-centered therapy headed by Rogers' approach. Rogers was the one to view man as originally good and productive. Followers of this view are termed humanistic psychologists and existential-oriented therapists.

III. Freud's Personal Life[89] and Its Impact upon His Psychoanalytic Views:

It is assumed in this work that no theory is free from the influence of its builder's personal life. A theory builder does not theorize in isolation from the cultural motif of his time, whether it is manifested in the views of the scientific community or in the theorist's ethnocentric experiences. These assumptions are based on Kuhn's views of the process of scientific discovery and the systems view of the impact of the two-dimensional domain upon the individual's life in general and upon his view of man and the universe in particular. Freud's life was highlighted by a number of significant events: his life span covered a period of time during which the European philosophy of scientific discovery was by and large empirical, positivistic, and linear in its understanding of the causality principles in explaining natural phenomena. As has been pointed out in this work, the dominating logic in the Western empirical paradigm is the British associationistic view which explains associations according to the contiguity principle of temporal and spatial proximity. Freud was born in Moravia on May 6, 1856 and died in London on September 23, 1939. Most of his intellectual work was done after his graduation from the medical school of the University of Vienna in 1891 until the end of his life. During the 19th century, especially in the last quarter, scientists' interest in the nature of conscious experience was overwhelming, especially in Germany among the Wundtian school of structuralists. The theory of evolution and the relativity theory were just being formulated and they enriched scientists with new views of less rigidity in the analysis of

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[89] See Hall and Lindzey (1970) and Chaplin and Krawiec (1968) for information about Freud's life.

natural laws. These two dominant lines of thought explained the open-closed nature of Freud's psychoanalytic techniques. Freud encouraged free association on the part of the patient, and then reorganized the patient's reported events in light of associationistic principles, with special focus on childhood experiences and their genotypic developmental nature. His view of psychic energy is affected by the physical sciences' view of energy which was prevalent at the time, which maintained that energy transforms from one form to another by changing its work.

Freud's negative image of man could have been the result of his personal experiences as a Jew. It is a documented fact that the Jewish people were discriminated against in Europe during Freud's life. However, though most of Freud's writings were completed before the racial discrimination in Europe was culminated in the Nazi regime, still Freud must have had his share at least by observing the sufferings of his people as a minority. Freud's negative image of man is evident in his terminology when he discribes the forces of the id, superego and environment as three tyrannical masters (pp. 188-189 in this work). The ego is described as a poor structure which has to serve these three masters. Freud may have identified these components of the personality with the oppression of the Jews by the Europeans - the superego of the time - and with the demands of the environment which was then overruled by the Europeans' negative perception of the Jews. The conceptualization of the id as full of aggression and survival motive might have been stimulated by the oppressive acts of anti-sematism against the Jews. The three tyrannical forces are clearly manifested in Freud's personality theory.

As a medical student Freud was trained to deal with neurotic patients. Later he practiced his training on this kind of patient. However, Freud

witnessed two major events during his career: World War I and the anti-semitic movement which culmiated in the Nazi regime. These two events must have had an impact upon Freud's career, his writing and his image of man. During much of his career he observed patients who had suffered from discrimination and this might be one of the personal factors which led him to form an essentially negative view of man and conclude that man is originally neurotic. Consequently, he believed that when man's ego had been freed (through psychoanalysis) he would become rational and free of neuroses. Freud's negative image of man, which was perpetuated in his writings, must have been influenced by his reaction to World War I and the anti-semitism which was spread in European countries then. These two big events could have formulated a reinforcement reactive mechanism (to use Freud's terms) which might have caused the perpetuation of a negative image of man.

However, some theorists who lived through similar experiences seem to have transformed their suffering into a positive image of man. An example of this is Victor Frankl, who views man as originally good and neurosis as the outcome of existential frustration or "noögenic neurosis."[90] It seems that personal suffering can lead a theorist to look for good or bad in his view of man. In the final analysis, the theorist's image of man is nothing more than a reflection of a perceptual outcome of his own private life. For this reason, this researcher persists in viewing scientific contributions as colored with subjective reality no matter how much the theorist

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[90] This is a kind of neurosis that results from existential frustration. V. E. Frankl. An Introduction to Logotherapy: Man's Search for Meaning. New York: Pocket Book, 1974 (2nd print). According to Frankl, "The term 'existential' may be used in three ways; to refer to (1) existence itself, . . . (2) the meaning of existence, and (3) the striving to find a concrete meaning in personal existence, that is to say, the will to meaning. Existential frustration can also result in neurosis. For this type of neurosis, logotherapy has coined the term 'noögenic neurosis', , , another logotherapeutic term which denotes anything pertaining to the 'spiritual' core of man's personality" (p. 159).

tries to control for the subjective element. For this reason it was proposed earlier that social scientists must account for the subjective element by utilizing it rather than controlling it by artificial means on the basis of linear logic.

Another factor that might have affected Freud's writing is his travel to various countries. He traveled a great deal to observe the implementation of different techniques for the treatment of neurosis. He went to France to study the use of hypnosis in the treatment of hysteria, and later to Germany where he met Carl Jung of Zurich. He also visited England to which he escaped from the Nazis in 1938.[91] Hall and Lindzey (1920:31) report that Freud visited the United States when he was invited by G. Stanley Hall, the eminent American psychologist and president of Clark University. These scholarly visits within Europe and to America created the opportunity for Freud for multiplex intellectual experiences on various psychological issues. This might explain Freud's ambition to formulate a comprehensive general system of psychology. Jahoda (1977:37) points out, "The ambition to create a general psychology stayed throughout his life, even though he abandoned the project for a scientific psychology, his first effort in that direction. The passionate commitment to psychology that he felt remained."

Freud's view on women is sexist in nature and his theory portrays a bias against what he calls femininity. He views femininity as passive, with a weak superego, or maybe no superego in the final analysis, and with inherent tendencies towards hysterical neurosis. Freud (1975:143-145) argued against the assumption of physical hermaphroditism that inverts

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[91] Chaplin and Krawiec (1968:77).

have feminine mentality and do not possess secondary masculinity. He said that there are inverts who retain a masculine mentality and have secondary characteristics of their own sex. Female inverts, according to Freud, are looking for a love object that exhibits both the physical and mental traits of femininity. However, they themselves look and think in a masculine manner. The question that arises is, how can Freud state that there is such a thing as feminine and masculine mental traits? This statement assumes that the sex factor decides mental traits. Modern psychologists find it difficult to accept such an assumption. Vinacke (1976:244-245) reports his observations on experimental games:

> Females represent a number of puzzling kinds of behavior which reveal the importance of special attitudes. Whereas males appear typically to treat the game as a competition in which individual gain is salient, associated with a desire to win at whatever cost, females appear to treat the game as a social interaction situation in which equitable outcomes are sought . . It is a mistake to say females are not or they do not enjoy winning, rather it is a matter of how problems are perceived and solved. It is better to say that males tend to be exploitive and females tend to be accommodative.[92]

The question of the existence of a sex factor in personality traits seems to be a difficult question to deal with in an unbiased manner. Freud's observations on this issue are clearly biased as compared with the empirical finding stated above. Vinacke (1976) chooses a descriptive phrase, "puzzling kinds of behavior", to refer to his observation of female behavior in experimental games. The choice of such a phrase suggests an underlying awareness that a psychologist must avoid generalizations on the sensitive issue of femininity-masculinity, since modern women who have been influenced by the liberation movement are no longer tolerant of what

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[92] W. Vinacke, "Variables in Experimental Games: Toward a Field Theory". In P. Hollander, and R. Hunt (Eds.), Current Perspectives on Social Psychology. (4th Ed.). New York: Oxford University Press, 1976:240-247.

is written about them in social sciences literature. The whole quotation in its wording is an attempt on the part of Vinacke to be unbiased in stating his observation. However, sex differences are still seen as a significant area for investigation. This researcher does not recall any article in social psychology or counseling which does not investigate the impact of the sex factor upon behavior under investigation.

Despite this interest of psychologists, the real question is: Does the sex factor in real life cause the apparent differences between men and women, or do these differences occur as the result of socialization? Researchers seem to investigate sex factors as they define them subjectively rather than as it exists in real life. Men and women are both human systems. Their function in society is decided by their social role which is basically the outcome of their positional values in whichever social system they exist. The traits, according to this researcher's view, are inherent in the role the individual plays rather than in his own personality structure. The social roles are assigned by societal needs and their features are defined by the symbolic interactive effect of their outputs. For example, if it is observed that more females go into "education" than males, while more men go into the professional fields, this does not mean that one could conclude that the mental abilities of females are less than those of males or that vocational choice is decided by sex factor.

Accordingly, Freud's observations that women tend to be hysterical more often then men should not be taken to mean that hysterical neurosis is a typical pathological trait of women. From the perspective of systems analysis, it is more appropriate to interpret these observations as being caused by the various conditions under which women play their social

roles.[93] It is the positional value of women in the structure of society as a whole that determines their behavior. Moreover, it is the meanings that society assigns to this role(s) that directs us to view such behavior in a given way, be it positive or negative. In all these situations, sex is not "the" factor that decides the personality trait of the individual. It might be a factor which is indirectly involved among other factors, and only inasmuch as the physical structure of the individual can delimit or facilitate one's function in relationship to his or her positional value in society. In short, mental traits like personality traits should more appropriately be treated as the outcome of "socialization processes" through which the individual acquires his own role according to his positional value in a given social system.

Freud's view of women may have been influenced by the cultural motif of European society in his time, which was mostly negative towards women, and his personal view of his own mother. Freud's mother may have been a dominant active person whose role was not coherent with the cultural motif of European society in general nor with the typical role of women in Freud's ethnic cultural motif. This may have created the bi-sexual image

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[93] The question of social role vs. sex as causes of personality traits is addressed by L. Kohlberg, "Stage and Sequence: The Cognitive Developmental Approach to Socialization", in D. Goslin (Ed.), Handbook of Socialization Theory and Research. Chicago: Rand McNally Company (1969:347-80). In this article Kohlberg emphasizes the point that "boyness" or "girlness" is the result of role-taking in the socialization process. Role-taking is directed by two cognitive principles: (a) assimilation, and (b) accommodation. The child selects his role in a way that suits his cognitive schemata (i.e., assimilation process), then he acts upon environment by taking the role-opportunity and acting it out (i.e., accommodation). Two processes accompany these Piagetian principles, the imitation and ejection processes. The boy imitates what other boys are doing, then evaluates his behavior on the basis of what those others might think of him. Later he develops his own perception of what to do in order to be a boy, differentiated from girls. The same happens with girls. See also L. Kohlberg, "Continuities in Childhood and Adult Moral Development Revisited," In P. Balete & Schaie (Eds.), Life Span Developmental Psychology: Personality and Socialization. New York: Academic Press, 1973.

of female mentality which existed in Freud's own mind. However, this is a highly hypothetical explanation. Hall and Lindzey (1970:31) report Freud's lifelong devotion to his wife Martha Benneys and their six children. If one were to accept Freud's own logic one might conclude that this devotion was a reaction formation against Freud's negative attitude toward women. But nothing definite could be concluded.

IV. Does Freud's Psychoanalytic Theory Part with the Linear Logic of The Empirical Paradigm of Psychology?

In light of the aforementioned discussion on Freud's views of man and the method of investigation (i.e., psychoanalytic technique) that he employed, the following observations could be inferred:

(1) The rule of psychoanalytic technique which Freud uses to describe the internal connection between the conscious and unconscious processes is explicitly linear in its logic. Freud (1975:39) says: "It is a rule of psychoanalysis technique that an internal connection . . . will arouse its presence by means of a contiguity - a temporal proximity of associations, just as in writing, if "a" and "b" are put side by side, it means that the symbol "ab" is to be formed out of them." This rule is strictly applied by Freud in his Interpretation of Dreams, in his psychoanalytic techniques for interpreting the relationships between conscious and unconscious processes in his clinic, and in the description of "forgetting" in his Psychopathology of Everyday Life. In essence, this rule of psychoanalysis also lies basically and fundamentally at the heart of the British empiricist associationistic philosophy of J. S. Mill, as was seen in his first methodology of scientific discovery which was discussed earlier. It is the straightforward method of linear logic - "a" leads to "b" provided that everything else is constant. It is a causality that follows the

Humean model of the behavior of "billiard balls", when he says that one "ball" causes the movement of the other ball sequentially. In fact when Freud follows the dictates of British empiricist causality he assumes a positivistic approach for understanding human nature, and restrains the interactive and dynamic features of his psychoanalytic theory of personality.

(2) The concept of neurosis and its relationship to normality in Freud's work assumes a rational model for normality. Thus any behavior that is not rational (i.e., does not follow the contiguity principle) is neurotic. This view seems to indicate that there is no creativity in human behavior, regardless of whatever this behavior is attempting to satisfy, be it a sexual, psychological, or social need. This lack of creativity in the behavioral model that is portrayed by Freud's work is mostly due to his reductionistic approach. Freud views normal behavior as a form of tension-reduction. This form follows a prescribed pattern, otherwise the individual is classified as deviant. These views are the outcome of a strict deterministic orientation that was typical of the 19th century theory of knowledge.

(3) The time concept is not clearly defined in Freud's psychology. However, one can infer from Freud's theory of personality and his concept of developmental stages that he sees time as retrospective. There is always a focus on the past in interpreting what is happening at present. This is clear in Freud's belief that childhood decides adulthood and that neurotic symptoms are the outcome of repressed past experience in the unconscious. The classical concept of time is evident in the psychosexual developmental theory, since stages according to Freud occur at a specific age at which certain characteristics are formed or development occurs.

The strict definition of stages by age suggests that Freud treats time as static rather than dynamic. One can see that Freud's concept of time in this regard is consistent with the principle of "contiguity" of British empiricist causality. Jahoda (1977:62) observes that Freud's concern with real time and psychological time led him to be engaged "not only. . . in a retrospective psychology, but the difficult concept of time entered . . . into his psychological functioning."

The static concept of time appears explicitly in Freud's analysis for the meaning of somatic symptoms in relation to the time element. Freud observed that "Dora had had a very large number of attacks of coughing accompanied by loss of voice". In discerning the relationship Freud (1975:39) said:

> Could it be the presence or absence and disappearance of the man she loved had had an influence upon the appearance and disappearance of the symptoms of her illness? If this were so, it must be possible to discover some coincidence or other which would betray the fact. I asked her what the average length of these attacks had been. 'From three to six weeks, perhaps.' How long had Herr K.'s absences lasted? 'Three to six weeks, too,' she was obliged to admit. Her illness was therefore a demonstration of her love for Herr K., just as his wife's was a demonstration of her dislike . . .

This quotation explicitly demonstrates the misleading linear logic that Freud employs in his use of time concepts to reach conclusions which describe the causality of somatic symptoms. It could be argued that the correlation between the length of time from the appearance of the somatic symptom and the length of time since the disappearance of the "beloved" is a mere coincidence. Even if this correlation is replicated hundreds of times, it does not describe causality. It merely suggests a probable realtionship between events. Moreover, the last generalization that Freud induced from the described correlation is the strongest evidence

for the linear logic that underlies his analysis of psychological dynamics (See the previous discussion on the argument of Popper on induction, pp. 49-55 in this work). The point concerning time concept in Freud's work is another instance of his atomistic empirical reductionistic linear logic.

(4) The concept of change in relation to time and external or internal reward: the cure of somatic symptoms is described by Freud as the outcome of bringing the unconscious to the conscious level of mental processes. Though the symptoms are originally brought on by multiple causality, e.g., trauma, conflict of effect and distortion of the sexual sphere in the case of neurosis, the clearing up follows the psychoanalytic rule of contiguity that is basically linear. In this regard one can see that Freud assumes linearity for solving behavioral conditions of a multiplex nature. It follows then that there is a logical discrepancy between his conceptualization of the actual event and his solution or his conceptualization of the technique by which this actual event could be dealt with. This discrepancy explains why Dora came back to complain of the same symptoms after Freud thought she was cured. (Freud (1975:121) expressed surprise at this recurrence of the symptoms. He says, "After this[94] she had gone on quite well til the middle of October, when she had had another attack of aphonia which had lasted for six weeks. I was surprised at this news, and, on my asking her whether there had been any exciting cause, she told me that the attack had followed upon a violent fright."

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[94] "For four or five weeks after stopping the treatment she had been 'all in a muddle,' as she said. A great improvement had then set in; her attacks had become less frequent and her spirit had risen." In (Freud, 1975:121).

Even then, Freud continued to follow the same rule of psychoanalytic technique and found a connection between the time Dora started to suffer from a right-sided facial neuralgia and her transference of her feelings of revenge from Herr K. to Freud himself. Freud (1975:121-22) asked Dora about her symptom:

> How long has it been going on? 'Exactly a fortnight.' I could not help smiling; for I was able to show her that exactly a fortnight earlier she had read a piece of news that concerned me in the newspaper. And this she confirmed. Her alleged facial neuralgia was thus a self-punishment - remorse at having once given Herr K. a box on the ear, and at having transferred her feelings of revenge on to me.

Freud reported that after this transference, Dora was cured and got married. One might ask, how could Freud assume that his treatment (which lasted for fifteen months) was the cause of cure? Is it not possible that Dora's symptoms during this period were - as part of the total experience of her existence outside the clinic - interactively related, and that it might have taken even a shorter period for her to be cured if she had developed personal insight into her experiences rather than followed the therapeutic logic. Dora may have been caught by this logic and thus developed a perpetuating tendency to even consciously use it in order to justify her ailment. One might wonder, whether Dora was really cured by the psycho-therapeutic techniques or by natural transformation processes that had developed in her psychic inner world over time, since time is dynamically interrelated with everyday events of Dora's life.

This researcher tends to view the whole rationale of Freud's interpretation as one-dimensional and of a closed nature. Thus, the diagnosis and treatments may have been nothing more than a reflection of an adjustment objective that assumes maintenance of the status quo is the

equifinality of therapeutic techniques. Accordingly, the reward for change is external and not intrinsic. It is apparent that only when Dora agrees with Freud's interpretation is she granted the "green card" of making progress towards mental health. And Freud as a therapist is the symbol of society's approval or disapproval. This is why Freud says in his description of Dora's progress, "She admitted. . ." This phrase is representative of Freud's attitude towards his patient. It shows that Freud begins with a preconceived assumption on the basis of which he measures the outcome. In this way, Freud's techniques are similar to those of normal scientists who Kuhn (1970) says test their theory instead of testing reality. Freud's techniques in this sense seek verifiability and not falsifiability. Consequently, one might suspect that the "cure" which Freud's psychoanalytic technique effects is an artificial one that is imposed upon the patient rather than a coherent developmental output of a natural process of transformation.

In short, the psychoanalytic theory is linear in its logic and misleading in its techniques. It is a theory that opens doors for psychologists to conceive an "energy model" of a psychical nature. However, Freud constrains the nature of such energy by applying the straitjacketed rules of linear logic and classical absolutist views of time and space, since he interprets time and space on the basis of reorganizing their sequence in accordance with contiguity principles.

Behaviorism: The "Scientific" School of Behavior:

Behaviorism is a school of revolt which was introduced by American psychologists who hoped to elevate psychology to the status of the natural sciences, such as physics and chemistry. This revolt was advanced within a time-space domain which provided fertile ground for American

scholars who wanted to contribute to the development of the uniquely American technology which was starting at the time. A literature review suggests that there was an "active movement"[95] of European scholars to American universities after the First World War. Moreover, there was a movement towards developing a new style of life in America which was characterized by technology, efficiency and accuracy. Generally speaking, the 20th century has been characterized by a scientific orientation of positivism, determinism and materialism. Scholars in such a time-space domain are motivated to conceptualize models which are capable of rendering information that helps readers to deal with their problems directly and master techniques of "how to do it efficiently."[96] It can be argued that people who have lived through a war tend thereafter to seek readymade, "blue print" techniques which tell them how "to survive," how to live "productively" and how to "make it." This human need creates conditions which pressure scholars to assume the responsibility for developing models of consumer values and "present gratification." People who have gone through the crisis of war tend to become need directed and reluctant to speculate about human nature in any metaphysical sense.

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[95] Examples of such movement among European scholars can be seen in Titchener's decision to move to Cornell University in 1892, where he remained until 1924. During this period Titchener was active in translating German psychology works into English (Chaplin and Krawiec, 1968:81). Another example is seen in Freud's visit to Clark University in 1909 (Hall and Lindzey, 1970:87). Other European psychologists came later and stayed in America for much of their professional lives such as, for example, the German Gestalt psychologist, Kohler. Kohler visited Harvard during 1934-1935, and in 1935 accepted a position as a research professor at Dartmough College which he held until his death in 1967 (Chaplin and Krawiec, op.cit.:80).

[96] Shannon's model of communication is a mathematical model which aims at solving the efficiency in communication problem mathematically by utilizing the statistical physics concepts. This model originally appeared in 1920 to meet the needs of the time. C. Shannon and W. Weaver (Eds.). The Mathematical Theory of Communication. Urbana: University of Illinois Press, 1949.

Under these circumstances, the cultural motif begins to be mobilized around "practical matters," the motif of "seeing is believing." It is during such periods that psychologists begin to grow intolerant of philosophical abstractions and arguments over ethical principles. With these assumptions in mind, it is expected that any system of thinking which promises "workability" will meet the interests of its clients and override any arguments of a metaphysical nature. However, although it can be hypothesized that such attitudes may follow a crisis period of war, the opposite extreme may also occur, with people seeking "spiritual" solutions and turning to idealism. The sharpening of the dialectic between materialistic and spiritual orientations reaches its peak during periods of reform. However, a search for homeostasis necessitates that one orientation overrides the other. Materialism tends to be the more appealing orientation under such circumstances, and therefore a materialistic model would survive the challenge and stand in its own right.

The behavioristic school began in the writings of its founder, John Watson (1878-1958). Watson was of the opinion that the traditional schools of psychology were not scientific in the "real" objective sense. His position was a revolt against the "mental psychology" of both structuralism and functionalism which was discussed earlier. Watson's first article, "Psychology as Behaviorists View It," published in 1913, started the revolt in psychology.

In this article Watson called for a science of psychology which dispenses with the traditional mental psychology and its introspective techniques. He charges the introspective method which was used by the structuralists and earlier by functionalists with being absurd, non-scientific and of no objective value in describing individual behavior.

Scientific psychology, from Watson's viewpoint, has to have "behavior" as its objective datum for investigation. Psychologists as scientists of behavior have to dispense with the absurd terms of "consciousness", mental images and emotions because they have no objective reference. The introspective method from Watson's viewpoint fails because its data are subjective. Introspection has to be replaced by objective scientific methods such as: (1) observation, with or without instrumental control, (2) the conditioned reflex method (i.e., studying the causal relationship between stimulus and response), (3) the verbal method under which subjects report their response in experimental conditions by saying which stimulus is different from the other in terms of shape, size and color, and (4) testing methods which require measurements of individual behavior.

Watson argues (Chaplin and Krawiec, 1968:58) that verbal report methods are different from the introspective techniques: "In introspection the psychologist and the subject are one and the same. In verbal reports the psychologist does not report on his own behavior or mental processes but utilizes subjects whose reports become data for the psychologist."

Watson's objectivism leads him to conceptualize all psychological processes in terms of objective reference. Emotions, feelings and thoughts are to be treated as behavioral patterns which are largely and predominantly acquired through childhood conditioning. Thoughts, which are the stronghold of mental psychology, are viewed as "laryngeal habits" and thinking is reduced to "muscle movements" which can be seen and recorded (Chaplin and Krawiec, 1968:54). Behavior in general is a form of simple reflexes, or S-R bond. This position is fundamentally a revolt against "mental psychology" in its efforts to understand the internal world and its acceptance of heredity as a factor in psychological

processes. According to Watson, there is no internal world; there is only neurology which is reflected in the reflex arc and there is no single factor which determines behavior other than the external conditions of the individual (i.e., environment).

Watson's extremist stance is expressed in the following quotation:

> Give me a dozen healthy infants, well formed, and my own specified world to bring them up and I'll guarantee to take one at random and train him to become my type of specialist. I might select doctor, lawyer, artist, merchant, thief, and yes, even beggarman, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors.[97]

Watson's views man as an animal in the sense that he learns in the same way as animals. This view is based on Watson's understanding of Darwin's Origin of Species which was published in 1859. Darwin's discussion of mental evolution in his Expression of Emotions in Man and Animal (1872) explicitly equates human with animal behavior. He says, "The human rage pattern, for example, bears a striking relationship to that found in lower forms" (Chaplin and Krawiec, 1968:218). This view was nourished by the findings of animal research in the 20th century which Watson followed with great interest. Consequently, it is not surprising to find that Watson's behaviorism equates human behavior with that of animals. Watson's views were also directly influenced by Pavlov's findings on animal behavior and his articulation of the theory of classical conditioning in learning at the time Watson began his behaviorist revolt in American psychology.

Allport (1973) points out that behaviorism has the following principles: (1) that which is external and visible is more fundamental than

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[97] In Chaplin and Krawiec (1968:53), quoting J. Watson, Behaviorism. New York: Norton, 1930:82.

anything else; (2) that which is molecular and small is more fundamental than that which is large and molar - "S-R" is the basic unit of behavior; (3) that which is earlier is more fundamental than that which is later; and (4) all species are fundamentally equivalent. For these reasons, animal psychology is considered capable of explaining or describing human behavior. This approach, according to Allport, views man as passive and its epistemological foundations stem from the Lockian tradition in the British empiricist school. This tradition assumes that the mind is a tabula-raza, that an organism is reactive when it is stimulated, motivation is external. Behavior is seen as a reaction to environmental conditions and its nature should be studied by scientific objective methods (i.e., experimentation and objective observation techniques).[98] In view of these characteristics, it can be concluded that Watson's views rest on assumptions of a closed system nature, both in their power of explanation, which rests on the linear logic of the empiricists, and their power of description. He views experimentation as a scientific method which necessitates an absolute control for conditions, thus permitting the behaviorist to create the kind of individual that he wants, regardless of hereditary factors or the individual's own dynamic pattern of relating to the environment at a given time. The principle of S-R association is the strict explicit expression of closed system views.

In fact, the definition of psychology as the study of S-R association is an extremist reductionistic position which does away with the individual's mind and reduces the psychological process to chains of physiological or neurological movements that can be observed without regard for

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[98] G. Allport. Becoming: Basic Considerations for a Psychology of Personality. Clinton, Mass.: The Colonial Press, Inc., 1973.

any of their relationships to the internal world. Behaviorism, as such, is an extremist viewpoint of a materialistic and physicalistic nature that has done away with the metaphysical component of reality. Psychologists dispensed with the "soul" and replaced it with the "mind," in the 20th century psychology left the individual with a body but with no "soul" and no "mind." What is left is observable behavior or mechanistic movements that can be described, predicted and controlled. These mechanistic movements are the only data which behaviorists recognize as objective data for "scientific psychology." Behaviorists want to bring psychology onto an equal scientific footing with the natural sciences of physics and chemistry. However, the question remains whether behaviorists have really accomplished their scientific aim, and if so, have they really achieved understanding of human behavior?

To answer this question, one would need to ascertain whether behaviorists actually describe what they claim to be describing. It is only when the system of behavior which the behaviorists conceptualize corresponds to the natural behavior of individuals that one can say they achieve what they set out to achieve. The articulation of a comprehensive scientific systems view of behavior was presented in Skinner's The Behavior of Organisms.[99] These views have been further articulated by Skinner throughout his professional life. In reviewing Skinner's writings, it is apparent that the core concept of his view of behavior is the principle of reinforcement contingencies in their role of strengthening the operants

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[99] B. F. Skinner. The Behavior of Organisms. New York: Appleton - Century Crofts, Meredith Publishing Company, 1966(A). This work was first published in 1938 and was originally written as a Harvard Ph. D. dissertation in 1931. Skinner, an American psychologist, born in 1904, is an outstanding theorist of the psychology of learning on the basis of his experimental work on animal learning. In essence, his writings since 1931 do not exceed the articulation of the contingency principle of reinforcement in shaping individual behavior by operant conditioning.

and shaping the individual's behavior through conditioning. Skinner is consistent in his terminology, his scientific position and his view of man. He is a strictly behavioristic, descriptive and experimental/analytical minded investigator.

Skinner's scientific system:

The questions which are addressed to a scientific theory of psychology are similar to those addressed to physicists as they investigate natural events. These questions are the problems which were discussed in chapter 2 of this work (pp.42-49): (1) the problem of meaning in describing the operational aspect of a physical phenomenon, (2) the problem of isomorphism between the structure of thought, language and the structure of direct experience, (3) the problem of generalizations based on inductive logic, and (4) the problem of relativity in mathematics in describing actual events. It is assumed that if such problems are inherent in the Nature of Physical Theory (Bridgman, 1936) then they will be more evident in the science of human behavior.

Skinner's basic position is objective, scientific, mechanistic and deterministic in nature. His position is similar to Watson's in the sense of defining psychology as a science of behavior. However, he parts with Watson's "S-R" reflex arc concept which assumes that behavior is a neurological and environmental function. This is why Skinner (1966,A:xii) explicitly says that his theory, as presented in his earlier work, is erroneously placed in the S-R tradition. He says:

> The Behavior of Organisms is often placed, quite erroneously, in the S-R tradition. The book remains committed to the program stated in my 1931 paper in which the stimulus occupied no special place among the independent variables. The simplest contingencies involve at least three terms - stimulus, response, and reinforcer - and at least one other variable (the deprivation associated with the reinforcer) is implied. This is very much

> more than input and output, and when all relevant variables are thus taken into account, there is no need to appeal to an inner apparatus, whether mental, physiological or conceptual.

This quotation makes explicit denial, not only of the mental processes which Watson also dispenses with, but also of the physiological processes which Watson has maintained in his reflex arc. However, Skinner accepts Watson's view of the environment but he makes a distinction between a reflex arc in classical conditioning and the reflex in operant behavior. Skinner sees no connection between neurology and the science of behavior. He says,

> If we are to avoid historical influences in arriving at a modern verdict, we must disavow the priority of the science of neurology, and in recognizing that the two sciences are of, let us say, equal validity, we may no longer subscribe to a point of view which regards a chaos of behavior as reduceable to order through appeal to internal ordered systems.[100]

Skinner argues, moreover, that the neurologists and students of behavior begin to study behavior with the observation that a given stimulus elicits a given response. However, the neurologist studies the "reflex arc" as a neurological entity, which has no counterpart in behavior. In a science of behavior the "explanation" could be given in neurological terms when a direct observation of neurological processes is possible. "Behavior is far more easily observed as a subject matter than the nervous system, and it is a mistake to tie one science down with the difficulties of another" (Skinner, 1966,A:427). This quotation suggests that Skinner is concerned with the feasibility of observing what he intends to study. The fact that the neurological basis of behavior is difficult to observe justifies, in Skinner's view, the position of not considering neurology as a factor in behavior even if it is relevant in explaining the nature

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[100] Ibid.,:419.

of behavior. This position negates any holistic approach to investigation. Skinner explicitly mentions, in The Behavior of Organisms, that neurology and the science of behavior are "two independent subject matters which must have their own techniques and methods and yield their own data" (Skinner, 1966,A:423).

With this orientation, Skinner is assuming the significance of specialization in the sciences to the point of separating the function of a given phenomenon from its structure. At this point it must be questioned what kind of system Skinner is describing? He is not willing to study the intrinsic functioning that, in this researcher's opinion, produces the system. How can he assume that he is studying behavior when he does not study the behaving organism which is operating in a structure-function manner? Can even a watchmaker assume understanding of the functions of the hands of the watch without considering the function of each structure from which the watch has been composed as a mechanistic physical system? The answer to this question is negative. If this is true in a system like that of a watch, how then can one assume any understanding of behavior based on mere recording of the behavior as it occurs. Skinner might argue, however, that he does not claim to understand, explain or find the cause/effect of the phenomenon in any metaphysical sense. The task of the behaviorist is merely to describe, find correlates among properties of what is described, analyze these correlations and make predictions. With this answer, which is a "logic-tight compartment," Skinner assumes that he cannot be charged with claiming things that are not fulfilled in his system. The kind of arguments with which Skinner readily answers any criticism are of a similar nature. He establishes a rule of what a phenomenon should look like and complies thereby. He constantly selects conditions and even creates

them to suit his own logic,[101] instead of describing events as they occur in nature. An example of this type of argument is seen in his concept of predictability and the lawfulness of behavior. Skinner (1966A:26) says:

> Operants as predictable entities, are naturally isolated last of all because they are not controlled through stimuli and are subject to many operations. They are not obviously lawful. But with a rigorous control of all relevant operations, the kind of necessity that naturally characterizes simple reflexes is seen to apply to behavior generally.

This quotation shows that even when it is recognized that behavior is not lawful, it is made lawful by the creation of conditions that will control the operation of its occurrence till it becomes predictable and thus lawful. Skinner does not describe behavior as it naturally occurs, rather as it occurs under the conditions which the experimenter designs. If the latter is the aim of the scientist, then the question of reality in science becomes more complicated, and it is doubtful whether this approach to describing events corresponds with "true facts" or the direct data which Skinner is committed to studying.

A science of behavior, according to Skinner, has to use the experimental method as its main method of investigation. This method is objective in the sense that it describes data directly and uses "control" conditions to allow for the occurrence of identified behavior under specific conditions. Skinner (1966A:433) describes his work as characterized by the following features: (1) it is mechanistic in the sense that it implies a fundamental lawfulness or order in the behavior of organisms; (2) it is analytical in the sense that the unit of behavior is identifiable in observable movements of the organism - for example, pressing a lever; (3) it is experimentally validated; and (4) it is descriptive of topographical relations in that it

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[101] In Skinner's sytem the problem is not with the internal consistency of his arguments but rather with his basic premises. He does not see the values of the internal world, though he does not deny its existence. He is not yet willing to deal with it in his "scientific approach."

classifies the reflexes, the operations which induce changes in reflex strength, and the groups of reflexes affected by such operations. Thus the science of behavior studies S-R relationships in a correlation of analytical sense and not in any cause-effect sense of explanation.

In short, Skinner's scientific system subordinates topographical description to experimental investigation of "dynamic processes" of reflex strength in operant behavior. Skinner's major contribution lies in his shift in emphasis from studying respondent behavior into studying operant behavior, which he defines as a subject matter in itself that should be studied in its own right.

Skinner (1966,A:440) defends his behavioral system as follows:

> An obstacle in the way of a science of behavior is the failure to understand that behavior may be treated as a subject matter in its own right. The materialist, reacting from a mentalistic system, is likely to miss behavior as a subject matter because he wishes to have his concepts refer to something substantial. He is likely to regard conceptual terms referring to behavior as verbal and fictitious and in his desire for an earthy explanation to overlook their position in descriptive science.

Skinner chose to study operant behavior because he believed at the time when he wrote his dissertation, that there was a lack of balance in favor of respondent behavior (Ibid.:415). He wanted to investigate the operant behavior which is emitted by the organism to act upon the environment. It is this kind of behavior, he believed, that could be changed by manipulating the environmental conditions and applying the principle of reinforcement contingencies. Skinner initially studied the operant behavior of white rats. Skinner (1966,A:47) explains his rationale for the choice of a white rat as the subject of investigation:

> In the broadest sense a science of behavior should be concerned with all kinds of organism, but it is reasonable to limit oneself, at least in the beginning, to a single representative

> example. Through a certain anthropocentricity of interest we are likely to choose an organism as similar to a man as is consistent with experimental convenience and control. The organism used here is a white rat. It differs from man in its sensory equipment (especially in poorer vision, in its reactive capacities), and in limitations in certain other capacities such as that of forming discrimination.

Thus Skinner chose the white rat despite his awareness of all the differences between the rat and man. The choice was a matter of experimental convenience, but the argument against this choice is, how can Skinner account for all the differences which he has pointed out, between man and the rat and still justify his generalizations on animal behavior as applying to human behavior?

Skinner (1971:201-202) defends his position on man as an animal. He says:

> Man is much more than a dog, but like a dog he is within range of a scientific analysis. It is true that much of the experimental analysis of behavior has been concerned with lower organisms. Generic differences are minimized by using special strains, environmental histories can be controlled, perhaps from birth, strict regimens can be maintained during long experiment; and very little of this is possible with human subjects . . . There is, of course, always the danger that methods for the study of lower animals will emphasize only those characteristics which they have in common with men, but we cannot discover what is 'essentially' human until we have investigated non-human subjects.[102]

In short, Skinner's position is environmentalist, positivist and experimentalist, with a strong aversion to "mental psychology" or any theory which refers to the inner world of man. A science of behavior

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[102] B. F. Skinner. Beyond Freedom and Dignity. New York: Alfred A. Knopf, Inc., 1971. This book was written for laymen. It explains the major concepts that Skinner uses in The Behavior of Organisms, and argues against those critics who charge Skinner with reducing man to animals, machines, and empty organisms, and with showing a lack of ethical value in considering man as a slave of the environment. Skinner's core argument is that his scientific view "works": it helps man to change and to become more capable of surviving by adjusting to the environment.

according to Skinner, has behavior as the unit of its investigation, behavior is observable, lawful and controllable. The method of investigation is experimental and analytical; it is strictly descriptive of the operant responses as they are directly observed. The goal of a scientist is to infer generalizations from his observations of the behavior of the organism (i.e., animal behavior) in a laboratory situation.

It would seem from the above discussion that Skinner's view of a science of behavior has the potential of suffering from similar problems such as were pointed out by Bridgman (1936) in The Nature of Physical Theory: First there is the problem of meaning in describing the operational aspect of observable behavior:

In describing observable behavior, Skinner emphasizes that the scientist has to describe the action of the organism upon the outside world. However, the terms should not be vernacular in the sense of describing behavior by conceptual scheme. Skinner (1966,A:7) says: "There is only one way to obtain a convenient and useful system and that is to go directly to the data." For example, the term "try" is not scientific because it implies a relation of a given sample of behavior to past or future events, but the term "walk" may be retained because it does not relate to any indirect event. Skinner emphasized the point that description of behavior would be inadequate if it failed to give an account of how separate units exist and function together in the ordinary behavior of the organism.

The question, at this point, becomes, what is the criterion for ordinary behavior, or, in other words, who decides the meaning of ordinary behavior? In regard to this question, one can see that the experimenter chooses the criteria for describing ordinary behavior and thus

nduces his own subjective meaning on the event in operation. Consequen-
ly, the description of behavior involves a subjective element regardless
of the "objective" control which is induced upon the situation. Skinner
(1966,A:42-43) recognizes that this problem of meaning exists in a sci-
ence of behavior. He says:

> The experimenter is more likely than not to hit upon experimentally real terms, and he may have some private set of properties resulting from his own training that will serve. The word 'hiding' may always be used by him in connection with events having certain definite properties, and his own results will be consistent by virtue of this definition per accidens. But it is a mistake for him to suppose that these properties are communicated in his use of the popular term. If no more accurate supplementary specification is given, the difficulty will become apparent whenever his experiments are repeated by someone with another set of private defining properties and will be the greater the wider the difference in background of the two experimenters. This raises a problem of epistemology, which is inevitable in a field of this sort. The relation of organism to environment must be supposed to include the special case of the relation of scientist to subject matter.

However, despite this recognition of private meaning for given operations, Skinner continues to argue that it is possible to arrive at a popular term experimentally, and thus description is possible to be objective. The missing point in the whole argument is that, even the classification system which scientists employ in identifying properties of behavior carries a choice which is inherent in the observer and not in the observed system.

The second problem is that of isomorphism, or the notion that there is no one-to-one correspondence between the structure of language and the structure of direct experience. Since a scientist has to describe the behavior of the organism, and this behavior has an infinite number of features, it is inevitable that the scientist selects some features at the expense of others. In so doing, the scientist is not describing the

system as it is, but rather as he himself decides to describe it. It is this choice of selected features of a given system, which Skinner calls properties of behavior, that makes a descriptive system not in complete correspondence with the objective world. Skinner does not admit to this fact, though he himself identifies the properties of operant behavior of the white rat in relation to the amount of pressure the rat exerts on a lever in boxes of different sizes. These movements are classified as "vertical" or "horizontal" in relation to the position of the experimenter, not that of the rat, and above all a form of behavior which Skinner calls "spontaneous" activity has to be identified by the experimenter. That which is "spontaneous" or non-spontaneous is also defined by the experimenter. In fact, all the descriptive terms involve a subjective criterion of some sort or another, no matter how "generic" or "popular" they are. The argument is that there is an infinite number of features in the given behavior of an organism as simple as a rat, and that this complexity of features would become much more difficult to reduce to specific features in the case of a human system.

Accordingly, a third problem is one of generalization. Granted, a scientist can arrive at generalization in a closed class of objects, either by experiment or by the method of exhaustion. But in a case where a class of objects is open, or infinite, as is the case with human behavior during thinking processes, a scientist cannot assume that such generalization is possible. What adds to the problems in Skinner's model of conceptualizing behavior is his bold generalization from the behavior of an organism like a white rat to that of a human being in spite of the infinite number of differences between both organisms. The inductive logic in analyzing the topographical correlations between stimulus and response in

arriving at generalization is used by Skinner for inferences of probability of response occurrence under similar conditions. It has been argued previously that replication of any event is hypothetical, since neither time nor space is at any point static. Therefore, the concept of probability is a statistical one which does not describe the operation in reality (i.e., as it occurs in nature). Skinner utilizes this concept of probability in drawing predictions on the individual's behavior. He says (1963:28): "In none of the work has the behavior of the individual been predicted in more than a statistical sense."[103]

It might be asked, however, what is the value of this statistical sense if it does not yield a genuine understanding of what was actually happening? Taking this line of argument, Bugental (1963:565) points out: "In spite of increasing elaboration of statistical methodologies, despite greater and greater reinforcement of laboratory procedure, the product of years of conscious effort has not been such to warrant confidence that will eventually arrive at genuine understanding of human behavior."

Skinner's science of behavior assumes confidence in the mathematical model's ability to measure, describe relationships and draw conclusions on the basis of numbers or symbols which represent the algebraic summation of behavior in relation to environment. The question remains, whether Skinner is describing relationships among "symbols" in a mathematical or correlational model of a conceptualization system of behavior, or the actual relationships among the various movements in a given act.

In analyzing the topographical relation between number of current

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103B. F. Skinner. "The Science of Learning and The Art of Teaching." In A. Crow (Ed.). Readings in Human Learning. New York: McKay Company, Inc., 1963:28-58.

responses and time, Skinner simplifies the mathematical problem. He simply counted the progress of emitting the right act (i.e., the act which is followed by reinforcement) over time. In doing so, Skinner has reduced the complexity of the problem under investigation. His concern is not to find how the actual act as a whole takes place or why. He is merely concerned with the description of proper movements in relation to time, on the basis of which he makes inferences on the strength of responses. The underlying assumption of his analysis of behavior is that behavior is the summation of its parts and that the whole is neither quantitatively different from its parts nor qualitatively in the Gestalt sense.

It is because of this concept of wholeness vs. summation of parts that it is argued here that the epistemological foundation of Skinner's thought is linear and that his concept of time and space is classical and not dynamic. The following quotation shows the linear and static nature of Skinner's conceptualization of behavior (Skinner, 1966,A:55):

> Any section of a chair may be elicited in isolation with the same properties which characterize it as part of the total chair. There is no reason to appear to any unique property of the whole sample as an 'act.' I make these statements as explicitly as possible in view of 'prevailing opinions to the contrary.'[104] Experimental justification for present molecular view will accumulate during the rest of this book.

This reductionistic view is contrary to the simplest examples of human activities. For example, a given word as part of a given statement would have a different meaning and a different power of communicating an idea when it is placed in a different context. If Skinner's

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[104] Prevailing contrary views include the view that the whole is different than the summation of its parts.

argument were true, the word would maintain the same properties of meaning in isolation as it has when inserted in the chain of words that make up the statement as a whole. The same argument applies equally to the "letter" in a given word.[105] In fact, there seems to be much evidence in everyday life that things are never the same in isolation from a given whole as they are in that whole. Moreover, it is difficult to think of any thing with a property of "existence" which is in isolation. Things exist by the mere definition of their relationship to other things.

Skinner speaks of acts in isolation because he does not see a necessity for purposefulness in behavior. It is not surprising to see a term such as "isolation" in a conceptual system which views behavior as a mechanical act. Unlike Tolman, who views the significance of purposefulness in a given act, Skinner holds the position that terms like purposefulness are not scientific because they cannot directly be observed. In fact, he argues, the reinforcement or the consequences of the operant responses which increase the probability of its occurrence, could be taken as purpose for behavior.

It is assumed here, however, that nothing in this life is purposeless or aimless, and thus purposes have to be accounted for in explaining or describing any given phenomenon. An organism as "simple" as a rat is still purposeful in its behavior. The act of pressing the lever which includes the movements of "lifting the forelegs from the floor, putting

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[105] D. Berlo. The Process of Communication: An Introduction to Theory and Practice. New York: Holt, Rinehart and Winston, Inc., 1960. Berlo argues, "The meanings for things consist of the ways you respond to them, internally, and the predispositions which you have to respond to them externally" (P. 184). Moreover, "It is more accurate to say that words do not mean at all. Only people mean, and people do not mean the same by all words" (p. 176).

one or both of them on the bar"[106] is purposeful. In a way one could argue that the rat's "lifting the forelegs" in Skinner's box is different than doing this in a situation where the rat is observed to be scratching a wall in order to make a hole to rest in. Could Skinner argue that the act in the former condition is the same as it is in the latter? He might do so, saying that in both cases the act is determined by its consequences.

Major Concepts in Skinner's Theory and his View of Man:

Skinner's main contribution in his various writings since 1931 up to the present day is the concept of reinforcement contingencies and its role in strengthening or shaping the individual's operant behavior. He bases his conceptualization of behavior on several assumptions. The first assumption is that behavior is lawful, therefore it is predictable. The second is that behavior is reduceable to units that could be observed and measured in isolation and as parts in a whole chain. Third, any chain of behavior follows in its formation specific laws depending on the type of behavior. Laws of respondant behavior are static while those of operant behavior are dynamic.

The concept of operant behavior:

Operant behavior, according to Skinner, is an observable act which is emitted voluntarily by an organism. This behavior is characterized by spontaneity and it refers to a posterior event. In contrast, the respondant behavior is elicited involuntarily upon the presence of an external stimulus. Both types of behavior are subject to conditioning.

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[106] This description is given for the rat's movements by Skinner (Op. cit., 1966,A:48).

Through conditioning, behavior can be strengthened, extinguished, reconditioned and/or could appear as a form of spontaneous recovery after it has been extinguished. Skinner (1966,A:21) describes the operant behavior as follows:

> An operant is an identifiable part of behavior which may be said, that no stimulus can be found that will elicit it (there may be a respondant, the response of which has the same topology), but no correlated stimulus can be detected upon occasions when it is observed to occur. It is studied as an event appearing spontaneously with a given frequency.

This quotation suggests that Skinner treats the S-R relationships in terms of correlations, and not in any sense of cause-effect relationship, the way this bond is treated by traditional S-R theory. Moreover, the quotation says that S-R correlation is easily detected in the case of respondant behavior but not in the case of operant behavior. Operant behavior is spontaneous and thus obviously unlawful. Therefore, in order to detect S-R correlation in the operant, the experimenter has to observe the consequences of the response after its occurrence. Skinner (1966,A:25) proposes, "The principal task of a science of behavior is to isolate the operants, separate effects and to establish their functional relationship with strength." The "strength" in this quotation refers to the reflex strength or the S-R correlation.

The concept of environment:

According to Skinner, the environment constitutes all the conditions which the organism acts upon to bring the consequences of a response. In other words, the environment enters into a description of behavior when it can be shown that a given part of behavior may be induced at will by modification of some of the forces affecting the organism. Skinner refers to this part of the environment as stimulus and the correlated part of behavior as response.

The stimulus-response properties are defined in terms of their relationship to each other, and this observed relationship is termed reflex. The term reflex, according to Skinner, is purely descriptive and refers both to the respondant and the operant behavior. However, in the case of respondant behavior, reflex retains its traditional meaning which is the reflex arc as described by Watson. In operant behavior it has a different meaning, one which describes the lawful characteristic of behavior.

Skinner identifies two types of laws which correspond to the two types of behavior: First are the static laws termed "Type S" which correspond to respondant behavior. They include (a) the law of threshhold, (b) the law of latency and (c) the law of after-discharge. According to Skinner (1966,A:14), "The properties of latency, threshhold, after-discharge and R/S ratio are detected by presenting a stimulus at various intensities and durations, observing the time of occurrence, duration and magnitude of response." The second group of laws is the dynamic laws ("Type R") which describe operant behavior. Dynamic laws describe the pattern by which the operant is emitted. They describe the processes of excitation and inhibition which are seen by Skinner as forming a continuum of degrees of reflex strength. Inhibition refers to a negative change in strength produced by a kind of operation that would yield a positive change under other circumstances. Excitation refers to the positive degree of reflex strength under conditions which increase the probability of the occurrence of the operant response (Skinner, 1966,A:17-18).

These two groups of laws could be viewed as the underlying dynamics for the homeostasis principle in the process of adjustment. However,

Skinner does not seem to view them in this way; he explicitly mentions that the two laws apply to different types of behavior and that these two types of behavior are mutually exclusive. Skinner (1966,A:22) says: "The Type R is impossible in a respondant because the reinforcing stimulus with a response implies a correlation with its eliciting stimulus. It has already been noted that conditioning of Type S is impossible in operant behavior, because of the absence of an eliciting stimulus."

The dynamic laws describe conditions under which the strength of a reflex is increased in operant behavior. "The strength of an operant is proportional to its frequency of occurrence, and the dynamic laws describe the changes in the rate of occurrence that are brought by various operations performed upon the organism" (Skinner, 1966,A:21).

This law, in other words, is describing the function of reinforcement in the process of conditioning. It states that "if the occurrence of an operant is followed by presentation of reinforcing stimulus, the strength is increased. . . If the occurrence of an operant already strengthened through conditioning is not followed by the reinforcing stimulus the strength is decreased" (Ibid.:21). The increased strength is referred to as conditioning, while the decreased strength is described as extinction. It is noticed that in both cases, the factor which brings about the change in the strength of the reflex is the reinforcing stimulus.

The concept of reinforcement:

Reinforcement is a key concept in Skinner's theory of operant behavior. In general, no concept in Skinner's work is presented without mention of its relationship to the principle of reinforcement

contingencies. Skinner (1966,A:62) defines this principle as follows: "Reinforcement is a presentation of a certain kind of stimulus in a temporal relation with either a stimulus or a response." However, Skinner differentiates between reinforcement in respondant behavior and in operant behavior. The difference is a matter of presentation. In the case of respondant behavior it precedes the response and thus it is the stimulus which elicits the response. For a hungry animal, food is a primary reinforcement, and any other stimulus which is simultaneously presented with food and elicits the same response - salivation - is a secondary reinforcement. In the case of operant behavior, reinforcement is defined as any conditions which follow the response and increase the probability of its occurrence.[107]

Skinner's model of instruction (1963) is based on the principle of contingencies of reinforcement. The principle as defined above describes the arrangement of reinforcement in relation to a response. Experimental findings show that the shorter the time between the response and its reinforcement the stronger the reflex strength or the greater the probability of emitting the desirable response. Accordingly, Skinner instructs the teacher to arrange reinforcements with the least possible lapse of time between the students' response and the presentation of

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[107] In classical conditioning, Pavlov's experiment on a dog which is deprived of food and conditioned in an experimental situation to salivate upon hearing a certain sound after that sound has been paired with food on preceding occasions, is an example of reinforcement in respondant behavior. The example of reinforcement in instrumental conditioning is the condition(s) which follow the operant behavior (i.e., the rat's pressing of the lever in Skinner's box). The reinforcement which follows the operant behavior is the presentation of food and the sound of the lever, the shape, and the light that follow the pressing of the lever. Any condition which increases the probability of "pressing the lever" is a reinforcement, according to Skinner (The Behavior of Organisms).

reinforcements. Skinner argues that the arrangement of reinforcement is the most important variable in bringing about change in student behavior. The student, according to Skinner's Model of Instruction, is conditioned to avoid undesirable behavior by being "punished" for such behavior. He acquires the desirable behavior when such behavior is followed by reward. According to this model, the teacher plays the role of the experimenter. Skinner argues that the efficient teacher follows a program of progressive approximation which leads to the final form of desirable behavior. This argument is based on the assumption that behavior is reduceable to smaller units and that the summation of these units makes up the total behavior. Therefore, if every unit of behavior is followed by reinforcement - the serial order of reinforcement contingencies to its corresponding units of behavior which precedes its occurrence - would develop a response approximation from the final goal (i.e., the desirable behavior).

The techniques of adopting a program of progressive approximation (Skinner, 1963) require that the teacher answer the following questions: (1) what behavior is to be set up; (2) what reinforcements are at hand; (3) what reinforcements are available in embarking upon the program of progressive approximation; and (4) how can the reinforcement be most efficiently scheduled to maintain the behavior in strength?

To assist him in answering these questions, Skinner (1963) suggests that the teacher: (1) look at the material to be taught to see if it could provide reinforcement for correct student behavior, (2) provide other reinforcements if the "natural" ones are not enough, and (3) arrange in an ascending form the reinforcing conditions to match the units of behavior which are to be developed, from simple to complex.

(The teacher's ability to identify the "natural"[108] reinforcement is the initial step for setting the educational environment).

Skinner applies the principle of contingencies of reinforcement in The Technology of Teaching (1968), where he proposes a program of self-instruction through use of mechanical device techniques. Skinner (1968:35) describes the function of the mechanical device in the following quotation:

> Several machines with the required characteristics have been built and tested. Sets of separate presentations or 'frames' of visual material are stored on disks, cards or tapes. One frame is presented at a time, adjacent frames being out of sight . . . The student composes a response by moving printed figures or letters, and his setting is compared by the machine with a coded response. For more advanced students - from junior high school, say, through college - such a machine is unnecessarily rigid in specifying form of response. Fortunately, such students may be asked to compare their responses with printed material revealed by the machine . . . The machine itself, of course, does not teach. It simply brings the student into contact with the person who composed the material it presents. It is a labor-saving device because it can bring one programmer into contact with an infinite number of students. This may suggest mass production, but the effect upon each student is surprisingly like that of a private tutor.

It is clear from this description of the concept of reinforcement,

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[108] B. F. Skinner. The Technology of Teaching. New York: Appleton - Croft - Century Crofts, 1968. In this work natural reinforcements are defined in terms of Rousseau's concept of natural education. "Make the student independent of men; teach him dependence on things. Use only those forms of coercion or punishment which arise naturally from his behavior; ' if he breaks a window, do not repair it, but let him experience a cold room. Use only natural rewards. Social reinforcers cannot be neglected, alas, but they can at least be genuine." However, Skinner added, "Not all natural reinforcers are useful. Most of those having obvious biological significance, like food and injury, are not naturally contingent on the behavior in a standard curriculum . . . Nevertheless, there are problems. The teacher who uses natural contingencies of reinforcement really abandons his role as a teacher. He has only to expose the student to the environment; the environment will do the teaching. It was not for nothing that Rousseau spoke of negative education" (p. 153).

that Skinner views it from a materialistic stance. Reinforcemnt is by and large defined in terms of external conditions. This concept that has its epistemological foundations in the Lockian tradition which assumes that mind is a tabula-raza (i.e., blank sheet). Information is viewed as sensory and objective. Accordingly, there is no internal world, no cognitive processes, no heredity factors and only the environment determines the individual's learning. Skinner has added to this view the significance of arranging the environment temporally and spatially in a serial order for contingencies of reinforcement. The principle of contingency is associanistic and empirical and is described in this work as possessing a linear logic.

Skinner's principle of reinforcement contingencies has often been applied in education and many programmed instruction texts are designed accordingly. Holland and Skinner (1961) present a program for self-instruction in The Analysis of Behavior,[109] which is designed to teach the student the conceptual web of behavior theory by following instructions given in the book. The information is presented in frames and is learned with the use of the device machine (Skinner, 1968).

Skinner's technology of teaching raises many epistemological problems and even ethical issues concerning the nature of man. However, the most fundamental problem is that of conceptualization of the nature of motivation. Motivation is viewed in this work as a major force for learning. A theory of learning must address the issue of motivation. In his first work, The Behavior of Organisms, Skinner treated motivation as a drive. However, he uses the word "drive" in this work in a restricted

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[109] J. Holland and B. F. Skinner. The Analysis of Behavior. New York, Toronto, London: McGraw Hill Book Company, Inc., 1961.

sense, stating that he does not regard it as a basic energy in bringing about the responses of an organism; nor is it identified with purpose or some internal representation of a goal. Skinner uses "drive" to describe a state of stimulation such as hunger, thirst, the sexual instinct, etc. It is, therefore, identifiable by the presence or absence of the behavior which follows its existence. Thus, when an organism is in a state of eating, and this state is observed by another organism, the behaving organism is described as being hungry and his drive at the time is identified as "hunger." Moreover, Skinner states, a drive is identified by the degree of strength in which the behavior exists. Accordingly the measure of hunger is not an all or nothing one (feeding or fasting), but indicates degree of hunger. "The problem may be restated as follows: In dealing with the kind of behavior that gives rise to the concept of hunger, we are concerned with the strength of a certain class of reflexes and with the two principle operations that affect it - feeding and fasting" (Skinner, 1966,a:343).

This conceptualization raises certain problems. First, how can an observer define the degree of hunger of a person who eats small quantities of food after being in a state of deprivation, if the food he is given happens to be prohibited by his religion? For example, a man might say that he is extremely hungry but if the only available food happens to be "pork," consumption of which is against his religious beliefs, he then faces an ethical problem while eating this food. Consequently, an observer may see him eating very slowly and ingesting less than he might under conditions which fit his cultural values. How would Skinner measure hunger in this example? His answer might be, "Hunger has a generic characteristic: when we eat we are hungry, we don't eat because of delicacy when

we are not hungry . . . hunger is not dual but multiple (Skinner, 1966,A: 369). This answer is unconvincing because it creates a paradoxical logic. Skinner says that hunger is generic while in the same work he argues that the measure of hunger is made in degrees.

The second problem relates to the biological research findings on "specific hunger." At certain times one is more hungry for special nutritional items than for others. One's behavior, therefore, is not indicative of a state of hunger alone, but also of a biological state which caused a specific hunger at that time.[110] Under Skinner's concept of hunger, an observer who watches a person who does not eat salty food and who refuses all available food on the grounds that it is salty but without stating his reason, would be described as not hungry. In a case such as this, strict observation of behavior does not report the actual event. It is argued here that even a physiological motive (drive) is multi-dimensional in its arousal: it is biological, cultural and ethical. The various dimensions inherent in the arousal of a given drive are interactively related. Mind is not separate from body functions. Therefore when a person has an appetite for a given food there is a history behind it, both physical and metaphysical. In other words, a motive, even at its simplest level, cannot be understood through mere observation of the behavior of the organism. The picture becomes even more complicated when it comes to motives of a social or psychological nature. A motive in this work is defined as a multiplex force of physical and metaphysical nature at any point of behavior. The biological motive is not separate from its cultural,

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[110] C. P. Richter and J. F. Eckert, "Mineral Metabolism of Adrenalectomised Rats Studied by the Appetite Method," Endocrinology, 22, 1933:214-224. In this study it was found that certain glandular disturbances produce a craving for substances such as calcium and salt. (Reported in Munn, 1956:86.)

social and psychological history and the same is true of the social or psychological motive. What differentiates physiological motives from psychological ones is the fact that the physiological motive has the leading positional value at the time of its arousal and as it relates to its goal. This conceptualization views mind and body as an interactive whole.

Skinner (1966,B) in describing motivation in Walden Two, claims that in an engineering culture (i.e., his utopia of a technological society), "We have the extra motivation that comes when a man is working for himself instead of for a profit-taking boss. That is a true 'incentive wage' and the effect is prodigious. Waste is avoided, workmanship is better, deliberate slowdowns unheard of" (p. 66). The problem lies in the concept of man working for himself. Is it possible to imagine a society with such individualistic orientations surviving without high rates of crime and sense of non-belonging?

Skinner defines student motivation (1968:145-168) in terms of reinforcing conditions which bring about change in behavior. He argues that students learn in order to obtain all or some of the following benefits after they complete their education: (1) jobs which pay them money (dollar value), (2) proficiency in a particular field of knowledge in order to do desirable things (personal value), and (3) social prestige (recognition of others). These three benefits are obtained at the end of an individual's education, or at the end of some substantial part of it. They cannot be used as reinforcers during the educational process itself. Skinner argues that the ultimate advantages of education should not be seen as reinforcers or motivational entities during the process of educating students for the following reason: students who are motivated by the idea of future

successes suffer from the delay of latency and are left with no direct reinforcement to act upon as the immediate result of their work. They then become less proficient in dealing with present conditions that are prerequisite for their success in the long run. The student, under these conditions, "is not only not diligent or eager, he cannot make himself study at all" (Ibid.:147). Proximate reinforcers are more efficient in leading to the goal. This requires that the teacher arrange good instructional contingencies, to provide on-the-spot consequences (p. 148).

The arrangement of reinforcement contingencies for on-the-spot consequences is, from this researcher's view, a condition that develops an attitude of direct gratification. It might build a potential for frustration at any time when things do not go well directly after a given act. The individual in this equation learns neither perseverance nor tolerance and he becomes a reactive impulsive person, whose purpose[111] in life is fragmented, shaped and directed by his own choices. It is this kind of orientation which creates conditions for the noögenic neurosis, or existential vacuum which Frankl (1974) identifies in describing the "modern" man of "technology" who lives for no mission beyond his own skin.[112]

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[111] Skinner (1971) responds to the charges that he views man as being without purpose in the following way: "In operant conditioning the purpose of a skilled movement of the hand is to be found in the consequences which follow it. A pianist neither acquires nor executes the behavior of playing a scale smoothly because of a prior intention of doing so. Smoothly played scales are reinforcing for many reasons, and they select skilled movements. In neither the evolution of the human hand nor in the acquired use of the hand is any prior intention or purpose at issue" (p. 204).

[112] B. F. Skinner. Walden Two. New York: The MacMillan Company, 1966(B), (11th printing, 1st print, 1948). In this imaginary world of a utopian engineering culture, Skinner assumes that lonliness or boredom do not exist, because the individual is always busy with something. The individual is always with a crowd (p. 41). The individual in Walden Two is productive; he uses his time efficiently and earns credits for what he does on the spot. Boredom is thus never a problem. Emotions of a negative nature such as hatred and jealousy are also controlled. They are eradicated through training in reinforcement schedules.

The concept of time:

Generally speaking, time according to Skinner is one dimensional. The only relevant dimension of time is the present. He explicitly mentions this, saying (1966,b:209):

> I am not going to talk about destiny, any more than about history. The past and future are both irrelevant. We do not act because of a future, nor because we know there's going to be one. But man changes. It's characteristic of him to discover and control, and the world does not long remain the same once he sets to work . . . that characteristic will survive in a successful community. It must survive or less efficient cultures will somehow come on top.

This quotation suggests that Skinner treats time as an absolute static entity, in the sense that what happens "now" has nothing to do with what has happened in the past or what might happen in the future. Thus he displays a logic that contradicts even the basic principle of "response consequences" which he emphasized to be a major factor in shaping the response. Even if the response consequences were to follow the response within a fraction of a second, they would still be in the future domain in relation to the response which is taking place in the present. Moreover, the response which is emitted is a past event, relativistically speaking, in relation to its consequences. The argument that past and future are irrelevant in operant conditioning could be true only if the organism is a machine in which the input is encoded or decoded at the will of the external control. But even in machines absolute control is impossible, since the machine design determines which elements will be encoded or decoded. There is hardly any system which functions under complete control of external conditions in the absolute sense (in absence of the system's structural functions). If Skinner's concept of time were correct, then his ability to predict would be absolute and not in a "statistical sense"

as he admits. The second implication of the quotation is that a "present orientation" is helpful in the creation of an efficient society. However, it can be argued that efficiency is relative and what is efficient now might not lead to better conditions in the future.

Skinner does not even attempt to make long range predictions. He says (1971:209): "Man will presumably continue to change, but we cannot say in what direction . . . No one could have predicted the evolution of the human species at any point in its early history, and the direction of intention of generic design will depend upon the evolution of a culture which itself is unpredictable for similar reasons."

It must be added at this point, what is the value of making predictions on the one-to-one correspondence of time-event relationships at the micro level if such predictions do not have long run implications? If man in the long run is unpredictable, why, then, should he be oriented to present gratification and be left with high expectation of being able to "make it" when in fact he might not? Present orientation is neither consistent with the dynamic nature of time nor with the individual's need for freedom to make decisions. Man's freedom in making decisions requires an examination of as many alternatives as possible. Concentrating on present events eliminates the relevant previous alternatives and the possible future ones. Moreover, the focus on present available rewards in a unidirectional way of one-to-one correspondence eliminates other existing alternatives of an open nature in the time-space domain. The present oriented individual in his race to seek gratification of present needs and his movement toward an unknown objective can be seen as analogous to the behavior of horses in a race. The horse is blinkered on both sides, he runs ahead with no distraction from any direction. The only direction

is what he can see ahead within his visual capacity. The horse runs towards the unknown, the running speed is controlled by the jockey who whips the horse if it slows down and rewards it by not whipping if it runs faster. The horse has no other direction than what his "master" decides for him. The control system for the individual's behavior functions in the same way: to avoid punishment and continue to run "efficiently." To get a reward one has to emit the right response in the right time and to continue to do so in a serial order.

Another outcome of present orientation and immediate gratification is the constant search of the individual for concrete materialistic rewards. The individual seeks constant satisfaction for his own needs without paying any attention to the interdependent nature of his needs in relation to those of others. Others become important only when comparison becomes part of the standard for efficiency. Consequently, Skinner's present orientation may create conditions for competition rather than for cooperation. The values of a society which follows such an orientation are bound to become materialistic and the metaphysical dimension of human life becomes absurd.

Skinner's technological utopia in Walden Two is described as an efficient and productive work-oriented society. The individual is trained to use his time efficiently by following the work schedules and program instructions. His behavior is engineered to meet materialistic needs. He earns his living by "labor credits" (i.e., the number of hours of work he is required to render daily). The social system runs smoothly by following the plan of a specialized group, a Board of Planners. The needs of the society are constantly studied by observing the behavior of the members. Reinforcements are arranged in contingency

with individuals' work, to shape their behavior according to the design of the planners. In this kind of "world," intellectual and emotional lives are also engineered.

The concept of control is deterministic and based on efficient causality of a serial order of events. Control is defined in terms of objective reference (i.e., the external environment). Experimentally, control could be maintained by procedures through which the reflex is isolated and through which extraneous factors affecting the strength are controlled (Skinner, 1966,A:55). This view assumes that the input upon which the organism acts could be reduced to the number of items which determines the strength of response. The items in the external environment could be arranged quantitatively and qualitatively in a fashion that would lead to a predictable response. The input is viewed here as the factor that determines the output. This concept ties neatly with the principle of contingencies of reinforcement. The linearity of the input-output relationship with no mediation by the internal world of the organism, is explicitly expressed by Skinner (1966,A:145):

> The constant rate represents a valance between input and output; if the input is affected by reducing the efficiency of the reinforcement, the output must fall.

It is clear that Skinner treats the organism as an empty box, consequently there is no concept of transformation or a through put process which could decide the quality or the quantity of the output. This view is a closed system view which assumes that the organism is static and passive. Skinner's view eliminates the role of cognitive processes by which the external world should be mediated. In other words, Skinner's system of behavior does not attach any significance to the subjective world of the individual as this individual interacts with the environment.

Skinner is faced with the problem of isolating the fundamental variables in order to design experimental conditions which are coherent with his concept of control. In fact, he would not be able to solve such a problem unless he assumes that a science of behavior could be patterned after geometry or Newtonian mechanics, which have proved to be limited in their ability to describe the dynamic nature of time and space even in the natural science of physics. Skinner (1966,A:437) submits that: "A science of behavior cannot be closely patterned after geometry or Newtonian mechanics because its problems are not necessarily of the same sort. This is especially true for the problem of isolating fundamental variables."

This quotation suggests that Skinner is inclined to use Newtonian mechanics but recognizes the difficulty of applying it to describe human behavior. In spite of this realization, it has been seen that his principle of reinforcement contingencies is in fact treating the time concept in a Newtonian way. The dynamic nature of time in relation to events would contradict, for example, with Skinner's "dynamic" laws of serial order, summation and the view of input as a corresponding factor on a one-to-one basis with the output. (See Skinner, 1966,A:27 on the reflex reserve.)

In short, the concept of control, according to Skinner, applies to the consequences of the individual's behavior. These consequences are environmental, therefore the individual is controlled by the environment, not by any "internal cognitive" world or physiological factors. Accordingly, Skinner (1971:38) argues, "Freedom is a matter of contingencies of reinforcement, not of the feelings the contingencies generate. The distinction is particularly important when the contingencies do generate escape or counterattack." He concludes (Ibid.:43): "What is needed is

not to free men from control but to analyze and change the kinds of control to which they are exposed."

In response to this it might be asked, however, who decides what kind of change should be made in the environmental conditions? Is it not a human being who is in a position of control? If so, why is the individual who arranges the conditions for change considered to be capable of freedom of choice while the individual who is exposed to them is not given the same freedom? The question becomes even more complicated when the control system in society is viewed as the transformation of ethical codes and sanctions into a system which the whole social system has helped to create and is not reduceable to anyone's individual effort. The systems view of interrelatedness between man and his environment in the biospheric sense assumes that man is free to choose inasmuch as he recognizes alternatives in his environment and in relationship to his perception of these alternatives or the meaning he gives to them. This view emphasizes the perceptual nature of behavior and goes beyond the sensory world in its "objective" sense.

Skinner's view of man (1971) could be summarized in the following points:

(1) Man's behavior is determined by the contingencies of reinforcement in his environment. Therefore, men differ according to different environmental conditions to which they are exposed.

(2) Man's nature is erroneously described in terms of the "autonomous" man or the so-called "inner" control agents, be it perception, values, attitudes, emotions, thinking or private self. All these terms apply to the description of man's relation to the environment. Nothing is originally internal, therefore, thinking, values, attitudes, etc., are

the outcome of contingencies of reinforcement.

(3) Skinner argues that shifting control from "autonomous" man to observable behavior does not leave an empty organism. All it does say is that the internal world is not a concern of "objective" science according to this shift.

(4) Man's nature is reduced to body movements which are observable and lawful. Skinner (1971:199) says, "It is an important part of the contingencies to which a young child is exposed, thus his own body is the only part of his environment which remains the same (idem) from moment to moment and day to day."

(5) Skinner constantly generalizes from animal behavior to human behavior. Thus he assumes that man is an animal in his way of behaving and he ignores the distinct characteristics of man's complexities on the physical and/or mental level. Moreover, Skinner places no value on physiological or mental characteristics which are scientifically unobservable. In defining his position on the use of animals to study man, Skinner (1971:201-202) says:

> Man is much more than a dog, but like a dog he is within range of a scientific analysis. It is true that much of the experimental analysis of behavior has been concerned with lower organisms. Genetic differences are minimized by using special strains, environmental histories can be controlled, perhaps from birth, strict regimens can be maintained during long experiments; and very little of this is possible with human subjects. . . . There is, of course, always the danger that methods designed for study of lower animals will emphasize only those characteristics which they have in common with men, but we cannot observe what is essentially human until we have investigated non-human subjects.

(6) Skinner (1971:202) states his defense, in response to the critics which say he considers man to be a machine, by saying:

> Man is not made a machine by analyzing his behavior in mechanical terms . . . Man is a machine in the sense that he is a complex system behaving in lawful ways, but the complexity

> is extraordinary. His capacity to adjust to contingencies of reinforcement will perhaps be eventually stimulated by machines, but this has not yet been done, and the living system thus stimulated will remain unique in other ways.

Skinner's view of man in the aforementioned summary suggests several arguments. To start with, the shift from "autonomous" man to observable behavior from the systemic viewpoint reduces man to an empty organism. This argument is based on the assumption that the input-output relationship in Skinner's behavior system is a direct relationship. The input in Skinner's model is the stimulus, while the output is the response. Since there is no place for throughput processes in the S-R model, then one can conclude that man is reduced into an empty organism. Secondly, the generalizations on man's behavior based on animal behavior are not valid. This is in view of the fact that man is more different than similar to animals. Skinner, in defense of his position, suggests a paradoxical logic. On the one hand he says man is different from animals, but he is reduceable to scientific analysis. On the other hand, Skinner claims that investigating non-human subjects leads us to discover what is essentially human. How can one expect a contrast of human - non-human nature when all investigation is done on non-human nature and its results are generalized to human subjects? He says, "We cannot discover what is essentially human until we have investigated non-human subjects." This is an assumption. His theory is based on this assumption. In fact all Skinner's system is based on non-human subjects and he applies his findings on human subjects in the "technology of teaching" as a truism. However, it is more convincing to argue that we can never understand human behavior solely by understanding non-human behavior. Thirdly, Skinner's defense of his stance that man is not made a machine if his behavior is described in mechanical terms sounds tautological. If man is not viewed as a machine, then how

can he be analyzed in mechanical terms, especially since those terms, according to Skinner, have to be descriptive of direct data? In view of this inconsistency it can be said that Skinner makes man analogous to machines. This analogy is misleading and incoherent with man's nature since living systems differ from machines in many important respects. They affect and are being affected by external conditions in a multiplex lawful manner, unlike machines which are affected by external conditions in an orderly linear manner; living systems are complex not only in structure but also in function. There is no coherent characteristic for any structure. The function of a structure is decided by its positional value in the two-dimensional domain of time and space. A function is a result of the individual's choice in light of the purpose he holds at different times. In machines, the function of a given structure is limited to its positional value that is mostly rigid and not changeable. Such differences make the living system an open system while the machine is a closed one.

In short, the complexity of a system is determined not by its total structure and function in a summation sense as Skinner assumes, but rather by the variety of interactions among the various structures of the organism. The function of a given structure in a human system is not only determined by environmental conditions and/or by its inherent characteristics. In the open systems view advanced in this study, the function is determined by an infinite number of factors united by the meaning the individual holds at the moment of functioning. The eye is a sense organ for vision, however, it has other functions of communicating feelings of love, attention, interest, fear, anger or a need to sleep. Its function therefore is not singular, and whatever function it has is not separate from the mental and/or physical state of the individual. This is not the case with a machine.

The machine is a different system in the sense that it has no cognitive process. Thus machines are neither complex nor dynamic when compared with living systems.[113] Skinner assumes that psychology becomes a science when psychologists abandon mentalism and examine behavior in its own terms. This researcher argues that psychology then becomes not a science of human behavior in its dynamic sense but rather a science of sensory data in its static sense. A more coherent assumption with the nature of behavior is: behavior is not only objective and observable but also invisible and subjective, and both objective and subjective behavior are in fact united in one but which is beyond what the scientist observes. A science of behavior has to include an understanding of behavior, not only a description. Understanding is not achieved when it is based on one source of knowledge, namely, empirical data. It is the thesis of this work to assert that knowledge is the output of three sources: (a) the empirical, (b) the logical, and (c) the intuitive, not as a summation of the element of each source but as the three sources interact simultaneously to form a coherent idea which represents the subjective and objective world as one unit of physical-metaphysical nature.

Skinner's life and its implications upon his theory:

Skinner's life can be seen in terms of his cultural motif in its time-space domain and of his personal experiences. These two groups of factors, the cultural and personal ones, were interactively related and mediated by Skinner's personal intellectual and emotional structures as he grew from a child into a scientist.

Hall and Lindzey (1970:477) suggest that Skinner's childhood interest in building things may have affected the subsequent invention of the 'Skinner

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[113] Complex and dynamic concepts are elaborated on in chapter five.

Box," and the various mechanical devices for teaching that he proposed. Hall and Lindzey quote Skinner's own description of his own childhood:

> I was always building things. I built roller-skate scooters, steerable wagons, sleds and rafts to be poled about in shallow ponds. I made see-saws, merry-go-rounds, and slides. I made slingshots, bows and arrows, blowguns and water pistols from lengths of bamboo, and from a discarded water boiler a steam cannon with which I could shoot plugs of potato and carrot over the houses of our neighbors. I made tops, diabolos, model airplanes driven by twisted rubber bands, box kites, and tin propellers which could be sent right into the air with a spool-and-string spinner. I tried again and again a glider in which I myself might fly . . . I worked for years on the design of a perpetual motion machine (It did not work).

This rich childhood creativity and interest in building mechanical devices might have sharpened Skinner's desire to design behavior in a similar fashion to the way that devices could be designed. Skinner was obsessed with the desire to make things work, and since he was able to control mechanical things, he may also have thought that human behavior could be similarly controlled. The Gestalt-switch in his mind from controlling the environment through his own creativity to focusing on the environment as the factor of control could be explained as a transformation caused by his realization that he could not design a perpetual motion machine, and/or an ambition to become a creator of conditions that would control and shape human behavior. In either case, Skinner's life stands as an empirical example of man's ability to control things and reorganize them in his own way. Skinner's ability to build things is also a good example of man's autonomy.

In a form of self-analysis approach, Skinner should have asked whether it is possible to describe his behavior as an outcome of contingencies of reinforcement without assuming any role for his own personal interests in building things. With close observation Skinner could have recognized that the trigger for his interest in building was not purely environmental. There must have been other factors which were unique to Skinner that were instrumental in the development of such interests. However, in relation

to the purpose of this work, it is clear that Skinner's personal interests have had an impact upon his theory building, and especially upon his tendency to test his theory by using the "Skinner Box" as an experimental situation.

Skinner, the son of a small town lawyer, was born in 1904 and raised in a warm and stable family environment. His educational experiences involved a diversity of interests. His undergraduate education was in liberal arts. He majored in English, planning to become a writer. He wrote short stories and devoted a relatively unproductive period of one to two years to full-time literary endeavor. Finally he gave up writing and went to Harvard University, where he continued his education in psychology. During his graduate work Skinner did not have a special interest in the work being done by any of the faculty members and was more influenced by the work of Pavlov, Watson and Thorndike and the writings of several philosophers including Bertrand Russell and Percy Bridgman.

However, Skinner's contribution to psychology cannot be seen as an extension of the work of any of these prominent men, but rather as a transformation of their work into a more, or in some cases, less, deterministic viewpoint. Skinner is as deterministic as Pavlov, Watson and Thorndike, but he is more particular in specifying the unit of study experimentally and analytically. However, he does not seem to have benefited much from his study of Bridgman's view of the dynamic concepts of time and space. This was earlier referred to in this work when it was stated that Skinner faced all the problems that Bridgman identified in the theory of physics. Skinner assumes that all problems of the science of behavior would be solved when scientists dispense

with mental psychology. This position is contrary to Bridgman's emphasis on the subjective element in scientific discovery.

After this lengthy discussion of behaviorism and especially of Skinner's work, one can conclude the following: (1) Behaviorism is positivistic, deterministic and reductionist; (2) The logic of scientific discovery in behaviorism is linear and of a British empiricist epistemological foundation. This is true in the sense that reinforcement contingencies are described in terms of the contiguity principle temporally and spatially in relation to the emitted response; (3) The behaviorist concept of time is static since the experimental and analytical methods Skinner uses consider "replication" of events as an actual event rather than a hypothetical one. The evidence for this is seen in the fact that the magnitude of response as well as the number of responses are analyzed in terms of the amount of time needed for their occurrence. Time is defined in terms of duration between the response and the consequences of its occurrence. This discrete numerical concept of time is Newtonian in its fundamental assumption which does not account for the motion of events in time that makes it relativistic. Consequently, behaviorism, in its classical sense of Watson's and Skinner's scheme of a science of behavior, is a closed systems view. It is a model which assumes that man is not purposeful, that he reacts similar to machines in his lawful behavior, and like animal behavior, his behavior can be subjected to scientific analysis.

Findings and Conclusions:

The systemic analysis for the various theories in original schools of psychology generates several findings that are appropriate and

significant inferences for understanding the nature of theory building in psychology. The following findings can be utilized in developing a new theory by transforming the core concepts of psychological theories into a new view of human nature and for using this understanding to improve human conditions:

(1) Broadly speaking, it has been shown that the various schools of psychology developed in a transformational process that was directed toward articulating an empirical scientific paradigm which assumes the objective world as its reference. However, in the ontological development of this paradigm, there were a few instances in which some founders of certain schools, especially functionalism and Gestalt, shifted their focus to the subjective reference without losing touch with the objective one.

(2) The nature of mind has been described as lawful and determined by natural laws, which are basically and fundamentally associationistic. The association principle of temporal and spatial contiguity is a core concept that is employed by almost every school in explaining mental processes in structure and/or function, and later in describing behavior when behaviorism dispenses with mental processes.

(3) The physiology of behavior, especially the function of the nervous system, was found to be a major reference for the understanding of mental processes in relationship to sensory data in the objective world. This suggests that mental processes are viewed in reference to the physical structures and their functions, with almost no reference to the metaphysical nature of mind, a condition that is interpreted as an outcome of the dualistic view of the mind-body problem. However, Skinner is the only one who does not use the

physiology of behavior in describing the unit of psychological study (i.e., operant behavior).

These three major findings are based on the following observations:

(A) The British school of associationism, during the 17th, 18th and 19th centuries, transformed the Aristotelian logic of science by drawing from the scientific movement in physics and neurology at the time, especially from Newtonian physical theory. This physiological theory - used by Hartley - assumed that two sets of vibrations occur in close temporal proximity and one develops the power of exciting the other. Hobbs treated association as atomic bonds, and "sense physiology" reached its height in Locke's dictum: mind is a tabula-raza. However, Berkeley maintained that reality lies in the mind and in this declaration he introduced a subjective element. But his theory of vision is purely physiological and his logical analysis follows the same principle of contiguity. Hume, in spite of his argument that causality is in the mind of man, had explained the difference between ideas, memory, and imagination by the doctrine of association, which according to him is reducible to principles of resemblance and contiguity. J. S. Mill recognizes the difference between simple and complex ideas by attending to the holistic nature of complex ideas, considering them greater than the summation of their parts. However, he ended up by developing a logic for science that assumes the ability to control subjective elements and has the objective reality as its reference. Mill also adopts the contiguity principle, but has articulated methods of studying mental processes empirically, a transformational point in the associanistic tradition toward scientific methodology. The fact remains that efficient

causality is the core concept of associanistic logic for explaining the lawfulness of mental processes. There was no mention of teleological causality in the British empiricist views.

(B) The psychophysics school of Leipzig, in the 19th century, transformed the British empiricist views into a scientific methodology. They were the first to quantitatively measure sensation. The psychophysics school utilized physiology, physics and quantitative rules of statistics that were being formulated at the time. By then the scientific community had a strong faith in the experimental method and in quantitative analysis. Anyone who did not follow this motif of the scientific community was not accepted as a scientist. It was almost a taboo to refer to the subjective element at that time. This caused a problem for Fechner when he referred to the spiritual aspect of mental life and his problem was not resolved until he formulated the identical hypothesis - which says that the physical and the spiritual worlds are identical. He then was recognized as a scientist especially after his measurement for sensation by Weber's law of the j.n.d., in his famous equation $\Delta/R = K$ (see p. 98). This equation is a ratio form of the contiguity principle. However, since a ratio equation could be rewritten in a linear way it ultimately follows the same principles, for multiplication is a form of addition and as such the whole is equal to the sum of its parts. This explains why j.n.d. according to Fechner is mistakenly viewed as being constant. Tests and measurements since then have become fashionable in psychology especially in relation to describing and explaining individual differences.

(C) The structuralistic school accompanied the psychophysics school and fed into it the experimental techniques, and at the same time

bred on it, in its conceptualization for mind. However, structuralistic psychology wanted to study the structure of consciousness: its chief areas of concern were sensation, attention, images and affective processes. The experimental technique was employed to study sensation, but direct experience in the laboratory had to be analyzed by means of the introspective method. Mental elements were assumed to follow the principles of association. Wundt who was the founder of the first laboratory, in spite of his experimental orientation and objective reference, recognized the significance of awareness for adaptation (see p. 105). However, Titchener who was a co-founder of structuralism and the articulator of Wundt's views, reduced the content of conscious experience into static classification that does not allow for any understanding of the "awareness" role in adaptation. In essence his work was a description of mental structures with no reference to their functions. The chemistry of mental elements was a classification system of elements that constitute the mind, and the attributes that constitute each element. The relationships between one element and another, or any attribute and another, has to follow the principle of contiguity in its traditional sense.

(D) The American functionalistic psychology transformed the focus, in studying the conscious experience, from the structure of consciousness into the function of this structure in enabling the individual to adapt to the environment. This school continued to use the introspective method but it utilized Darwin's theory of evolution and thus treated causality in its efficient and teleological senses. Teleology as a causality was not used by any school before William James founded this school with his colleagues Dewey and Carr. This transformation point starts to move the

empirical paradigm from almost a complete objective reference into a subjective one without losing touch with the former. However, the internal world of the subjective reference is inferred from the observable behavior described by the association principles. Carr differentiates two types of association principles of learning: (1) the explanatory ones, and (2) the descriptive ones, which is the similarity principle. The explanatory principle is the contiguity principle in its traditional British empiricist sense, and the assimilation principle is an all-inclusive law of generalization. Assimilation is a law of generalization that assumes the over-all role of cognitive factors in the process of learning. This principle is holistic as compared with the contiguity of temporal and spatial relationships. This last view is seen as a major transformation in the empirical paradigm. It is a shift of a two-fold nature; in logic it moves toward the multiplex, in reference it moves toward interaction between the objective and subjective worlds. However, Carr used the contiguity principle more often than assimilation, and he used the S-R connection more than the S-O-R, since the internal world is mostly viewed in terms of the physiological function of the nervous system (Carr, 1925:381; see p. 120 in this work). Functionalism, also, made another transformation, in putting less emphasis on sensation than on perception, although the latter was examined in the context of the learning process. The functionalists are to be credited for this dynamic view of perception. Moreover, they were the first to study emotional states as adaptive behavior in relation to body conditions and mental processes. But these views are not exclusively functionalistic, they are based on the theory of evolution. In spite of all these transformational points that were brought about by the functionalists they were not able to go beyond the

reductionistic views of previous schools in many ways: (1) in conceptualizing the adaptive act as a process of tension reduction; (2) in adopting the principle of contiguity for explanation; and (3) in their emphasis on objective techniques for understanding and measuring individual behavior more than introspective behavior. Thus in the final analysis functionalism leans toward the objective reference more than the subjective one.

(E) The Gestalt school: this is a third German school that was formed in the early 20th century with a radical stance against the German schools of structuralism and psychophysics. In fact, Gestalt psychology made a real switch in that it focused on the subjective world, and in pointing out the inherent nature of perceptual organization principles. This school, however, continued to study the conscious experience by using experimental methods and quantifying its results by utilizing geometrical analysis, but it did make a real contribution in pointing out that what we observe does not necessarily represent objective reality. The discovery of the phi-phenomenon was the main empirical evidence that Gestalt brought to the field of psychology as an anomaly in previous views of objective reference orientation. Nothing in the physical world is in complete correspondence with the psychological world, and the relationship between the physical and psychological world is isomorphic and not complete. This is a principle that transforms Fechner's identical hypothesis and challenges the static structuralistic views of mental elements and their attributes. In this way association principles are transformed into isomorphic principles, and elementistic views are transformed into holistic ones. However, the proximity principle of associanism is utilized by Gestaltists in explaining the phi-phenomenon

and the closure principles of Gestalt law. Physiological processes of cortical phenomenon are described as holistic in their functions and not as chain-reaction as the Newtonian physical theory claims. Stimulation between two cortical points in the whole field could happen under certain conditions, in spite of the fact that only the points of the two ends of the field are actually stimulated.

The concept of insight is also a radical transformation of the empirical views; in the sense that insight is synthetic in nature and not a summation of steps or parts of chance learning as it was traditionally viewed. However, the Gestaltists could not get away completely from chance learning and past experience. Their explanation is holistic, generally speaking. The only problem that persists in the Gestalt conceptual web is the circularity and ambiguous nature of their concept of insight as it relates to perception and learning (see pp. 154-7).

In spite of the Gestalt emphasis on the holistic concept in describing or explaining perception, Gestalt contradicts the very foundations of the dynamic conceptualization for perception by describing problem solving in terms of hierarchical, related solutions which tend to become increasingly more specific (Kohler's description for productive thinking). This analysis brings the Gestalt school closer to the traditional linear logic.

(F) The psychoanalysis school: this school reacted against the traditional structuralistic view in a different way than did functionalism and Gestalt. Freud, the school's leading theorist, made a shift of a transformational nature insofar as the subject of psychology is concerned. Freud's focus came to be on the study of unconscious processes in relation to conscious ones. The stream of thought in the conscious

as well as in the unconscious levels of the mind were analyzed by Freud on the basis of the contiguity principle in its most linear sense, both temporally and spatially (see previous discussion on pp. 167-9 in this work). Freud also transforms the scientific experimental method that was used by other schools into a clinical case study method. However, the rules of observation and interpretation for events which take place in the clinic follow the same natural laws of association which are followed by experimentalists. Freud made use of the anatomical research on neurological and other physiological organic structures of the body. The physiology of behavior, or in Freud's words unconscious experiences, is an important component of Freud's sexuality theory. The physiology of behavior is taken to be a source of energy that is transformable into psychical energy. Tension-reduction dictum is retained in Freud's theory in the same way it is maintained in the functionalistic view, a condition that permits one to conclude that Freud saw behavior as lawful and purposeful in the same way that functionalism and Gestalt did. However, the three schools (functionalism, Gestalt and psychoanalysis) arrive at the same conclusion from different directions. While functionalism described purposefulness in terms of an adaptive act which is determined by both the individual's internal world and his environment (soft determinism), Gestalt saw purposefulness in perceptual organization for problem solving and maintained that organization principles are innate (i.e., hard internal determinism). Freud, on the other hand, views purposefulness in terms of the individual's adjustment to the social norm (i.e., hard external determinism).

Another contribution of Freud's psychoanalytic view is the concept of psychical energy. Though the psychoanalysts attempted to transform

the physicalistic view of psychology into a metaphysical view, the equifinality was found out to be purely physical, especially since the instinctual components which constitute the major portion of the libido - or are the libido - are all physical: the source, the zone, the aim and the object. The personality structure-function components are id, ego, super-ego, all conceptualized to be the outcome of the interaction between the individual and his environment. The id is originally instinctual, but with time it developmentally transforms into a reality principle which is environmental and rational.

(G) Behaviorism: Watson and Skinner of this school assume the responsibility for articulating a science of behavior. In their school the position is totally environmentalist. They dispense with mental psychology and reduce human nature into observable movements that are described with mechanical terms. This school not only splits mind-body as almost all other schools do, but it completely dispenses with mind. (Neo-behaviorism was not discussed in this chapter, thus generalizations here apply to Watson's and Skinner's work.) Behaviorism in the Skinnerian sense does not deal with the causality of cause-effect relationship in the traditional sense, but draws conclusions on the basis of scientific analysis of correlations of S-R or more accurately of response and response consequences (i.e., stimulus or environment). However, correlations are treated as causal relationships of a lawful nature based on the linear logic of contiguity principles.

Interestingly enough, every school claims to solve the problem of mind-body, but ends being caught by the same logic of the contiguity, objective reality and avoidance of dealing with the metaphysical component of man's nature. It is concluded therefore that psychological

theory in various schools tends to use a closed system logic and to fall short of understanding the subjective element in human experience (with the exception of the Gestalt school which made a serious effort in this direction). Another interesting finding is that the theory builder is affected by his personal life and by the orientation of the scientific community at the time. These findings support the assumptions which were pointed out in the introduction of this chapter:

(1) The scientific theory of psychology in the various schools of the 19th and 20th centuries is a closed rather than an open system. However, functionalism and Gestalt tend to transform the empirical scientific paradigm into an open systems view, especially in their recognition of teleological causality and their views on the dynamic nature of the individual's internal world as it related to the external world through perceptual process.

(2) No theory of psychology is mutually exclusive from the cultural motif of the scientific community at the time.

(3) The various schools of psychology develop their theories by utilizing other fields, especially physiology, neurology, and physics. This finding supports the hypothesis which says that a theory is not mutually exclusive from other fields at the time.

(4) The scientific development of psychology theory is a transformational process. It is seen that every school transforms the views of the previous ones in a Gestalt-switch which focuses on new aspects of the problem and in the tools of investigation. However, a trend of retaining the contiguity principle of association persisted to be used by all schools as a means of explanation. This supports Kuhn's conceptualization of the development of science.

(5) A theory builder is affected by a subjective element in the sense of being influenced by his previous educational training and by the prevailing views from other theories at the time. This is most apparent in Titchener's and Freud's work.

In conclusion, the various schools of psychology form one paradigm of an empirical nature, with a tendency toward a closed logic of causality rather than natural causality of open logic. The underlying problem in the whole paradigm is to find a solution for the mind-body problem in relation to the environment. The schools that have a potential for transformation in open system theories are the school of functionalism and the Gestalt school. However, the energy concept in Freud's work could be reconceptualized to generate a powerful open systems view if it were reconstructed by utilizing the functionalistic and Gestalt views in a new model field energy theory. Kurt Lewin's theory might be relevant in taking a start for developing a model of an open systems view.

CHAPTER 4

The Implementation of Psychological Theories In Mental Health Practices in The United States

Introduction:

Psychology as a behavioral science aims at understanding the individual's psychological processes as they occur naturally. In other words, psychology studies the psychological phenomena - behavior, experiences, and/or cognitive processes - as natural phenomena.[1] In contrast, applied psychology deals with the implementation of psychological theory and its scientific findings.

The United States has been chosen as a sample country for the examination of applied psychology as witnessed in mental health practices, in relation to the success of psychological theory in improving human conditions. However, it is recognized that the process of improving human conditions is not solely dependent on utilizing these psychological theories, since there are other variables which have an impact on this process, including cultural, social and political factors. It is therefore assumed that the social and political system in the U.S. has a direct impact upon mental health services. This assumption is based on the idea that no single system is independent from other systems in the influence which it has on individual behavior. However, a mental

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[1] Various schools of psychology define the subject matter of the field differently. This was pointed out in chapter 3 in the examination of the theories of each school's founder(s). However, the description of psychology as a science defined in the behavior, experiences and cognitive processes is an inclusive definition which takes care of both subjective and objective dimensions of the psychological processes.

health system which is designed to improve the mental health of individuals is expected, in this researcher's view, to be an agent for improving the individual rather than for maintaining the status quo. In a value free mental health system the client is assumed to be the "center" of therapeutic techniques or methods of treatment. Hence, the goal of mental health programs is to help the individual to become a productive and uniquely individual member of his society. This goal requires that therapists help the individual to retain his uniqueness and develop at his own pace on the one hand, and to become an integrated member of his society on the other. Such a view is based on the assumption that in any given system, individuals exist as sub-systems in the system as a whole, in the same way that each individual is a system in his own right. Accordingly, it is argued that mental health services which work purely as agents of society, rather than to directly benefit individual development, are programs formulated from a closed systems perspective. They are closed in the sense that they create conditions to control the individual's behavior, determine his style of life and direct him towards an external goal other than that which he wishes to choose for himself.

This chapter examines the relationship between mental health models and the social-political system in the United States. The relationship is investigated in the following areas:

1. The social and cultural foundation of the concept of mental health and normality.
2. Diagnosis of mental illness and its consistency with the social system.
3. Treatment of mental illness and the social-political system.

4. Suggested models of treatment and their ability to avoid the limitations of the existing models.

These four areas are investigated through a systemic examination of literature on mental health services in the United States. In a few instances, reference is made to cases outside in order to afford an opportunity to examine the American perspective in comparative analogies. This is done in view of the fact that the theoretical foundations of mental health models in most countries share similar epistemological foundations, since psychological theory was European or Western in origin. This is especially the case in countries that have fallen under the domain of Western influence in the 20th century. It is recognized that there exist other systems views of psychology in the U.S.S.R. and the East, as a result of different intellectual orientations and traditions. However, this work is especially directed towards an examination of the systems views of Western theory.

One might argue that a theory of knowledge does not have a national home and might add further that knowledge is objective, therefore the "truth" is the same regardless of its national origin. Nevertheless, it was shown in the previous chapters that knowledge, or scientific discovery, has a subjective element which is strongly influenced by the cultural motif and the personal history of a theory builder. Moreover, it was found that theory builders in different Western countries have viewed man from different theoretical perspectives or models, in spite of the fact that these theory builders in general share a common view of man which tends to be more closed than open. This is particularly true of theories which take the objective reference in their view of causality and their description of the time-space domain, as well as in their

attempts to solve the mind-body problem. These findings suggest that while there might be a similarity between Western and oriental thinking in building a theory of knowledge, there are also important differences which are due to the cultural motif within which each theory builder lives in a certain time-space domain. However, it is outside the scope of this work to deal with the comparative analysis of a world theory of psychological knowledge.

This chapter points out the strengths and limitations of psychological theory as applied in American mental health practices and examines whether the epistemological limitations that were discussed in the previous chapter are responsible for limitations in practice. In other words, is the therapist a control agent (i.e., an agent of the social-political system) or a change agent, in terms of the effect he has on the individual's mental health? It is assumed that psychotherapists (psychiatrists or counselors) are agents of one of these three systems: (1) the patient, (2) the social-political agents, or (3) self-interest. However, in a free contractual ethical practice it is assumed that psychiatrists openly express their ideological perspectives explicitly to their target client group and to the public in general. Their potential clientele is then free to decide for itself whether these announced commitments are congruent with what the individual client needs. In this kind of mutual freedom in what is offered and what is accepted, both parties share responsibility for the outcome in terms of mental health practices.

It is expected that those who hold a systems view of linear logic and external objective reference will make their practices as "professional" as possible and thus the party that would assume full responsi-

bility for making decisions, on what is most "efficient" for improving human conditions, is the professionals (i.e., the psychiatrists and the counselors). If this is indeed found to be the case in mental health practices, then this researcher would conclude that current American mental health practices follow a closed system model of one-dimensional responsibility. In an open system model professionals would utilize the input of their clients, taking into consideration the clients' own life aspirations and life expectations, a condition that would allow for the sharing of responsibility between client and therapist in the process of change. In contrast, closed systems model assumes that clients are in need of help, therefore they are unable to make decisions unless they are freed from their "neurosis" or whatever they may be suffering from.[2] The open systems view assumes that a human being has the ability to make choices at every point of his transformation (i.e., including during the time he is in need of help). At the very least, the client can choose a person whom he trusts to make decisions in conference with the professional as to what he might need. This is where friends, parents and relatives come into the picture. These ethical questions over the roles of professionals and clients will be examined in this chapter in the context of the four areas of investigation which were designated above.

Unit I: "Mental Health" and "Normality" Concepts in Mental Health Practices:

The terms, mental "health" and its opposite, mental "illness," originated during the scientific movement of the 19th and 20th centuries.

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[2]This is inferred from the psychoanalytic techniques which were originally postulated by Freud and were discussed in chapter 3.

They follow the medical model in which the role of the psychiatrist or counselor is defined in terms of "diagnosis" of the patient's "disease" and "prognosis" for the treatment. In the medical model the doctor usually identifies the causes and decides what type of treatment could be given to eliminate these causes and consequently to cure the ailment.[3] This model therefore has its epistemological foundations in the British empiricist conceptualization of scientific method as it was originally articulated by J. S. Mill.[4] It can be argued that the medical model which is used by psychiatrists and counselors is evidence of the dualistic problem faced by the scientific movement of this period. Specialization becomes a distinct characteristic of 20th century thought so that the individual's health is dualistically treated. Mental health is treated by professionals with training in psychiatry or counseling, and "physical health" is seen as the purview of medical doctors. The point is that this practice splits mind from body. This form of health practices seems to be consistent with the epistemological problem of mind-body. However, it was pointed out in the previous chapter that a holistic model views the individual as a totality and therefore mind should not be separated from body. One might argue that it is for this reason that psychiatrists are trained to be medical professionals as well as psychologists. This may be true of the training of psychiatrists but these professionals rarely bring this holistic view to their conceptualization and treatment of the client's problem.[5]

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[3] D. D. Robinson. Modern Approaches to Counseling Diagnosis. Journal of Counseling Psychology, 1963, 10, 325-333.

[4] See Mill's method in chapter 3 of this work, (pp. 101-102).

[5] Comment based on literature review on the treatment of the "mentally ill" which will be presented later in this work.

However, there is a new trend in modern psychology which rejects the medical model on the basis of its negative view of man. The trend is termed humanistic psychology. Along this line, Maslow (1965:285) expresses his rejection of the medical model, saying, "Actually I hate all these words, I hate the medical model because the medical model suggests that the person who comes to the counselor is a sick person, beset by disease and illness, seeking a cure. Actually, of course, we hope that the counselor will be the one who helps to foster the self-actualization of people, rather than the one who helps to cure a disease."

This statement suggests that Maslow proposes a concept of self-actualization to replace the diagnostic medical model view of mental health, which is viewed in the ability of man to adjust to the environment, be rational and free from neurosis (see the previous chapter for discussion on Freud). However, the concept of self-actualization is vague and Maslow himself points out (1965:279), "The notion of self-actualization gets to be almost like the Rorschach ink blot. It frequently tells me more about the person using it than about reality." Despite his difficulty in describing self-actualization, Maslow (1962, 1967, 1969) has made several attempts to define self-actualization. He describes self-actualizers as possessing qualities of spontaneity, autonomy, calmness, joy, zest in living, creativity and resistence to enculturation. Moreover, he (1962:9) states a criterion for self-actualization which is "the full use of talents, capacities, potentialities." According to Maslow (1965:281), "Self-actualizing people are, without one single exception, involved in a cause outside their own skin, in something outside of themselves. They are devoted, working at something which is very precious to them - some calling or vocation in the old sense, the priestly sense

. . . all in one way or another devote their lives to the search for what I called (1962) the being values ("B" for short); the ultimate values which are intrinsic, which cannot be reduced to anything more ultimate."

These characteristics of self-actualizing people are drawn from lives of outstanding individuals in American and European history. The "B" values stand for meta-motivation or meta-needs. These values are originally biological and since they are intrinsic they are within the potential of the human being. Maslow (1967) proposes a theory of meta-motivation in which he assumes that the individual's biology directs his ethics. He argues that man is originally good and that his values evolve through the process of development. The theory assumes that the individual's needs are developed on a hierarchical scale.[6] The lowest level of this scale represents the biological needs, the second level represents the psychological, the third the social needs and the fourth or top level of the hierarchy represents the need for self-actualization. According to this theory people have different levels of motivation which affects their ability to reach self-actualization. Maslow (1967:104) describes such differences in the following quotation: "Less evolved persons seem to use their work more often for achieving gratification of lower basic needs, of neurotic needs, as means to an end, out of habit or as a response to cultural expectation, etc. However, it is probable that there are differences of degrees. Perhaps all human beings are

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[6]Hierarchical scales were examined in chapter 2 of this work and are found to be inconsistent with the nature of living systems as open systems of ontological development in the sense of regress and progress (see pp. 30-36).

potentially meta-motivated to a degree."[7]

Hall and Lindzey (1970:327-28) point out that Maslow differentiates between basic needs and meta-needs. These two types of needs are: (1) Deficiency needs which include the basic needs of hunger, affection, security and self-esteem; and (2) Meta-needs, or growth needs which include needs of justice, beauty, order, unity and so forth. The deficiency needs are predominant over meta-needs in most cases and are arranged in a hierarchical order. While the meta-needs have no hierarchy, they are equally potent and can fairly easily be substituted for one another. Moreover, lack of satisfaction of either type of need makes an individual ill, since both needs are inherent in man's nature. However, the "meta-pathologies"[8] which are caused by lack of fulfillment of the meta-needs consist of states such as alienation, anguish, apathy and cynicism.

Self-actualization is learned intrinsically through the development of self-insight. Though Maslow indicated in his description of actualizers that self-actualization is experienced by very few people, he later said that it could be practiced by any person daily or even at every moment. He terms the experience of self-actualization as peak experience, saying, "Practically everyone does have peak experience, but not everyone knows it" (1965). Maslow (1965:282-84) describes eight ways in which one

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[7]Maslow's hierarchy of needs suggests that people are classified according to their level of needs. Those who are engaged on lower levels of needs are less evolved. They are confirming to cultural expectations habitually. This view could be taken as a contrast to Skinner's view of the same kind of people. According to Skinner's Walden Two, a person whose responses are shaped after cultural expectations is classified as an efficient member of society.

[8]This is a medical term that one can see, and as such is a contradiction of Maslow's original statement that he rejects medical terminology (Maslow:Op. cit., 1965).

could experience self-actualization: (1) by experiencing fully, vividly, selflessly, with full concentration and total absorption; (2) by making choices one after another, whether to be or not, to steal or not, etc.; (3) by listening to one's inner self, to the impulsive voices; (4) by being honest rather than not, and by exercising responsibility in making decisions; (5) by using one's own intelligence; (6) by having peak experiences; (7) by heeding one's own taste; and (8) by finding out who one is, what one is, what one likes and what one does not like.

Broadly speaking, Maslow proposes a concept of mental health which views man as being capable of self-actualization. This concept is based on the assumptions which Maslow (1954) points out in conceptualizing a positive view of man:

First: Every human being is originally good.

Second: Every human being has an essential nature of his own which represents his uniqueness and has common characteristics which are typical of the human species.

Third: Man has an inherent tendency toward health which is manifested in his active will toward growth and self-fulfillment or self-actualization.

Fourth: Psychopathology results from the denial, the frustration, or the twisting of man's essential nature.

Fifth: Man has two types of motives - (a) deficit motives, and (b) growth motives. The first kind underlies his need to adjust and the second underlies the need to be himself, unique, and creative.

In short, Maslow is a humanist who believes that man is both active and good. The purpose of human development is growth as manifested in

self-actualization. Counselors according to this view could help their clients to fulfill themselves by having positive regard for man and maintaining sincere and warm relationships.

Along similar lines, Rogers (1962) has developed a model of counseling (the Rogerian model) in which he has specifically stressed the significance of the counseling relationship. Four major facilitative conditions are proposed in the Rogerian model:

First: Congruence - a condition in which the counselor is what he is, "When in the relationship with his client he is genuine, and without 'front' or facade, openly being the feelings and attitudes which at the moment are in him" (Rogers, 1962:417). Although, according to Rogers, the congruence condition is never fully achieved, the counselor can come close to it by listening to the client and accepting him and accepting what is going on within his own self as he is listening, without fear of the complexity of his feelings. In other words, to be congruent in this sense means to be real and this requires that the counselor should express honestly what he feels without being blunt or impulsive.

Second: Empathy - this refers to the ability to achieve accurate understanding of the client's private world and to be able to communicate some of the significant fragments of that understanding. The therapist must be able to see the inner world of the client "as if" it were his own. Rogers recommends that the most important thing for the counselor is to notice that empathic understanding should be non-judgmental, for it is believed that non-judgmental understanding would lead to openness and then to change.

Third: Positive Regard - this condition is similar to the feelings that parents communicate to their children. In the context of mental health it means that the therapist cares for the client in a non-possessive way - "It is liking which has strength and which is not demanding" (Ibid.:420).

Fourth: Unconditionality of Regard - this condition requires that "The counselor prizes the client in a total rather than a conditional way" (Ibid.:421). This condition is similar to that of "positive regard" in the sense that the counselor is non-judgmental. However, Rogers emphasizes that unless the client perceives and experiences these conditions, they will not be significant factors in bringing about the desirable change. Most important is that the counselor himself should be aware of the conditions he is employing. Moreover, the counselor has to know when to apply unconditional positive regard. Rogers proposes that in the cases of schizophrenic clients, conditional regard is more efficient than unconditional regard. He also suggests that counselors who attempt to manipulate their clients, for the welfare of the state or the good of an educational organization, would not experience the facilitative conditions as they were described in the aforementioned points.

Hall and Lindzey (1970) call Carl Rogers' type of therapy "nondirective" or "client-centered." They quote Rogers' description of successful client-centered therapy conducted under optimal facilitative conditions:

> [It] would mean that the therapist has been able to enter into an intensely personal and subjective relationship with this client - relating not as a scientist to an object of study, not as a physician expecting to diagnose and cure, - but as a person to a person. It would mean that the therapist feels

> this client to be a person of unconditional self-worth, of value no matter what his condition, his behavior or his feelings. It would mean that the therapist is genuine, not hiding behind a defensive facade, but meeting the client with the feelings the therapist is experiencing. It would mean that the therapist is able to let himself go in understanding this client; that no inner barriers keep him from sensing what it feels like to be the client at each moment of the relationship; and that he can convey something of his empathic understanding to the client. It means that the therapist has been comfortable in entering this relationship fully, without knowing cognitively where it will lead, satisfied with providing a climate which will permit the client the utmost freedom to be himself.
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> For the client, this optimal therapy would mean an exploration of increasingly strange and unknown and dangerous feelings in himself, the exploration proving possible only because he is gradually realizing that he is accepted unconditionally. Thus he becomes acquainted with elements of his experience which have in the past been denied to awareness as too threatening, too damaging to the structure of the self. He finds himself experiencing these feelings fully, completely, in the relationship, so that for the moment he is his fear, or his anger, or his tenderness, or his strength. And as he lives these widely varied feelings, in all their degrees of intensity, he discovers that he has experienced himself, that he is all these feelings. He finds his behavior changing in constructive fashion in accordance with his newly experienced self. He approaches the realization that he no longer needs to fear what experience may hold, but can welcome it freely as part of his changing and developing self.

It is clear from the previous discussion that Roger's concept of mental health involves a process of change in which the individual takes part of the responsibility for his own growth. This concept is based on the assumption that the individual is trustworthy and essentially good. Both Maslow and Rogers seem to reject the diagnostic model and are inclined to believe that the human being is an open system. However, the client-centered therapy as described above, is still limited in its view of the role of the client. The model suggests that the client is treated as an entity separate from the counselor, since the counselor does not share himself with the client, functioning instead as a mirror

to what the client is experiencing. A true open system recognizes the significance of the sharing experience in which both parties are involved existentially in the process of human dialogue. This stance is best described by Alfred Adler, who once said, referring to a children's school he founded in Vienna, "The pupils teach the teachers." This quote is cited by May (1953:8) in his discussion of psychotherapy. He added, "It is thus in psychotherapy. And I do not see how the therapist can be anything but deeply grateful for what he is daily taught about issues and dignity of life by those who are called his patients." The sharing experience goes one step further, that is, the therapist also learns about himself as he is exploring with the client the experiences which the client is going through. The humanists seem to be recognizing more and more that the essential to the psychotherapeutic course is the patient's own responsible involvement in the change process" (Bugental, 1963:664).[9]

Frankl in his Logotherapy (1974) perceives mental health as the will to meaning. In this regard he says, "What is demanded of man is not, as some existential philosophers teach, to endure the meaninglessness of life, but rather to hear his capacity to grasp its unconditional meaningfulness in rational terms" (p. 188). Frankl's concept of mental health is close to that of the psychology of the oppressed. For this reason he is fond of quoting Nietzsche, "He who has a why to live for can bear with almost any how" (Frankl, 1974:xi).

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[9] J. Bugental. Humanistic Psychology: A New Breakthrough. American Psychologist, 1963, 18, 563-567. This article refers to the group of psychologists who view man as originally good, and emphasize the significance of the subjective element in understanding human nature.

Those approaches to counseling which are directive in practice, in the sense that the therapist actively directs the client, generally define mental health as the ability to adjust to the environment. The psychoanalytic approach, which is a directive approach, defines mental health as freedom from neurosis. Behaviorism, another directive approach, views mental health as the ability to solve problems. However, the ability to solve problems is viewed as the ability of the individual to adjust to society. Thus such a view maintains the status quo as an objective of therapeutic process. Lowe (1959:688) quotes Skinner, "The criteria for good is to be the survival value of the culture."

It is apparent that there are two main ways in which psychotherapists look at mental health. One group views mental health as the ability to adjust, to be a member of society, to conform or in Maslow's terms, to satisfy the deficit motives, while the other views man as healthy if he has the ability to be himself and has meaning for his life beyond his own skin. Walker (1956:89) points out that becoming oneself

> appears to mean less fear of the organisms' non-reflective reactions which one has, a gradual growth of trust in and even affection for the complex, varied, rich assortment of feelings and tendencies which exist in one at the organic or organismic level. Consciousness, instead of being a watchman over dangerous and unpredictable lot of impulses, of which few can be permitted to see the light of the day, becomes the inhabitant of a richly varied society of impulses and feelings and thoughts which prove to be satisfactory and self-governing when not fearfully or authoritatively guarded.

This extract seems to emphasize the individuality of the person at the expense of his sense membership. It is argued here that there is no self-governing individual in any absolute sense. An individual is at no point completely dependent or completely independent. He is always in an interplay of interdependency. What we need is a model of man that views the system-subsystem interaction and exchange of roles

in terms of positional value.

American society by and large emphasizes individual differences and independence in spite of the technological conditions which create an impulsive individual to function dependently in relation to machines, external rewards and materialistic values. This society, which many people regard as "free," in fact applies the most deterministic views of man in its schools and counseling practices inasmuch as it uses the efficiency model in training, and mental health itself is conceptualized after the rational models which classify non-adjustive people as deviants and mentally ill.

Martin (1972) describes American culture, in its child rearing practices, educational and political institutions, as well as psychiatric and mental health services, as a culture that imposes orientations which impair the inner resources of Americans and thus create mental problems. According to Martin, the mental illness of the individual is the outcome of the work culture, which deprives the individual of leisure time. Even if he has leisure time, the culture does not prepare him to use it on his own without being trafficked and directed like a rat in a maze. Martin (1972:128) points out, "Maladaptation to free time does not result from any inherent lack of inborn adaptive resources but rather from impairment of their development due to life-long exposure to incorporation of certain cultural patterns and systems."

Martin views mental health - based on his empirical inquiry - in terms of the strength of the ego to have its autonomous functions of effort and relaxation to actualize the inner resources of the individual freely. However, Martin does not define what he means by "actualizing inner resources," nor does he explain how this could be done freely. Such

terms may attract the reader and touch him in a mystic sense, but they do not mean much in a scientific community which is oriented toward definitions of operational value. The questions of "how to do it," when, where and why, are typical ones which need to be answered. In a technological society which dictates efficiency and accuracy before anything else, words like "self-actualization,"[10] "full potentialities," and "inner resources" are merely poetic unless they are measurable. This is the dilemma of a spiritual orientation versus a materialistic one, and such a dilemma is inevitable when the epistemological foundation for the theory of knowledge about man's nature continues to split mind from body and the physical from the metaphysical world. Because of this dualistic epistemological problem, the behavioral sciences often conceptualize phenomena in terms of either/or. What is not mentally healthy is mentally ill. What is not freedom is deterministic, and so on. "Mental illness" is often conceptualized as abnormality or deviance. The concept of normality is linked with mental health and thus abnormality is a form of mental illness. Consequently, there appear to be as many conceptualizations of normality as there are developmental theories and philosophical orientations concerning man's nature. Literature on this issue of normality yields four major conceptualizations:

1. Normality is a process of adaptation - the criterion of normality in this concept is derived from the view of man as a unique individual. It relates to one's ability to integrate one's system to function uniquely in confronting the environment while one is satisfying one's

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[10] It will be seen later that self-actualization was defined in a scale which is used for measuring the individual's ability to have the facilitative conditions that are identified by Rogers.

own needs. According to this view, "The normal personality is directed by a core system which organizes, selects, and integrates the multitude of motivational needs, i.e., the self" (Buhler, 1968:18). This concept stems from a view of man as originally good and self-propelled towards mental health. Rogers (1947:365) agrees that, "Normally the self resists incorporating into itself the experiences which are inconsistent within the functioning of the self and the problem is solved when the client is not put on the defensive; he then sees it is possible to consider the rejected perception to make new differentiations and to integrate the self in such a way as to include them."

This concept of normality is consistent with the view of mental health as the ability to actualize one's inner resources. It is held by mental health practitioners who adopt the situational approach which views people who need mental health services as the outcome of poor situations to which they have been exposed. According to this view, improving the situational conditions will result in the improvement of the psychological health of the afflicted individual (Levine, 1970, 1969).

2. The relative concept of normality - this approach views people as normal inasmuch as they adjust to the given norms of their community. In other words, normal people are those who conform to their expected roles in society with the reward of social acceptance. Individual differences are tolerated as long as they do not challenge the norms or destabilize the status quo. It would appear that the mental health practitioners who hold this view do not concern themselves with the fact that the individual might suffer from tension or lack of peace of mind as long as his suffering does not hinder him from performing his expected role. In this sense one can argue that practitioners who hold the relative

concept of normality work as agents of the social-political system with the goal of maintaining the status quo and not with the objective of helping the individual to overcome his or her psychological problems.

Shoben (1957:183) in his article, "Toward a Concept of Normal Personality," argues that: "There are even those who argue that there is no such thing as a normal man, there are only those who manage their interpersonal relationships in such a way that others are strongly motivated to avoid them, even by committing them to a mental hospital or a prison, as opposed to those who do not incite such degrees of social ostracism."

Scheff (1963) points out that the concept of normality and mental health, as it is viewed by both the public and the professional, indicates the following assumptions: (a) all people are pathological, they differ in the degree rather than quality; (b) pathological symptoms are relative to the culture the individual lives in; and (c) a degree of sanity is something observable in terms of conforming to the norms in a specific culture.[11]

Rosenhan (1973) in Being Sane in Insane Places, a pioneer study which tested the concept of sanity or what is called normality, found that pseudo-patients were diagnosed as real patients in mental hospitals and were given pathological labels. In the second phase of his study, he found that patients were diagnosed as normal when the staff of the hospital were told that some pseudo-patients would be coming. Rosenhan

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[11] T. J. Scheff. Being Mentally Ill. New York: Aldine, 1966. The thrust of Scheff's argument in this work is to point out that mental illness is a myth and that it functions only as a label or stigma for rule-breakers, and only when these rule-breakers do not have the power (i.e., social status or money) to get away with what they do.

(1973:71) concludes: "Data speaks to the massive role of labeling in psychiatric assessment. Having once been labeled schizophrenic, there is nothing the pseudo-patient can do to overcome the tag which colors others' perceptions of him and his behavior."

The significance of Rosenhan's study lies in its ability to show that the diagnostic model and its relativistic concept of normality is misleading. The diagnostic labeling system tells more about the orientations of the practitioners, who use its terminology, than about the patients whom they are supposedly helping. Even more significant is the evidence that Skinner's scientific scheme which instructs psychologists to study observable behavior at its own level and in its own right, might end up in describing pseudo acts and not the real psychological process. This suggests that objective scientific observation is misleading and that behavior is a phenomenon beyond what we actually observe. It also indicates that the diagnostic concept of mental health is subjective and perceptual, and not as objective as scientifically oriented practitioners would like to believe. In short, this provides an explicit example of the isomorphic problem in practice as it was earlier described to exist in theory-building. In other words, the system which the scientists observe is not in complete correspondence with the reality of what has been observed. Rosenhan's findings suggest an anomaly exists in the diagnostic paradigm and points to major limitations inherent in accepting direct data as is. The message is that "labeling" of clients in terms of normal or abnormal, is conditioned by the social context and psychological conditions in which the scientists operate, rather than reflecting an objective descriptive of a value free nature.

3. <u>The statistical concept of normality</u> - this concept emerged

from the whole trend of tests and measurements which came into vogue directly after the psychoanalytic theory of personality. The normal individual is one who scores average or above average on personality inventories. Shoben (1957) points out that the criterion of this concept is conformity. This criterion is the same one for normality in the relativistic sense, since the norm, statistically speaking, varies from one culture to another, and even from one group to another in the same culture. The argument is that each culture has its own norms which makes it difficult to generalize on what is normal and what is not in any scientific sense (i.e., in an objective way). This argument is based on cross-cultural research which was done by Benedict.

4. Normality is a positive development and an integrative adjustment - this concept is very similar to the adaptation concept, except that it accounts for the role of learning and socialization in bringing about positive integration. Believers in this concept define the normal person as "one who has learned that in many situations his greatest satisfaction is gained by foregoing the immediate opportunities for comfort and pleasure in the interest of more rewards" (Shoben, 1957:186). Shoben points out that the main characteristics of the integrative model for normality are: (a) self-control, (b) responsibility, (c) interpersonal responsibility, and (d) the sense of obligation toward society and then toward humanity. The normal person has ideals and values that he tries to live up to. This concept of normality avoids defining the normal person as being always happy, free from conflict and without problems. The normal person is likely to be one who enjoys a relatively consistent and high degree of self-respect and who experiences positive and warm reactions from others. The integrative adjustment model views the human

being as an open system rather than a closed one. The closest psychotherapeutic practice to this conceptualization is the logotherapy of Viktor Frankl, especially in his treatment of "grief cases."[12] According to Frankl (1974:153),

> In logotherapy the patient is actually confronted with and reoriented toward the meaning of his life. My improvisation of a definition of what logotherapy means, therefore, holds true in that the truly neurotic individual does try to escape the full awareness of his life task, and to awaken him to a fuller consciousness of it can contribute much to his ability to overcome his neurosis.

In essence, logotherapy has the objective of helping the patient to find meaning for his life. Inasmuch as logotherapy helps the patient to be aware of the logos (i.e., the ethical spiritual life) of his existence, it is an analytical process. In the latter sense, logotherapy resembles psychoanalysis, although it differs in the former sense. In other words, logotherapy does not restrict itself to instinctual experiences within the individual's unconscious, but also cares for spiritual realities such as the search for meaning to one's own existence (Ibid.:163).

The four given concepts of normality could be reduced to two major concepts, namely, (1) normality as an integrative process, and (2) normality as a statistical, relative adjustment. The first concept is

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[12] A case of grief is reported in Frankl's logotherapy: "An elderly general practitioner consulted me because of his severe depression. He could not overcome the loss of his wife who had died two years before and whom he had loved above all else. Now how could I help him? . . . I refrained from telling him anything, but instead confronted him with the question, 'What would have happened, Doctor, if you had died first, and your wife would have had to survive you?' 'Oh,' he said, 'For her this would have been terrible; how she would have suffered!' Whereupon I replied, 'You see, Doctor, such a suffering has been spared her, and it is you who has spared her this suffering; but now, you have to pay for it by surviving and mourning her.' He said no word but shook my hand and calmly left my office. Suffering ceases to be suffering in some way at the moment it finds a meaning, much as the meaning of a sacrifice" (pp. 178-179).

derived from the humanistic orientation of an open system view, while the second is consistent with the scientific objective view of mental health which is more of a closed system view. Community clinical psychologists tend to believe that a person's self-integration is destabilized as the result of external conditions or misperception of such conditions. This view advocates change in society rather than change in man to better fit into society. Levine (1970) points out that this view of change has usually been held during reformation periods in the history of the United States. However, he adds, the presently held model is intrapsychiatric and views the social-political system as an acceptable one, consequently advocating change in individuals rather than in society as a whole. Whether this is true is questionable. The question concerning the suitability of the social-political system and/or the workability of mental practices becomes urgent when one reads Grob's (1966:xi) findings:

> Mental illness, along with cancer and heart disease, ranks as the most pressing health problem facing the American people. Statistics on the prevalence of mental disease, indeed are quite striking; over half of all hospital beds in the United States are occupied by mental patients at the present time, more than seventeen million American patients are afflicted with some form of psychological disturbance or mental disorder . . . It is estimated that mental illness costs nearly one billion dollars annually in direct costs and three times that amount in indirect costs.

This quotation suggests that almost 8.42 percent of the total population used to be mentally sick.[13] However, one might ask whether this was because of inaccurate screening techniques to select which patients were hospitalized or if the figures are truly representative of mental

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[13]This figure was given at a time when the population of the United States was around 190 million. This estimate is based on information given in the Hammond World Atlas, Superior Edition, New York, Chicago: Hammond Incorporated, 1976. This resource says that the U.S. population in 1960 was 179.3 million, while in 1970 it was 203.2 million (p. 192).

health in the U.S. around the mid sixties. The question still remains whether that condition was due to the American involvement in the war in Viet Nam. Although the Commission Reports[14] on mental health give all kinds of figures which indicate the distribution of mental health: in-patients, outpatients, males, females, and different age groups, what do these figures really mean in an absence of a unified criterion among mental hospitals as to what is defined as mental illness. It would be absurd to make generalizations based on these figures in relation to the question raised in this work, since figures on "mental illnesses" at best suggest a rate of progress or regression in mental illness, but at worst do not tell much about the underlying assumptions on the basis of which people are classified as mentally ill. Moreover, aside from the need for a unified criterion for classification of mental illness before sense can be made of government documents, there is also a need to resolve the following questions before any generalizations can be made:

1. Is the criterion or criteria for mental illness reliable to a point that an objective census could be made which includes even those individuals who do not come to the clinics of mental health services?

2. Do the mental health practices contribute to the figures on numbers of mental patients in any form, i.e., through their institutional claims, their propaganda aimed at getting more people to seek help, and/or their cooperation with the judicial courts to keep the rule-

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[14] Presidential Report: Report To The Commission of Mental Health. Washington, D.C.: Governmental Document, VI, 1978. This report portrays a picture of multivariant dimensions of professional views on mental health services in the United States. It suggests very strongly that there is no unifying criteria for mental illness. Thus the census of mentally sick people is arbitrary. The number of inpatient vs. outpatient clients cannot be controlled for reasons of patient's mobility in search of employment in different states, a factor which makes it very difficult to report the full case of any patient in a form of complete follow-up, or without counting the same patient several times.

breakers out of the mainstream of society, etc.?

3. Does American culture in its various institutions have an impact in steering patients to mental health services?

These questions, among others, might be relevant to a skeptical attitude towards drawing generalizations on the basis of reported figures in government documents. A neat objective evaluation of the impact of American health services is difficult to obtain since practitioners hold similar orientations as their patients, since both were brought up in the same culture. If American culture happens to be characterized by materialistic values that impair an individual's inner resources (Martin, 1972), and the psychological paradigm is endowed with the problem of mind-body dichotomy (i.e., the separation of the physical from the metaphysical world), then one might expect mental health practices to perpetuate the patient's ailments instead of curing them.

Martin also describes American culture as a work culture, "where man-hours of mental and physical work and Gross National Product have become the principle means and measure of growth and development" (Martin, 1972:132). According to his analysis, American culture has three major characteristics: (1) its principles are authoritarian and its social system controls in a strict rigid way. The principles direct the individual to operate solely on a quid pro quo or tit-for-tat basis. Relationships in this society are developed solely on a conditional reward-punishment basis, "reducing man's total pattern of life to a conglomerate of intricate conditional reflexes comparable to what Pavlov developed in his dogs and Skinner more recently in his rats" (Ibid.:132). (2) The culture is commercialistic and positivistic, therefore behavioristic. It makes no allowance for man's autonomy. Martin quotes a reading

assigned to fourth graders in New York City . . . "You cannot enjoy Sunday unless you work six days to earn it" (p. 133). (3) American culture has no place for unconditional giving and receiving. Martin (1972:133) asserts, "I must emphasize here that the specific element of this work culture which seriously impairs our inner resources is not commercialism per se, but the bartering and trafficking practices of this commercialism."

According to Martin's view, the American social-political system is apt to be responsible for the complaints of people who are suffering from Sunday neurosis, boredom, alienation, and losing the ability to be in touch with their own feelings (Frankl 1973; May 1953; Sarason 1974). Humanistic and existential psychologists propose, like Martin, that the individual should be in a culture that enhances his freedom of choice to use his own resources to function autonomously. Thus the individual should be able to exercise, exert effort and enjoy relaxation. In other words, the conditions which improve the individual's mental health must be flexible enough to allow for choice. Martin suggests that the effort function is developed when work is not directed from outside, and the relaxation function develops when the individual freely uses his leisure time in a self-propelled way. In a work culture, he argues, the ego functions, effort and relaxation, are no longer autonomous. Effort becomes reactive and other-directed, while relaxation becomes neglected, inhibited and equated with laziness and idleness.

These radical arguments might help to raise awareness of people to seek freedom of choice. In this sense they are valuable, however, they do not seem to differ in their epistemological foundation in being essentially one-dimensional views based on linear logic. The question

is not the individual's freedom alone but also his sense of security as he relates to the system as a whole. The price of the individual's freedom without placing it within the perspective of the welfare of the whole society is equal to that of giving up the individual's freedom for the sake of maintaining a status quo. Martin's proposal might be classified as the opposite system from what is criticized. What makes a coherent system is the harmony of the opposites within and without the individual's system.

UNIT II: Diagnosis of Mental Health and Its Consistency with the Social System:

Diagnosis is the first step towards implementation of the medical model in mental health services. Through diagnosis the causes of the client's ailments are identified to enable the therapist to eliminate them and consequently cure the ailments.

Bordin points out that diagnostic constructs should have four characteristics (Hansen, et al, 1972:217): "(1) The system must be a reliable classification for the subjects among its categories, (2) the categories must be mutually exclusive, each class should be identified by constant, discrete symptom clusters, (3) there must be greater variance among the constructs than within each category, (4) each construct should form the basis for the choice of treatment."

This quotation suggests a rigid classification system which could not be fulfilled in medical models which diagnose physical ailments. The criterion of exclusiveness is extremely difficult to fulfill in an open system such as a human system. Even in the case of physical health problems, medical doctors recognize that different diseases might be

manifested in similar symptoms. Moreover, one can argue that the assumptions that mental illness is similar to physical illness in its potential for classification is wrong, simply because the former refers primarily to the state of mind while the latter refers to concrete physiological ailments. Thus if a rigid classification system cannot be neatly applied to physical ailments, then it is absurd to impose its application on a dynamic open state of affairs such as exists in the case of mental illness.

Another important argument is made by Szasz (1968) who points out that since "mental illness" is an interpersonal problem rather than a disease, the medical diagnostic model is detrimental to the kind of help the individual client needs. Among Szasz's criticisms of the medical model are: (1) mental disorders are relativistic in nature. They should be described in their social context. The medical model is too rigid and does not fit the nature of mental disorders. (2) In the therapeutic relationship, the psychiatrist is not the agent of the patient as is the case with the medical doctor. Szasz (1970) argues that mental illness has taken on mythical qualities in: (A) the attempt to explain it as a neurological function. This view has two errors - (1) it assumes that mental illness cannot be caused by conflicting personal needs, opinions, social operations and values, a view which is contrary to the evidence that people's troubles are due to social operations and conflicting needs; (2) medical models are based on epistemological error. The interpretations of communication as symptoms of neurological function is not an error in reasoning or in observation but rather in the organization and the expression of knowledge; and (B) the view of mental illness as a deformity of personality which assumes that social inter-

action is inherently harmonious and its disturbance is due to the presence of "mental illness" in many people is false. This view is false because it assumes that mental illness is a cause rather than an effect. In short, Szasz argues that it is logically fallacious to assume that mental health can be analyzed within the framework of a medical diagnostic model. He even goes so far as to say that mental illness does not exist. However, Szasz (1970:21) gives a rationale for his argument: "When I mention mental illness does not exist, I obviously do not imply or mean that the social and psychological occurrences to which the label is attached also do not exist . . . My aim is . . . to suggest that the phenomena now called illness be looked at afresh and more simply, that they be removed from the category of illness, and that they be regarded as expressions of man's struggle with the problem of how he should live." This extract indicates a positive view of man, and in essence asks for a new perspective in which the individual's disturbances are viewed as expressions of struggle to change the conditions under which he lives. It suggests that people who are <u>mostly</u> mentally sick are in fact people who suffer from certain injustices in their lives.

From a systemic viewpoint, a scientist is successful in describing reality inasmuch as what he observes corresponds with what he describes. In other words, the system of description is consistent or "isomorphic" with the observable system.

Morgalis (1966) points out that "mental illness" as a term is logically inconsistent with the phenomenon it describes. He also notes that the use of the normative approach, on which the medical model is based, is not logically justified. Normative models are scientific

models that are designed to describe statements of facts. This model is inconsistent with social and psychological phenomena, since our judgement of these phenomena is not based on established standards. It involves ethics, relationships and ideas that are all relative and cannot be measured with the use of scientific methods. Morgalis says, "The model of health, in the setting of psychotherapy, is a mixed model that shows clear affinities with models that obtain in physical medicine and at the same time with the models of happiness and well-being that obtain in the ethical domain" (p. 82).

It is clear from the above quotation that psychiatrists are dealing with two different systems--the physical and the ethical one. In doing so they sometimes mix the model and the reality to which they wish the model to correspond. The model is physical and the reality is psychophysical. However, one might argue that such "mixing" is inevitable because the body is not supposed to be separate from the "soul" or the psychological functions. Nevertheless, it does not seem to be the intention of psychiatrists to view the body and mind in one whole, but rather it is their practice to reduce the mental processes into body functions. This is especially true of psychiatrists who follow the Skinnerian approach.

An interesting study done by Braginsky and Braginsky (1974) suggests that diagnostic labels are misleading, since they reveal a great deal about diagnosticians and the society they serve but little about the persons they are trying to diagnose. The study measures the discrepancy between patients' attitudes and psychiatrists' attitudes towards political and social issues. It was found that patients who were described as most deviant by psychiatrists scored the highest on

the New Left Radical Scale, while their psychiatrists scored the lowest on this scale. The implication arising from these findings is that psychiatrists are conformists and their diagnosis of deviancy is based on their attitudes. Consequently, diagnosis tells us more about psychiatrists than about their patients.

Braginsky and Braginsky's major argument against diagnosis is not that we do not require a classification system by which we can understand people whom we are dealing with. It is the criterion of judgment used to create such a system and the goals towards which the system is directed that the writers criticize. The criterion is found to be the social norms and the goal is conformity or adjustment. The problem is that these norms are set by the political system for the purpose of maintenance of power rather than to help troubled patients. Therefore, psychiatrists according to the present study are primarily agents for the social-political system and not directed towards helping the individual.

The Application of the Diagnostic Model in American Mental Hospitals:

Hollingshead and Redlich (1958) studied all the mental patients of a New Haven neighborhood and attempted to determine the path a person follows on his way to psychiatric help. These investigators chose to study what they call "two facts of American life" - social class and mental illness - because they saw them as representing major problem areas in American society. However, Hollingshead and Redlich (1958:3-4) point out,

> Americans prefer to avoid the two facts of life -- social class and mental illness. The very idea of 'social class' is inconsistent with the American ideal of a society composed of free men and equal individuals, individuals living in a society where they have identical opportunities to realize their inborn potentialities . . . Although Americans, by

> choice, deny the existence of social classes, they are forced to admit the reality of mental illness . . . the suggestion that different social classes receive different treatment for mental illness may come as a shock.

The problem of investigation:

Hollingshead and Redlich investigated two questions: (1) is mental illness related to class stratification in American society? (2) does a psychiatric patient's position in the status system affect how he is treated for mental illness? These questions were investigated by testing the following hypotheses: first, the prevalence of treated mental illness is related significantly to an individual's position in the class structure; second, the type of diagnosed mental disorders are connected significantly to the class structure; third, the kind of psychiatric treatment the patients receive is associated with their positions in the class structure; fourth, the social and psychodynamic factors in the development of psychiatric disorders are positively correlated to the individual's position in the class structure; fifth, mobility in the class structure is associated with the development of psychiatric difficulties.

These hypotheses were based on several assumptions:

(1) The social structure of American society is characterized by a system of stratification.

(2) Individuals in different classes are subjected to different problems of living and these problems are expressed in different patterns of emotional psychological reactions and disorders.

(3) Psychiatrists are controlled by the value system of their societal membership.

(4) The working rules of psychiatry are practiced in ways that are

connected implicitly with class status.

In short, Hollingshead and Redlich (1958:11) assume that "mental illness is defined socially, whatever a psychiatrist treats or is expected to treat must be viewed as mental illness. This position is based upon the fact that in our society we treat individuals whose behavior would be ignored in a second society, punished by the criminal courts in a third, and in still others given over to priests."

The methodological procedure:

Each hypothesis was tested with different kinds of data and different research methods. The first three hypotheses utilize data drawn from the entire community of New Haven. The fourth and fifth hypotheses were investigated through examination of the detailed case histories of 50 psychiatric patients, including data about their families who lived in the community. In other words, two approaches were utilized in this study, (1) the macroscopic approach, and (2) the microscopic or clinical approach. Psychiatrists as well as psychiatric agencies were surveyed and evaluated in the study. The sociological and the psychiatric sides of patients' lives were also surveyed. The psychiatric treatments were classified in five categories: (1) classical analysis treatment, (2) therapy, (3) industrial therapy, (4) organic treatments, and (5) custodial care (i.e., no therapy).

The findings and interpretations:

Social factors were found to have differential effects upon the categorization of patients, especially in relation to two things: (a) the patient's access to existing technical knowledge, and (b) the patient's sociocultural values. These two variables were found to

influence the patient's referral process. The people who are involved in the referral process and who share in the appraisal of the patient's normality are the following: (1) the prospective patient, (2) his family, (3) his friends and members of clubs to which the patient belongs, (4) professionals outside the health area such as lawyers, teachers and ministers, (5) professionals in the health area (medical or mental), and (6) officials of the community, including police, attorneys and judges (pp. 177-179). However, the role of the psychiatrist in dealing with the patient is determined on two social levels: the official level where the court decides whether the individual is a deviant; and the layman's level, at which family, teachers, friends and/or social workers refer the individual to mental health care or they themselves attempt to treat the maladjusted individual. The psychiatrists in general are left to treat cases that cannot be treated by either the courts or the layman.

The patient's class was found to have a differential effect upon the referral category: (1) patients from the highest classes are referred by family, friends, or are self-referrals, while patients from lower classes are referred by officials. In the case of patients from lower classes (of low education and low income) policemen are called by the family of a prospective patient and the patient is directed to a psychiatrist who is chosen by these policemen. (2) Patients of lower classes mostly have no access to existing technical knowledge and their socio-cultural ethics are negative about psychiatric help. This is the opposite picture for patients who are coming from higher classes, who usually have access to existing technical knowledge and assume a positive role for psychiatric services in helping them. Hollingshead and Redlich (1955)

concluded that, "There is a definite class-linked gradient in police and court referrals; the higher the class, the lower the percentage of referrals, with a heavy concentration of referrals in Class V (the lower class) . . . a few referrals are made by family and welfare agency social workers and teachers from Classes I and II through IV" (p. 186).

Hollingshead and Redlich also found that there is a striking correlation between class position and distribution of neurosis and psychosis. Neurosis and psychosis are found among patients of all classes with the highest percentage of neurosis among higher classes and the lowest percentage among lower classes. The reverse is true in the distribution of psychosis. They concluded that there is a class-linked association between type of mental illness and class level.

This finding might be interpreted as evidence to support Szasz's (1970) argument that mental illness is to be regarded as an expression of man's struggle with the problem of how he should live. It is logical to assume that lower class people live under difficult conditions (e.g., overcrowding, inadequate diets, etc.), and thus are more potentially prone to severe disorders than upper and middle class persons. However, this assumption might cause psychiatrists to diagnose lower class disturbances as psychosis more frequently than similar symptoms in higher classes are diagnosed as such. In fact, Hollingshead and Redlich found that there is some overlapping in the symptomatic nature between one type of mental disorder and another, especially in the cases of psychosomatic disorders and hysterical reactions. This suggests that psychiatrists' personal biases may have an effect on their diagnosis of patients' ailments, especially in terms of class stereotyping. It also indicates that Bordin's criteria for classification of symptoms do not

work (see the previous argument on p. 293).

Hollingshead and Redlich identified five different types of psychotic disorders in their study population: the affective, the addictive-alcoholic, the organic, the schizophrenic and the senile. They also identified seven types of neurotic disorders: antisocial and immaturity reactions, character neurosis, phobic and anxiety reactions, depressive reactions, obsessive and compulsive reactions, psychosomatic reactions and hysterical reactions. In evaluating the definitions of these types of neuroses and psychoses and matching them with Szasz's (1970) argument about the usage of the label "mental illness," this researcher notices that: (1) In some of these diagnoses of mental illness, the social and psychological sides of the patient's disturbance is ignored. (2) Heavy emphasis on the physiological side of the psychological disturbance was made in (a) organic psychosis, (b) senile psychosis and (c) psychosomatic hysterical reactions of neurosis. (3) The argument that mental illness is a label that describes the psychiatrist and his society more than the patient, which was made by Braginsky and Braginsky (1974), appears to be partially true in light of Hollingshead and Redlich's findings. It seems that the types of neuroses and psychoses are class-linked. This finding suggests that "mental illness" is not a cause of social problems but rather the result of the social conditions under which the patient lives. The social conditions were the source of the mental illness from which the patient suffers.

Schizophrenia, which seems to be more typical of lower class people, according to Hollingshead and Redlich, deserves to be given special attention in the attempt to understand the merits of the medical model. Fitzgibbons and Shearn (1972) study the concept of schizophernia as it is

understood by mental health professionals. The differences in the conceptualization of schizophrenia among professionals as it was revealed by this study are so huge, the writer concluded that the usefulness of the term is doubtful. This finding suggests that the term should be cast from the psychiatric diagnostic schemes. Among the given findings: (1) Expressed ideas indicate that schizophrenia is a learned disorder. This is indicated in the general belief that schizophrenia is learned in communicational relationships with significant people. (2) Phenomenological description of schizophrenia in terms of expressing affect and withdrawal from people has a reliability of (.82). (3) Physiological conception, describing schizophrenia as basically a central nervous system disorder, has a reliability of (.73). This conception is antagonistic to the phenomenon of logical conception and in spite of this theory receives almost the same reliability. (4) The conception that schizophrenia is a deteriorating course and it has a uniformly poor prognosis; this received a (.52) reliability. (5) The concept of a weak link with reality and thinking disorders received (.57) reliability. (6) Schizophrenia is adaptive symptomology - (.69) reliability. (7) Schizophrenia as an incurable disease received (.70) reliability.

The above study shows that psychiatrists do not share common conceptions about schizophrenia which is so significantly dominant in their diagnosis. It shows that "schizophrenia" is a label that means different things to different professionals. This indicates that the medical model in mental health is far from being consistent with the physical medical model which is supppsed to be isomorphic with the mental model. Szasz (1970) is justified in calling mental illness a myth in light of these findings.

Historical Evidence of the Misuse of Diagnosis and its Implications:

Diagnosis could be very dangerous and extremely inhuman if it is misused as a tool of political and social control. This possible side effect of diagnosis is not inherent in the diagnostic system, but it may result from the misuse of this system. This outcome depends on how solidified psychiatrists are in their ethical principles and how critcial minded they are in utilizing the diagnostic scheme. There is historical evidence of misused diagnosis on a national scale as well as on an individual basis. In both cases, psychiatrists deviated from the expected human role they were supposed to play in order to support political systems. Fanon (1963) cites historical evidence of the misuse of scientific diagnosis, saying,

> Before 1954 magistrates, policemen, barristers, journalists and legal doctors agreed unanimously that the Algerian was a born criminal. A theory was elaborated and scientific proofs were found to support it. This theory was taught in the universities for over twenty years. Algerian medical students received this education . . . the elite came also to accommodate themselves to the inherent stigma of the Algerian people; they were born slackers, born liars, born robbers and born criminals (p. 296).

Fanon describes how the theory was developed by a French psychiatrist, Porot, and was given a framework of systematic thinking that sounded convincing. Neither the students of this theory nor the readers questioned the motives of Algerians in committing these crimes while they were oppressed by the French colonial system. Porot gave systematic evidence that Algerians are melancholics, who instead of committing suicide kill others. Among the traits that he attributed to Algerians were the following: (1) Algerians lack emotivity, (2) they are credulous and susceptible to the extreme, (3) they are persistently obstinate and mentally passive, lacking inquisitiveness or curiosity,

(4) compared with European children Algerian children have no ability to synthesize, they are pointless, and their verbal ability is minimal (Ibid:300).

Fanon (1963:300) quotes from Porot's address to the Congress of Mental Specialists in 1935: "The native of North Africa, whose superior and cortical activities are only slightly developed, is a primitive creature whose life, essentially vegetative and instinctive, is above all regulated by his doencephalon." Porot was a professor of psychiatry in Algeria in 1963 and with the collaboration of medical students, proved "scientifically" that the Algerian cortex is different from the French and European ones. In the same vein Carothers, a World Health Organization expert, wrote a book entitled Normal and Pathological Psychology of of the African (1954). He is quoted by Fanon (1963:302): "The African makes very little use of his frontal lobes . . . We must counter these natural creatures who obey the laws of their nature blindly, with a strict relentless ruling class. We must tame nature, not convince it" (Ibid.:303). After a long discussion of these racial views of "psychiatrists" and "scientists" Fanon (1963:309) gives his conclusion:

> Today every one of us knows that criminality is not the consequence of the heredity character of the Algerian, nor of the organization of his nervous system. The Algerian War, like all wars of national liberation, brings to the fore the true protagonists . . . The Algerian's criminality, his impulsivity and the violence of his murders are therefore not the consequence of the organization of his nervous system or characteral originality, but the direct product of the colonial situation.

Porot's "theory" that Algerians have a different cortex from that of Europeans can be taken as evidence for the misuse of scientific paradigm. A similar misuse often occurs when statistics are used as the basis of generalizations. It could be argued that the statistical

evidence on the high rate of criminality among Algerians was an indication of the frustrating conditions under which Algerians were forced to live. Had the last argument been made by Porot, he might have been closer to reality. However, it is evident that Porot, as a member of the colonizing elite, used his observations to support the victimizers against the victims. In such cases science could be detrimental instead of helpful in improving human conditions. Moreover, Fanon's findings lend credence to the assumption that the diagnostic model could be used to support the status quo of a political system.

In the United States, Cannon and Locke (1977)[15] found that being black can be detrimental to one's mental health. Their study was based on an analysis of the rates of institutionalization per 100,000 population in 1960, 1970 and 1975. They compared the distribution of institutionalization between blacks and whites, examining (1) type of institution, (2) inpatient-outpatient services, (3) admissions-discharges by type and facility, (4) admission-discharge by sex, race and family income, and age, (5) type of diagnostic mental disorders, (6) federally funded mental health community centers and percent of admissions within racial groups.

The investigators observed that:

(1) Several factors are inherent in the differential patterns of institutionalization between whites and blacks. Cannon and Locke (1977: 410-411) find:

> While in 1970 the over-all rate of institutionalization was 41 percent higher among blacks than whites . . . there

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[15] M. Cannon and B. Locke. Being Black is Detrimental to One's Mental Health: Myth or Reality. Phylon, December 1977, 38(4), 408-427.

> was considerable divergence by type of institution. Blacks exceeded whites in mental institutions by 52 percent; however, the excess of blacks to whites in correctional institutions was considerably greater . . . The phenomenon of blacks exhibiting behavior problems being incarcerated in correctional institutions while whites exhibiting similar problems get placed in medical facilities can probably be attributed to racist practices.

(2) Existing data suggest that more non-white persons utilize clinics affiliated with community mental health centers. This finding corresponds with the finding that "the median family income of white admissions was almost twice that of non-white admissions with the greatest disparity between white and non-white females" (p. 416). This financial factor might be one of many that contribute to the mental health of the individual. It suggests that people with higher incomes are less susceptible to mental illness, and moreover, that blacks earn less income than whites.

(3) In line with the differences in socioeconomic status of whites and blacks, disparity between the races is also apparent in admission rates to public versus private outpatient facilities (Ibid.:417). Interestingly enough, Hollingshead and Redlich (1958) came out with similar findings in their analysis of types of institutions and class levels. They found that more lower class patients used public facilities while middle and upper class patients used private facilities.

It might be argued here that the conditions of public facilities between the periods[16] 1958 and 1977 are not improved, and/or the perception of people of these institutes is still the same. It is possible also that mental health practices will continue to be class-linked for

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[16]This time span covers the studies done by Hollingshead and Redlich (1958) and Cannon and Locke (1977). The data reported in Hollingshead and Redlich goes back to the early 1950's when they started to collect their data, and that reported in Cannon and Locke does not go beyond 1975.

reasons inherent in the American socioeconomic system.

(4) The influence of race on diagnosis of mental disorders was also pointed out by Cannon and Locke (1977:423): "From the preceding discussion we have seen among patients treated in mental health facilities, whites are more likely to be diagnosed with depressive disorders while blacks or non-whites are more likely to be diagnosed as schizophrenic."

This finding is supported by other studies which show that labeling functions as a stigma which perpetuates the mental disorder in its victim.[17] However, in spite of statistical evidence which indicates greater evidence of mental illness among blacks than among whites, Cannon and Locke (1977) do not view mental health as inherent in race as Porot has concluded in the case of Algerians (Fanon, 1963). Cannon and Locke (1977:427) conclude:

> In attempting to answer the question, 'Is black detrimental to one's mental health?', blackness of skin is not. In our judgement stressful social conditions which come about as a result of blackness such as experiences of loss or failure, denial of respect, ordinary dignity and courtesy, being viewed as inferior, along with other effects of racism are what

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[17] T. J. Scheff. Being Mentally Ill. New York, Aldine, 1966. Scheff postulated that "among residual rule-breakers, labeling is the most important cause of careers of residual deviance" (p. 93). Schizophrenia is a label that has greater negative implications than depression. Thus people who are diagnosed to be schizoid are expected to suffer from greater stigmatization than those labeled depressives. However, Gove presents research evidence that patients who were treated by the medical diagnostic mode, who were once labeled by society, had been able to rehabilitate themselves and did not need to be readmitted to mental hospitalization. Nevertheless, the question of stigma and its role in mental health is not yet settled between societal reaction theorists and the traditional psychologists of micro-orientation (i.e., individual mental health is inherent in personality, not in external conditions. They believe that what needs to be changed is the individual, not the environment) W. R. Gove in: Societal Reaction as an Explanation of Mental Illness: An Evaluation. American Sociological Review, 1970, 35, 873-884.

> contribute to the high prevalence of mental disorders among blacks and not the amount of melanin in their skin . . . what the future needs perhaps is a reordering or reorienting of mental health services.

However, the question remains whether the diagnostic model helps to improve human conditions. The present researcher tends to believe that pointing out racial discrimination in diagnostic treatments and viewing it in the context of accompanying social and economic factors might be a necessary comment. However, such an interpretation is not sufficient. These critics seem to be unaware that they are perpetuating the model by advancing other reasons for original findings. The real question goes beyond a critique of outcome, it goes essentially to the epistemological foundations of the diagnostic model. The point here is that diagnosis based on observations, tests and measurements, and statistical analysis does not seem to touch the essence of mental problems. There seems to be a tendency on the part of practitioners to identify with the ethical system of those who are in power more than with victims of the system. Braginsky and Braginsky (1974:32) point out:

> In recent years we witnessed a sudden flurry of scientific research activity directed toward racially linked diseases, the poor, mental retardation, compensatory education for the young, population control, violence, and so on, as a consequence of both personal and political interest of our national leaders.

Why don't researchers as well direct their research to the politicians and decision-makers and those who are in power? The many questions that humanist-conscious writers are raising these days are promising ones. But who is going to listen? Instead of just questioning, they should try to research the areas of power - then the question is, would it be accessible? The point is, if behavioral scientists

believe that the individual's behavior is controlled by external conditions, why don't they study the decision-makers who seem to make major contributions to these conditions? It is acknowledged, however, that studying decision makers might not solve the problem in relation to improving human conditions, especially if the scientific method aims at verifying a theory rather than falsifying it (Kuhn, 1970). In this regard, if scientists begin with the assumption that decision-makers are "democratically" selected, that they are the best people in society, well educated, possess genuine integrity, and so on, then questions will be designed to test these characteristics, and the present decision-makers will most probably turn out to be the "best." The study of the ruling class seems to have been ignored by scientists in spite of its potential as a major area for creating conditions for social change. Zeitlin (1974:1167) points out that the capitalist, decision-maker class is the least investigated among all social classes by American researchers, though it is the most influential and powerful class in the process of decision-making.[18]

A landmark case in the study of the relationship between American mental health practices and the political system is reported by Szasz (1965). This is the case of Isola Warcarey who stabbed the black American leader Martin Luther King, Jr. in a Harlem department store on November 18, 1958. The woman was not brought to trial and instead was sent to Bellevue

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[18] M. Zeitlin, "Corporate Ownership and Control: The Large Corporation and the Capitalist Class." American Journal of Sociology, 79(5), March 1974:1073-1119. In this paper Zeitlin found historical evidence that the capitalist class controls organizations by its share of ownership and through administrative power. Zeitlin's findings are evidence against the claim of organizational theorists who believe that organizational control is separate from ownership or shareholders.

Hospital for a pre-trial psychiatric examination. She was referred to the hospital on the assumption that a sane Negro woman would not attempt to kill a black leader. Race was the main criterion which was used to determine her need for psychiatric help. In analyzing this incident, the question is not whether she was sane or insane or whether she had a motive to kill Martin Luther King, Jr. The more important question is why race was the first factor considered in making the diagnosis. Why did psychiatrists certify her as insane and commit her to a mental hospital for an indefinite term without regard to her motives for committing the crime? Szasz argues that a mental hospital is like a jail with the difference that the patient does not have the right to know why he is jailed or for how long. The important point, from the perspective of this present work, is that the woman must have had a motive and that it should have been of primary concern for mental health practitioners involved with her case to have discerned this motive. They might have found a political motive. If this were the case, those who were really behind the crime were protected in the name of "mental illness." Why did this "insane" criminal choose to kill and so successful a leader? Why did she happen to be a black woman?

These questions could be raised for the following reasons:

(1) In the case of assassination of a political leader, it must at least be considered that the assassin had a political motivation and was not merely a "crazy" individual.

(2) The assumption that a person of the same race as the assassinated leader would be unlikely to kill that leader for rational motives, is erroneous. There is ample historical evidence to show that political leaders have often been killed by people of their own race or even by

relatives who are either being used by other parties in conflict with the victim's orientation, or on the basis of personal motivation.[19]

The argument made here is that a closer analysis of political crimes would lead to treatment of the criminal on the basis of motivation and of an informed judgement on his or her sanity which precedes the recommendation of institutionalization. The political crimes have to be judged with the assumption that they are mostly planned in advance, and thus it would be possible for a criminal to feign mental illness in order to avoid harsher punishment. A criminal could also be trained to pretend to be mentally ill. This is especially true because mental health services are based on the diagnostic model. This was clearly suggested in Rosenhan's study, Being Sane in Insane Places, 1973 (see pp. 285-286 in this study). Having these arguments in mind one might suspect that a political system could use psychiatric institutions to cover up a political crime that might destabilize the status quo. It is suggested here that a better approach for dealing with political criminals is to begin with judicial steps before routing the criminal to the mental hospital, and even then the case should not be stopped. The real criminals have to be found by a continuous investigation in view of the assumptions presented in the aforementioned arguments.

Another case in point is that of Sirhan Sirhan who killed Robert Kennedy in 1968. Sirhan also was committed to a mental hospital and similar questions could be asked about his case: What motives were

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[19] King Faisal of Saudi Arabia was assassinated by a relative in 1975, and Said Hammeh, a P.L.O. representative in London, was killed by Palestinians who hold a different political ideology, in London in 1977. The first case was ascribed to mental illness, and the second case was ascribed to political motivation.

behind the assassination of a U.S. presidential candidate? Which parties benefited from the assassination of such a political leader? Speculations on answers to these questions might focus on conflicting interests in American foreign policy and Kennedy's views, or on internal power conflicts, or even on personal motives on the part of Sirhan. However, no one can figure out what exactly happened or who is behind such a crime.

In conclusion, psychiatric diagnosis seems to have the potential to be used in support of the political system. In the name of mental illness, crimes are committed and justified. Psychiatrists have to be aware of the fact that the diagnostic model is vulnerable to race and class-linked practices which would eventually lead to serve the social and political systems rather than to help the "patients." The point here is not to advocate the abandonment of psychiatric diagnosis per se, but rather to draw attention to the misuse of psychiatric diagnosis and its danger in covering up political crimes.

The medical model is potentially tempted to rely on diagnostic tests more than on the counseling relationship. This temptation might very often lead to misinterpretation for what the client is actually experiencing. It is for this reason that, "In current client-centered thinking it would seem that the use of tests in counseling would not completely be excluded, but their use may be somewhat limited as with other types of information" (Hansen, et al., 1976:93).[20] In this regard, this researcher argues, the only value that could be seen for these tests lies in the ability of the counselor to use them when they are chosen by the client and their meaning is perceived in the way the client relates to them. In other words, tests are to be viewed as special conditions upon which both the counselor and the client act upon in the process of creating a common field of meaning to certain psychological constructs.

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[20] J. Hansen, R. Stevic, and R. Warner, Jr. Counseling: Theory and Process. Boston: Allyn & Bacon, Inc., 1976 (5th ed.).

The medical model could be helpful in counseling and psychotherapy provided that it is modified to become less quantitative and more qualitative. It has to deal with the human being as a source of communication, not as a source of information. The aim of diagnosis should be to understand the human being rather than to describe and classify him. In this sense, the medical model should be used as a metaphor and not as a rigid scientific model.

Examples of Mental Illness:

In the previous section, criminality had been discussed as a behavior which is often classified or labeled as a type of mental illness. It was seen how the political system could use the psychiatrist to justify criminality in the name of "mental illness." Among the other examples that are classified as indicators of mental illness are, (a) suicide and (b) depression.

Suicide: Ravensborg and Foss (1969) study suicide by using three approaches -- (a) clinical, (b) psychiatric, and (c) sociological. They study reports of 275 deaths in Fergus Falls State Hospital, 27 by suicide and 173 by natural causes. These two groups were compared with a third group of current patients (N = 109). All these subjects were classified as troubled patients upon the time of their admissions. The Social Competence Scale, which consists of six factors (age, intelligence, education, occupation, employment history, and marital status), was used. MMPI's (i.e., Minnesota Multiple Personality Inventory) for the three groups were obtained from their files, where available. The available MMPI's which were filed cover: (1) 85% of the suicide group, (2) 13% of the natural death group, and (3) 55% of the inpatients.

Ravensborg and Foss found: (1) About half of the patients in each

group had been diagnosed as suffering from schizophrenic reactions and no significant differences among median length of hospital stay for the three groups were found; (2) There was no significant difference in rank of admission complaints. Among the three groups, depression was the major top ranking complaint; (3) It does not appear feasible to distinguish suicide from other patients on the basis of MMPI profiles; and (4) The social competence factor is found to be significant beyond the .001 level. The higher education and intelligence, the higher the rate of suicide. The younger the patient (25 age group) the likelier the rate of suicide. The semi-skilled were least likely to commit suicide, while professionals and managers had the highest rate of suicide.

These findings do not seem to be helpful in understanding the motives behind suicide, nor do they suggest that the diagnostic model is an efficient one for preventing intelligent individuals in high status positions from committing suicide. The findings suggest that a new model is needed for dealing with patients, one which is capable of sharing with the depressed the sense of loss of the meaning of life in order to provide new insight for reconstructing the ego-strength mechanism of unimpaired inner resources.

Bagley and Greer (1971) investigated the predictors of suicide in a study population of individuals who repeatedly attempted suicide. The study examined 204 attempted suicide patients admitted to a casualty department. Twenty-two percent of these patients were not referred to psychiatrists at the time of the attempt. Tracing these patients over a period of 18 months, it was found that only 3% of these patients attempted suicide and eventually killed themselves.

The study reveals a number of important findings: (1) There is a

positive correlation between psychiatric treatment and the reduction of suicide attempts. This finding indicates that psychiatric service is helpful in controlling suicidal tendencies in the patients; (2) The variables significant at the .80 level which were predictors of repeated suicide attempts are: (a) antisocial personality, (b) organic brain disorder, (c) previous attempts, and (d) membership of higher and lower classes (i.e., Class I to Class III).

These findings indicate that social conditions are underlying motivators of suicidal tendencies. The only variable which does not reflect interpersonal or social conditions is that of brain disorder. It appears from these findings that suicide is not necessarily an indicator of mental illness in the organic sense. It is rather a reaction to social conditions that are beyond the threshhold of the individual's tolerance. It might be due to cultural values more than any other reason. In Islamic countries the rate of suicide is significantly lower than it is in Western countries. This also might be due to the complexity of the social conditions of Western culture, a work culture in which man loses his self-worth and becomes a machine.[21]

Depression as a pathological symptom: If depression is pathological in the medical sense, then it should evoke the same pattern of responses and lead to the same consequences regardless of individual and cultural

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[21] The New York Times, March 7, 1980:A18, reports that a British group plans to publish a manual on suicide. William Border, in this report, describes the British group as dedicated to what it calls, "the right to die with dignity." The report says that the booklet was written jointly by lawyers and doctors and others on the Executive Committee of the British organization Exit, and is expected to have a preface by Arthur Koestler. The significance of New York's report on such a publication lies in its implication that suicide attempts are not to be viewed as cases of mental illness. Publication of such a book might encourage depressive people to commit suicide rather than seeking professional help in finding meaning for their lives.

differences. According to the medical model, depression should be like "flu" - once it hits the individual, he would have the same symptoms regardless of color, nationality or religion. And consequently, it should be curable by the same medication, or otherwise lead to death depending on how strong it is.

Depression is not an illness in the medical sense. It is a mode of reaction of the individual in cases of grief and loss. Depending on his ego-strength, cultural values and emotional support, the individual can recover from such a condition. Tega, et al. (1971) compare Indian depressives with British depressives, using the Hamilton Scale for depression. Their findings prove that there are cultural differences in modes of depression. These differences are seen in (a) somatic symptoms - Indian depressives express far greater frequency of these symptoms; (b) hypochondriac reactions are significantly more frequent among Indian depressives; (c) anxiety - Indian depressives are significantly more anxious and agitated than British depressives; (d) no significant difference in guilt feelings as a symptom that would accompany depression of both groups; (3) peripheral symptoms of obsession and paranoid features are significantly greater among British depressives than among Indian depressives. The last finding is attributed to Indian religious beliefs and social values. Such mystic beliefs are very unlikely to be fostered in Britain.

The major implication of these findings on depression is that modes of reactions are culturally learned. Thus depression is a situational function rather than a mental illness.

In concluding this discussion on diagnosis and social systems, several points should be reiterated:

(1) The medical model is misleading since it might fail to consider mental disorder as a situational function or a cultural outproduct.

(2) The various types of mental illness that were recognized by psychiatrists are not mutually exclusive. Thus treatment on the basis of disease classification cannot be helpful when it is applied in a rigid sense.

(3) Mental diagnosis is liable to be misused in explaining criminal acts and motives to support certain political power.

(4) The medical model of psychiatric diagnosis has the potential to develop stigma.

(5) The diagnostic model is normative and descriptive, it does not help in explaining or understanding the phenomena under treatment.

(6) The epistemological foundations of the diagnostic model are linked with the scientific movement, in which the logic tends to be closed and absolutist instead of open and relativistic.

UNIT III: Treatment of Mental Illness and the Social System

Once the individual is diagnosed as "mentally ill" he is apt to receive psychiatric help which is intended to cure him. This is a fundamental principle in psychiatric practices. It is also assumed that the ideology of mental health services should be based on helping the patient. The psychiatrist is supposed to be the agent of the patient, not the agent of the community or of the social-political system. This unit deals with the following issues:

(1) The ideology of psychotherapy and its relationship to the social and political system.

(2) The treatment modalities in mental hospitals and other facilitative institutions. This section deals with (a) types of available treatments and their relation to the social class position of the patient; (b) types of institutions and their relationship to psychiatric treatment and social class; and (c) attitudes toward mental health practices among patients and their families and psychiatrists' attitudes towards patients.

Ideology of psychotherapy and its relationship to society and political systems:

Szasz (1970) points out that the main feature of modern psychiatry is its scientific-technological ideology. This ideology claims that psychiatrists are capable of identifying mental illness, dealing with its causes and controlling its effects. Psychiatrists, like scientists, have the ability to understand "mental illness" as a phenomenon, predict its consequences, and design methods of controlling behavior. In short, behavior is considered observable, measureable, predictable and can be controlled. This ideology dehumanizes and victimizes the human being by exerting control over his freedom of choice. The psychiatrist's power lies in the use of the medical model, which uses diagnosis and labels patients, claiming the ability to cure without harming the patient. Psychiatrists claim that the medical model is value-free. Szasz argues that this claim is not true. There are certain issues such as birth control, abortion, homosexuality, suicide and euthanasia that still pose major problems in medical ethics. Szasz (1970:18) adds:

> Difficulties in human relations can be analyzed, interpreted, and given meaning only within specific social and ethical contexts. Accordingly, the psychiatrist's socio-ethical orientations will influence his ideas on what is wrong with the patient, and what deserves comment or interpretation, in what directions change might be desirable and so forth.

Szasz notes that, first, psychiatric ideology is scientifically and technologically oriented. Second, in the Western world the psychiatric social ethic is individualistic in nature. According to this ethic, a person who is harmless but is deviant is defined as mentally ill. He is to be committed to mental treatment and if he resists, this is viewed as a further sign of his mental instability. Third, psychiatric strategy is diagnostic in nature. Szasz believes that psychiatric diagnosis thus functions as a strategy of personal constraint especially since it leads to stigmatization which is detrimental to the individual's personal progress and development of his interpersonal relationships. These conclusions are consistent with this present work and its view of the linear logic limitations.

In this regard, Hurvitz (1973) maintains that the ideology of psychotherapy in the United States is congruent with the values of American capitalistic society. This ideology is a means of social control. The major points on which Hurvitz bases his argument are the following:

(1) Psychodynamic psychotherapy is based on the assumption that man is originally neurotic, and inherently aggressive and hostile. He is motivated by biological instincts. Accordingly, what needs to be changed is the individual, not the society.

(2) The ideology defines inappropriate behavior or emotional disorder as the "acting out" of putative, unconscious conflicts, such as, for example, the Odeipus complex, infantile sexuality, the death instinct. This indicates that the ideology avoids looking to the social system as a source of emotional disorder. Consequently the psychiatrist becomes an agent of the social system and controls rather than helps clients.

(3) The ideology identifes success with personal worth and failure

with the individual's inherent limitations.

(4) Adjustment is the major goal of psychotherapy. Therefore, the diagnosis of mental illness is essentially a political decision. Hurvitz (1973:234) notes, "Sirhan saw Kennedy as a 'replica' of his hated father, experts say." In the same vein, "The black movement in the U.S. is interpreted by psychoanalysts as 'black rage' and a good therapist helps a man change his inner life so that he can more effectively change his outer world" (Ibid.:225).

(5) The ideology is demonstrated in its practice. The client is encouraged to consider his own limitations rather than the social causes of self-defeating behavior. For example, women are treated in terms of psychoanalytic models of the Electra complex, penis envy and vaginal orgasm and made to believe and accept that they are inferior to men. They are not encouraged to see the social causes for their depression, and to accept continued discrimination against them.[22] Likewise, students who stage strikes on American university campuses are labeled sick by psychiatrists. Thus their motive for social change is denied and when it is recognized, it is identified as sick and not as a reaction to the limitations of universities. Political activists are also labeled mentally ill and some psychiatrists propose hospitalization for them instead of jail or public control.

In conclusion, traditional psychotherapeutic ideology is basically coercive in its function of social control. Its view of man is negative since it assumes that man is originally neurotic. Its goal is a limited one since it works toward adjustment and does not operate to develop the potential

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[22]This is consistent with Freud's theory of sexuality - see pp. 173-184 in this work.

of the individual as a unique entity. This type of ideology is congruent with a capitalistic individualistic economic-social system. Therefore, the psychiatrist in this ideology is the agent of the social system rather than the agent of his patient.

Siegler and Osmond (1971) defend the existing model of mental health practices in response to Goffman's Model of Mental Health.[23] They point out that Goffman unfairly generalizes that mental health services dehumanize patients, and mental hospitals, regardless of the orientation of psychiatrists who work in these hospitals, are concentration camps. They function as jails. Siegler and Osmond argue, (1) Goffman based his observations on deteriorating hospitals. This does not mean that the description applies to hospitals that function in accordance with the "right" medical approach. (2) Goffman's view that mental illness is a myth is a "conspiratorial" view. It deprives the patient of the right to be defined as mentally sick. This right would help him to get the psychiatric treatment. (3) The patient who is told that mental illness is a myth will avoid getting help.

The argument here is that psychiatrists are at their best helping patients to adjust and at their worst deteriorating them by stigmatization! Adjustment is needed for survival, but is survival all that the individual needs? Why should mental illness be seen inherent in the

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[23] Goffman is presented by Siegler and Osmond to have described mental health institutions as prisons and concentration camps. According to Goffman, mental health institutions are concerned with schedule hours and the shape of folding beds. Psychiatrists are involved in categorizing patients under various kinds of labels without paying attention to the role of labeling in inducing stigma upon patients. The mental health institutions are viewed by Goffman as the least intellectual institution. They hold no orientation. Thus, these institutions are portrayed to be all alike in their dehumanizing treatment of their patients. M. Siegler and H. Osmond, Goffman's Model of Mental Health. British Journal of Psychiatry, 1971, 119, 419-420.

individual? Why should mental illness not be regarded as the outcome of his social conditions? Why do psychiatrists avoid seeing the role of the political-social system in bringing about mental disorder, and consequently continue to label critical views as "conspiratorial"? The usage of the descriptive term "conspiratorial" seems to be consistent with the ideology of oppressing freedom of expression by labeling. It seems that pointing out the limitations of the existing paradigm raises a real scientific community crisis as Kuhn (1970) has pointed out. Siegler and Osmond would have done better to define the "right" medical approach which they are defending.

Treatment modalities and their social dynamics:

From the previous discussion on the ideology of psychotherapy, it could be assumed that the dominant models of treatment of mental illness aim at controlling the individual's behavior and helping him to adjust to society. This objective is consistent with the theoretical foundations of these practices.

Types of treatment: Hollingshead and Redlich (1958) identified three models or types of treatment that psychiatrists use in the various treatment facilities.[24] They are: (1) psychotherapy, (2) organic therapy, and (3) custodial care.

(1) Psychotherapeutic treatments: There are several types of psychotherapy that have different orientations and are used in different treatment facilities. Hollingshead and Redlich identified three types of treatment: (a) Individual psychotherapy - this is based on the

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[24]The various mental health facilities which are reported by Hollingshead and Redlich (1958) are: private psychiatric practices, private mental hospitals, state hospitals, Veterans' hospitals and psychiatric outpatient clinics.

orientation that a patient's difficulties will be eliminated through discussion and re-education. Psychiatrists with Freudian psychoanalytic orientations and who received psychoanalytic training tend to work with this treatment. Their aim is to reintegrate the total personality of the patient. A second group of psychiatrists who have psychoanalytic orientation but did not receive psychoanalytic training also function in terms of individual psychotherapy. Their aim is to deal with focal problems and not necessarily to totally integrate the patient. (b) Directive therapy - this treatment renders consultation, reassurance, suggestions and advice. However, it occasionally uses coercive measures and attempts to help the patient reach a cure through direct manipulation of his environment. Psychologists who use this approach are behavioristic oriented. (c) Group therapy - this is based on adaptation of the theory and techniques of individual therapy.

(2) Organic therapies: These include electro-conclusive therapy, insulin shock treatment, drug therapy and other organic treatments. These therapists are strictest in applying the medical model.

(3) Custodial care: This rests on the assumption that little can be done for a mental patient beyond providing him with a place to sleep, food, and physical care until he either recovers spontaneously or dies. Patients under this treatment plan receive essential medical care but do not receive specific therapy, even though their work in the kitchen, dairy, garden or shops may be a valuable therapeutic experience.

Aside from these three basic therapies there also exists a combination therapy that is mostly given to depressed patients. An example of this approach is the combination of analytic psychotherapy with two or three electro-convulsive treatments. The decision to use these treatments

was found often to be class-biased. Hollingshead and Redlich found that (a) upper class patients with neurotic disorders receive insight therapy. They are treated by private practitioners. (b) Neurotic patients of lower class origin receive organic therapy more often than other therapeutic treatments. Moreover, patients from the lowest class tend to be admitted to state hospitals and stay there for years without receiving effective treatment. In contrast, upper class patients receive effective treatment in private hospitals. (d) The availability of effective treatment is enhanced or blocked by the class position of the patient's psychiatrist. When it differs from that of the patient, treatment plans are not communicated to the patient. Patients in the lowest social classes are especially affected by this limitation. In the final analysis the researchers ascertain that latent social factors other than claimed medical criteria are influential in the determination of who is treated, where, how and for how long (Hollingshead and Redlich, 1958:253-303).

Hollingshead and Redlich found that expenditure on treatments is also class-linked. They found that the mean cost per day to the upper class patient is significantly less than that for the lower class patient. It was found that patients from higher classes were much more frequently given discounts than those from lower classes. Upper class patients stay for longer periods in private hospitals than lower class patients admitted to the same hospital. In clinics, the fees paid by middle and lower class patients are not significantly related to their class status. On the other hand, the cost to the clinic of treating patients is related inversely to class status. The clinic spends eight times as much treating each Class II (middle class) patient as it does each Class V (lower class) patient. Public expenditure on patients in state hospitals is related to

class position. This is attributed largely to the different level of usage of state hospitals by each class. Middle class patients are sent to the state hospitals as a "last resort," and usually only after their families have exhausted their resources in private facilities. The lower class (IV) uses the state hospital as a treatment center and as a place for custodial care. The state hospital is the one psychiatric facility available to lower class (V) persons who become so disturbed that they have to be separated from the community. Persons of Class V are usually not wanted by their families and are viewed as useless by their community.

In conclusion: The findings indicate that in each type of treatment, expenditure is affected by the patient's class position (Hollingshead and Redlich, 1958:chapter 10). One might argue that Hollingshead and Redlich's findings are limited to a description of mental health services in a specific community twenty years ago and that the situation today is more promising. However, the findings of recent research on the lower and working classes as well as on the racial bias in mental health care is striking in its suggestion that mental health services are not significantly better now than they were twenty years ago (Scheff, 1966, Rosenhan, 1973, Carkhuff and Pierce, 1967).[25]

Scheff (1966) showed that the higher the class of a deviant individual the more possible it is to get away with this upper class deviancy. Rule-breakers are protected by their social position, but when the deviant is from a lower class he tends to be committed and stigmatized. Once a mentally ill person has been stigmatized, he is rejected from the community and is repeatedly readmitted to mental hospitals. Rosenhan (1973)

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[25]Cannon and Locke's (1977) study suggests a similar picture. This study is one of the recent studies on racial discrimination.

described the dehumanization of patients in mental hospitals and showed that once the patient is labeled schizophrenic he cannot get rid of this label even when he is a pseudo-patient (see pp. 285-286). Carkhuff and Pierce (1967:633) showed that social class differences between client and therapist present communication barriers which do not allow a facilitative interpersonal process to take place.

Heitler (1973) reviewed literature on psychotherapy and its effort with lower and working classes and found: (1) Lower class patients seek help under extreme conditions, when their problems are overwhelming; (2) They are likely to drop out after the initial interview; (3) They are least likely to profit from psychotherapy when they remain in treatment; (4) Historically, the therapist has tended to find such patients unsuitable for psychotherapy. Heitler interprets these findings as based on the class differences of patient and therapist. The class discrepancy between the therapist and the patient develops a communication barrier. This interpretation supports Carkhuff and Pierce's findings in 1968. These findings suggest that mental health practices complicate the situation of the lower class patient rather than help him. The attitude toward these findings becomes: Why are poor people treated discriminately in a system which claims to aim toward equality and liberty? In fact it is expected that a free society negates discrimination not only in words but in action.

Morlarty (1974) investigated the impact of stigma on individuals who hold opinions which deviate from those of the majority. He conducted an experiment in which male college students exchanged opinions on the war in Viet Nam. Each subject was made to believe that he was in the minority on most of the issues but in agreement with one other group member. Two

variables were manipulated: (a) Stigma, which the minority member acquires from the direct reaction of the group. In this case the minority member was asked to give his opinion to the group which disagreed with him and belittled him. (b) Deviance - the subject is told that the majority of the group has a different opinion, but he is not exposed to group reaction. In both cases members were given standard stimuli to judge, or stimuli which were unlikely to be misjudged or to evoke a great number of variable responses. Then each subject was told the reaction of the group to his personal judgement. Results show that the stigmatized subjects were significantly more liable to change their judgements than the deviant group. This finding indicates that fear of deviance is not in itself strong enough to force an individual to change his feelings or judgement. Stigma is the main factor that brings about drastic change in an individual's self-confidence. The individual is stigmatized when his limitations, i.e., his behavior which deviates from the norm, are exposed to the public.[26]

Psychiatrists and all professionals in mental health services have to be aware of their own biases in dealing with their patients. Routh and King (1972) show that social class bias is often present in clinical judgements. They asked professional and non-professional judges to identify subjects who needed help. All subjects were given the same case description except for details on occupation and clues as to social class status. It was found that both professionals and non-professionals based their judgements on the class origins of the described cases. Middle class people were judged to more often be in need of help and deviant

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[26]This is a contradictory finding to Gove's (1970) findings reported in footnote 17 of this chapter (p. 308).

behavior was considered normal in lower class individuals. The interpretation of these findings is that judges tend to believe that lower class people tend to show more abnormal behavior patterns. They are expected to behave differently from upper or middle class people. This indicates social bias and allows to the possibility that help will not be given to lower class clients unless they are seriously deviant. This is consistent with earlier findings that lower class people, when they are identified as needing help, are mostly diagnosed as schizoid.

Among the other social biases common among psychiatrists is one against women. Abramowitz and Abramowitz (1973) conducted a study to clarify the role of political bias in clinical evaluation. Abramowitz and Abramowitz's (1973:386) hypotheses were: "When presented with bogus clinical data, professional counselors placed in the role to test an examinee would (a) more favorably evaluate the psychological status of a student testee perceived to hold a political orientation similar to their own and (b) more favorably evaluate the psychological status of a male than a female student testee." They found: (1) Leftism, regardless of the sex of the subject and of the examiner's political persuasion, tended to elicit less favorable clinical judgments than did rightism. (2) The sex of the testee was an important variable in the evaluation process. Women presenting leftist views were significantly more harshly evaluated than males, when evaluated by rightists. (3) There was not a significant difference between the evaluations of women and men when they were evaluated by leftists. These findings support the discussion on the ideology of psychotherapy. It indicates that political opinions have a potential to bias judgment in clinical evaluation.

From the discussion so far, the following conclusions can be drawn:

(1) The ideology of psychotherapy is basically to control the individual and assist him in accepting and adjusting to the socio-political system.

(2) The various types of treatment that are practiced in the U.S. indicate a view of man as basically bad, neurotic and irrational. The approach in these treatments is intrapsychic. The individual is the target of change rather than the socio-political system.

(3) Type of treatment, the kind of mental health institution, the cost of treatment and the attitude of the psychiatrist toward the patient is to a large part determined by the patient's social class position rather than the nature of the complaint itself.

(4) Lower class patients who are the most disturbed and most needful of mental health care are so because of their social and economic conditions rather than because they are inherently mentally ill.

(5) Research indicates that psychiatrists prescribe custodial care as a means of helping the community to get rid of deviants instead of helping the deviants learn to use their own resources in order to perform a role in the community.

(6) Patients who receive mental health services are commonly stigmatized thereafter.

It could be concluded on the basis of these findings that the medical model of mental health practice which is commonly used in the United States has drastic limitations in its ability to improve the mental health of the individual patient. Such practices tend to be more efficient as a method of social control. Educated people who fail to cope with the system often commit suicide, poor people who are oppressed by their financial or social conditions become "schizophrenic" and are

institutionalized for long periods. More dangerously, scholars who point out the limitations of the paradigm are labeled as holding a "conspiratorial" viewpoint. The following unit will present alternative models to the traditional medical model.

UNIT IV: Suggested Models of Psychiatric Treatments and Their Ability to Avoid the Biases of Existing Models

Literature review on the issue of alternative models for the diagnostic one gives rise to two possible models: (a) Remedial model, and (b) Preventive model.

Remedial Model

This model could be defined as one which basically accepts the medical model of mental health services but proposes certain corrections to reduce the original model's limitations. Among the limitations which are identified to be overcome by remedial models are the following:

(1) The basic limitation that was recognized is that the diagnostic model takes the lower class patients as their unfavorable targets.

(2) The medical model as it stands "could lead to the better or to the worse" (Truax, 1963:258).

(3) Schizophrenia is considered uncurable.

As to the first limitation, Heitler (1973) introduced empirical evidence that orientation programs for lower class patients are very effective in helping them to receive better psychiatric treatment. These anticipatory socialization interviews take the form of group therapy which precedes psychiatric help. The interviews are designed to prepare the patient to work with the psychiatrist on a cooperating basis. During these interviews the patients are familiarized with some of the social

values of psychiatrists in order to upgrade their ability to communicate with them. The patient acquires some knowledge of how therapists work. The model is developed on the assumption that preparing the patient to work with the therapist is fundamental for the development of the therapeutic relationship. It is argued that the experience of group therapy before treatment should enable the lower class patient to learn many skills and abilities that will help the psychiatrists to deal with him. A control group was used for comparative purposes. This group constitutes ordinary middle class patients who did not receive any training in therapeutic communication. The results of this experiment suggest that lower class patients who went through the anticipatory socialization experience have: (1) developed a readiness to communicate voluntarily; (2) increased in the amount of their participation as well as the quality; (3) become more initiative in their participation in the group. Patients who underwent anticipatory socialization were improved in their attitude to the psychiatrists; they became more ready to accept help and more favorably disposed toward psychiatrists. However, they were still rated as less likable by psychiatrists than the control group which was less active in communication. This indicates that the psychiatrist's attitude remains a detrimental factor to the therapeutic relationship. The weakness of this model, though it is workable, is that its ideology is still basically oriented towards maintenance of control over the individual. It shifts the responsibility for the therapeutic relationship on the client as he adjusts to the therapist and not the other way around. Moreover, if the interests of the client were at the forefront in this model it would have been proposed that the therapist get more training in relating to lower class values or problems.

Anthony and Buell (1973) discuss the "after care clinic" model. This model suggests that ex-patients be seen as out-patients by psychiatrists. This type of followup treatment would reduce the tendency towards readmission that is considered a phenomenon among discharged patients, especially ones who come from the lower or working classes. Anthony and Buell note that: (1) Ex-patients who attend after care clinics have a better change of remaining out of the hospital than those who do not. The investigators point out that the hospitals and after care clinics should work in close harmony to obtain the best possible results. (2) Results of this study indicate that after care clinics do not yield a differential outcome in dealing with clients of different class backgrounds nor on age or sex variables.

This proposal supports the idea that hospitals are justified in discharging patients before they are ready to be on their own. It seems to justify the limitations of current American mental health practices. The patient is the one who must compensate for the limitations of the psychiatric hospital. He is the one who pays for the after care clinic and suffers the consequences of psychiatric errors. A proposal is remedial but it is consistent with the ideological bias of maintaining the status quo. In this instance it is not the social status quo in general but the professional status quo in particular which is being maintained.

Graziano and Fink (1973) draw the attention of psychiatrists and mental health service agents to the fact that there is a second order effect of negative and positive nature in mental health treatment.[27]

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[27]The second order effects relate to the outcome of mental health practices which are not within the awareness of a therapist. They appear after the patient is discharged. A negative effect of this order appears in stigmatization resulting in a patient's reduced employment opportunities and social acceptance; while a positive effect might be seen in enhancing the vocational skills of the patient and in the development of a positive attitude toward mental health services.

The effects of first order are within the awareness of the therapist mostly when they are of a positive nature. Psychiatrists tend to deny the negative effect of the first order. Among the secondary errors, (a) labeling, and (b) fees and their impact on the economic life of the patient which might make his life more complicated than it was before therapy. The second order of a negative nature should be within the awareness of the therapist. In light of these findings, one might think that this could be corrected by making psychiatric help congruent with the social condition of the patient. His working hours, if he is an outpatient, his job conditions, his financial abilities and whatever else relates to him should all be part of the therapist's observations. Weinman, et al. (1972) showed that socio-environmental treatments are the most helpful in the case of schizophrenia, especially with elderly patients. Anxiety reactions are reduced with the application of this method of treatment. Generally, it was found that younger schizophrenics would be aided with desensitization and relaxation treatment.

In general the suggested corrections for the medical model are not significantly effective in eliminating the social bias, nor in allowing the therapist to function as a patient's agent rather than an agent of society.

Preventive Model

This model is based on the orientation of societal reaction. This orientation assumes that mental illness is situational function rather than inherent in the individual himself. Community psychologists advocate the preventive model on the assumption that what needs to be changed is social conditions and not the individual.

Levine, Sarason, Zax and Specter have all done research on this

model. Levine (1970), in A Social History of Helping Services, cites the settlement house movement during the era of reform (1890-1914) as an example of an innovative model of community mental health. This movement aimed at bridging the gap between the upper and lower classes, and thereby to promote the unity of society. The initiative was taken by theologians and intellectuals. The settlement houses were established in working class neighborhoods in several cities. Activities which were carried out in the settlement houses were relevant to the needs of the community. In many cases these activities were personal services. For example, "Jane Addams and Ellen Strand washed newborn babies, prepared the dead for burial, nursed the sick, acted as midwives at the birth of illegitimate babies, and took in a fifteen-year old bride who was desperate to escape the nightly beatings administered by her husband" (Levine and Levine, 1970:88).

The major features of settlement houses that emerge from Levine's description are as follows: (1) They were developed as the result of a motive for reform. This motive was developed in the context of social events. (2) The target population was the working class, the victims of industrialization. (3) Ethical commitment is a necessary condition in implementing any kind of help that aims at reducing the sources of stress and developing positive mental health. (4) Operationalization of ethics requires involvement in the problems of those who need help; and (5) Professionals who are involved in reform and preventive programs must possess an outgrowing knowledge that is open to testing reality and reshaping its function on realistic grounds.

This example from American social history gives further credence to Sarason's (1974) argument for the concept of a psychological sense of

community and his criticism of current mental care programs and the role played by universities. Zax and Specter (1974)[28] discuss the bases for opposing community and preventive approaches that are revealed in reports like that of the Joint Commission of Mental Health which was established by President Eisenhower in 1955. Also the report of another commission that was asked by Nixon in 1970 for the same purpose of the first one. Though the second commission did not oppose prevention like the first one, it did not support it. It put the treatment of the mentally ill as the first objective and almost the main one (Zax and Specter, 1974:315).

Criticism of the preventive approach has taken the following task:

(1) Lack of sufficient knowledge to establish preventive programs. The argument against this objection is that it is a manifestation of "professional preciousness" that represents fear of taking risks and prevents innovation in practice. It is mostly due to the dogmatic scientific orientation, which proved to be not efficient in bringing better community health.

(2) The programs require several changes which it would be impossible to bring about. According to Zax, this argument goes to the extreme by describing social change in terms of abolition of all injustices, discriminations, economic insecurity, poverty, slums and illnesses. The Commission Reports accept these injustices on the assumption that it is impossible to eliminate them all. This argument is thus self-defeating.

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[28] M. Zax and G. Specter. An Introduction to Community Psychology. New York: John Wiley & Sons., Inc., 1974. Zax and Specter are advocates of community clinical psychology in the preventive model, by creating conditions for individuals to develop a psychological sense of community. In fact, Zax and Specter might in the future be considered founders of a new approach, a new outlook that makes use of previous traditional theories and finds a way of ridding them of their limitations.

(3) Preventive programs invade personal privacy. This argument would be challenged by the fact that preventive programs, as witnessed in the early period of social services, were not only considered acceptable but were desired by people. People receiving preventive help would feel their own self-worth and not see it as an invasion of their privacy. Their self-worth is damaged by "traditional status quo" programs.

(4) Objections based on social needs for winners and losers. This objection could be argued by the fact that workers in the settlement houses were not deprived from their motives to be promoted. On the contrary, the evidence proved that they were motivated and were able to be raised from slums into the social ladder, becoming educated leaders.

(5) Objections concerning treatment and theoretical views of causes of behavior disorder and the threat to the professional's role. All these objections could be argued on the assumption that once mental care becomes community oriented there would be no place to raise these questions (Zax and Specter, 1974:316-334).

It could be added to the Zax arguments against the Joint Committees of Mental Health that in all these objections the concern was not the potential of preventive models to be helpful to community or the individual's mental health, but rather professional and administrative financial problems and, more significantly, rigidity in viewing things on the basis of present orientations. Officials cannot see the value of a program in terms of the future, they want to see that it is workable now. Such arguments prove beyond doubt that the professional mental health models are given to protect the socio-political system more than to help the victims of this system. Preventive approaches are far better in their ideology and might be in their functions in dealing with the real

sources of mental health problems. Their major assumption is that: mental health develops through a process and is not a byproduct function of diagnostic medical treatment.

Morrison (1970) describes the group dynamics of neighborhood workers in a black ghetto community action program where a white psychiatrist was group leader. Among the most interesting observations he makes: (1) The members of the group expressed suspicion concerning the confidentiality of the group. They feared losing their jobs. Their anger was directed first at other group members and then toward the directors. (2) The expression of anger toward the directors was a turning point in the workers' ability to experience themselves especially after the period of confrontation. (3) Workers became less inhibited in expressing their feelings and more positive in their attitudes to each other. (4) The experience developed their ability to see their potential to upgrade their skills in dealing with their working and social conditions. (5) The feeling of being a member of a majority helps one to express oneself. This last finding is seen in the social interaction of the whole group on one hand and the white leader on the other. The gap between the leader and the group was reduced and finally bridged as the result of direct interaction in a social situation that gave the participants a feeling of security.

Newman (1970) proposed a model for providing rehabilitation services within a community mental health program. His model consists of (a) job placement at the start of the rehabilitation process, (b) extinction of inadequate social-vocational behavior and shaping of appropriate work habits and interpersonal skills, (c) use of nonprofessional leaders directing work-related activity groups. This model starts with placement,

followed by continuous feedback (evaluation) and finally with training. The new thing in this model is the emphasis on immediate job placement. This satisfies the immediate need of the worker. The preventive mental health model and its consequences for treatment seems to depend on the inner resources of the individual. It gives the recipients of such help the opportunity to develop a psychological sense of community programs. In contrast, the medical psychiatric model isolates patients from the community during their stay in mental hospitals and after their discharge, with the result that they become stigmatized and find better refuge by going back to the hospital.

Love, et al. (1972) demonstrated that prevention is the most effective clinical intervention in dealing with disturbed children. Parent counseling rather than direct child therapy and "information feedback" therapy when used for lower class children is more efficient. Even middle class children benefited from parent counseling more than they did from child therapy. Moreover, the significance of this study to the preventive models lies in its emphasis on preparing parents to help their children. Parents are the major actors in a child's social life. In that sense only this study is consistent with the preventive model.

From the above discussion it would seem that there is a need for evaluation techniques on the basis of which the therapist or mental health helpers make their judgements. Robinson (1963) points out that there are four methods of evaluation, in the diagnostic models, for the purpose of selecting the relevant counseling method: (1) The case study approach which aims at finding cause-effect relationships; (2) The strengths and weaknesses identifying approach that aims at developing the client's strengths and remedying difficulties; (3) Identifying the

style or the model of adjustment approach that aims at understanding the client's style of response and predicting the expected type of adjustment responses in similar situations; (4) The moment-to-moment diagnostic approach, in which the counselor identifies the client's different purposes at different times as these purposes develop during the counseling relationship. In this last approach the counselor is presumed to be aware of the many different types of learning patterns that are available to a client.

The moment-to-moment approach is most likely to be taken by psychologists with a humanistic existential orientation. In this regard, Frankl (1974:206-207) says:

> Man does not simply exist, but always decides what his existence will be, what he will become in the next moment. By the same token, every human being has the freedom to change at an instant. Therefore, we can predict his future only within the large frame of a statistical survey referring to a whole group; the individual personality, however, remains essentially unpredictable. The basis for any predictions would be presented by biological, psychological or sociological conditions. Yet one of the main features of human existence is the capacity to rise above such conditions and transcend them. In the same manner, man ultimately transcends himself, a human being is a self-transcending being.

The problem of evaluating the ability of any model to make predictions seems to be central for the social and behavioral sciences in general and counseling in particular. However, recognition of the fact that the human being is not predictable in any absolute sense and that he or she is in a continuous process of change necessitates a new outlook toward evaluation. One suggestion which has been made along this line is that of involving the client as a co-evaluator. Fischer (1970) suggests a co-evaluation method in which the client and therapist discuss their perspectives on the testing situation. Moreover, he adds that tests,

whether in written or oral form, must be worded in everyday language. The findings or results of evaluation should also be reported in everyday language. The client in this model may participate in the entire evaluation process, including the selection of questions that will be asked, the answers he makes and the meaning of his responses. In other words, the evaluated person is also evaluator at all levels. This model suggests that evaluation can be a process of learning and sharing, and thus insightful for both the evaluator and the evaluated. Fischer's model of evaluation is consistent with client-centered counseling for the following reasons: (a) The client has some control over the counseling situation in the sense that he experiences the environment in his own way and always co-constitutes the meanings of his relationships. The client is able to experience things from his own perspective and share them freely with his counselor or tester. (b) This model of evaluation allows the expression of the individual's multidimensional perspectives as he or she is changing through the process of development. (c) The client is able to conform or to vary from his evaluator's views, and (d) The client has some input into evaluation which is especially important when evaluation reports, with their official statement of the client's progress, are often forwarded to other people who might affect his or her life. Fischer argues that the client should be consulted on to whom the report should be sent and on the form in which it should be written. Fischer's model is thus consistent with an open viewpoint of man's nature. Although his model might appear to be impractical to professionals holding the deterministic viewpoint, the model is in fact the one which is most coherent with the nature of man. However, professionals who adopt this model would have to be optimistic and almost

value-free.[29]

Foulds and Gazda (1966) study the effect of test interpretation on the change of self-concept. It is assumed that change in self-concept is the outcome of the counselor-client relationship. The study investigates the differential effect of methods of interpretation upon self-estimation. Foulds and Gazda analyze three methods of interpretation: (1) Interpretation through individual interviews, (2) interpretation through small group discussion, and (3) interpretation through written reports. The subjects were female college students who were tested on ability and personality. They were divided into three experimental groups, according to method of interpretation, and one control group which received no interpretation at all was also established.

Foulds and Gazda's findings indicate that, (1) for all the variables which showed significant impact upon the change in self-estimation, no significant decline in accuracy of self-estimate was noted in these subjects afterward (i.e., for a period of eight weeks' followup); (2) the change in self-concept and concept of others was not significantly different for any of the experimental groups nor the control group; (3) subjects who received individual interpretations evaluated the interpretation as significantly more complete than those receiving more group or written interpretations.

The significance of these findings is that interpretations which are given on individual bases, while they do not cause a change in self-concept, are viewed as more complete than other forms of interpretation.

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[29] Co-evaluation is recommended for use in educational settings along with the student-centered model which would be elaborated in chapter 5 of this work.

This suggests that clients appreciate being dealt with as individuals and that the possibility of change in self-concept might be raised if these individuals were given the chance to be co-evaluators during the interpretation process. However, these findings are based on the experimental method. Thus there is a chance that different results would be found with a different method (see Popper's discussion on the experimental method on pp. 49-52 in this work).

Broadly speaking, it seems that in any model of mental health practices, professionals encounter ethical issues over: (a) Who they are serving, (b) how they evaluate their clientele, and (c) the extent to which their practices are value-free. However, it might be argued that mental health professionals might take an unethical stance without intending to do so. In this context, Schwebel (1955) identifies several courses of unethical practice in counseling. He notes that: (1) Self-interest can cause unethical behavior and practice. The difference between unethical behavior and unethical practice is, the former is intentionally carried out when the therapist has full awareness of the code of ethics as defined by the American Psychological Association (APA) and/or the American Psychological Guidance Association (APGA). Unethical practice refers to unintentional violation of an ethical code without knowledge of its consequences. Such unethical practices may be motivated by (a) desire for personal profit, (b) need for self-enhancement, and (c) need to maintain security or status. Schwebel argues, the last motive leads to unethical behavior and unethical practice, since a therapist with a personal involvement presumably would reflect this in his practices. (2) Unsound judgement due to inadequate training and/or supervision or due to poor selection of therapeutic techniques.

It is argued here that unethical practices in mental health services are essentially inherent in the epistemological foundations of theory building by which practitioners are trained to manipulate their clients to maintain the status quo instead of helping them to develop to the best of their potential. According to this argument, even preventive models could be used for the purpose of maintaining the status quo instead of being client-centered. In other words, what makes the difference in mental health practices is the theoretical orientation and the value system to which the practitioner subscribes.

To summarize this discussion of alternative mental health practices models, the following points can be made:

(1) The major thrust of any alternative model should be the improvement of conditions for lower and working class patients.

(2) Remedial models are crippled because they are built on the same ideology that gave rise to the existing models and thus have the same limitations in their intent to maintain the status quo.

(3) The ability of community psychology in its preventive model to free itself from political intervention is doubtful for the following reasons: (a) neighborhood programs as they function these days are mostly state-funded. Any program that does not have independent financial resources is liable to be trapped by the political system. The settlement houses movement was financially independent but collapsed as an innovative movement when it became financially dependent; (b) it is unlikely that the service personnel in such programs will have been trained to hold a deterministic view of man.

In short, it seems that the traditional models of mental health practices perpetuated their epistemological foundations in the new

alternatives; moreover, the crux of the problem seems to lie in two major issues: (a) the mind-body problem on one hand, and (b) the problem of individual change versus socio-political change. These two issues are not resolved in the scientific theory of psychology, nor in the practices of such theory. What is needed is a new model of man, one which could account for individual change and the socio-political system change in a coherent pattern which follows the natural laws of transformation rather than the rational laws of control.

Conclusion:

The focus of the previous discussion was on the impact of the socio-political system upon mental illness. The detailed argument that was presented showed the various dimensions of the available, the possible and the desirable models of mental health.

The available mental health services are crippled by their submission to political ideology. This ideology negates freedom of choice and equality of growth opportunities. The ideology is justified through the scientific-technological myth. In the name of being scientific, objective, professional, expert, the psychiatrists become agents of social control. The mentally disturbed are doomed to stigmatization.

The possible mental health model is the prevention model. It has the potential to help the victims of industrialization and bring about a community psychological sense. It provides situational conditions that bridge the gaps among classes. Unfortunately, however, this model too is unable to stand on its own feet without the support of the socio-political system.

The desirable model encourages cooperation among all related

professions in the field of mental health on one hand and community reforms on the other hand. In this model, a synergistic view of man will be presented to describe the dynamics of the individual's transformation under various existential conditions. It is a model of transcending the reductionistic orientation of the diagnostic model of counseling and psychotherapy, a model in which labeling has no existence and instead professionals deal with their clients through a genuine insight of exploring their existential universe. Clients then are reciprocated by their counselors as systems of a holistic nature. The social and economic conditions of these clients are viewed as sub-systems of one existential universe upon which he or she acts actively. With this model psychiatrists become the agent of both the individual and society. Psychiatrists become active participants in the maintenance of justice and human rights, and the creation of a society where everyone helps to contribute to the general "mental health" and overall societal progress. This radical model makes a Gestalt-switch in which the change elements are viewed as input of the synergistic principle of transformation which is intrinsic in the individual's system. This model would take care of two types of human needs: the need for conformity in its psychological sense of community, and the need to vary in the sense of being creative and open for change. The criterion of mental health would then become the harmony of opposites: in conformity and separateness, in leader and follower, in passivity and dynamism, relaxing and producing tension, and so on. The healthy individual according to this model constantly transforms from an initial point of being/becoming. Man becomes oriented toward making genuine decisions. Man's decisions become his own free choice.

The following chapter will present a model of man as an open system,

a model that will assume the responsibility of solving the mind-body problem, the problem of linear logic in scientific discovery, and the problem of manipulation of man's freedom in relation to the process of communication, individual change and socio-political change. However, such responsibility must be viewed within the perspective of the transformation of the theory of knowledge. In other words, the model is not to be viewed as new in any absolute sense, but rather as a conceptual transformation of existing knowledge which aims at transcending the limitations of the positivistic deterministic view of human nature.

CHAPTER 5

An Alternative View of Man and The Universe: A Synergistic View of The Unifying Flow of Energy of Man and The Universe

Introduction:

Man and the universe is of vital interest to all scientists in their conceptualization of events as they take place in nature. This is true of all theory building whether the theorist expresses his or her view of man and the universe explicitly or whether it is implied in their assumptions, hypotheses and/or approach to scientific investigation, as well as the interpretation of findings. In other words, there is no theory in any field of knowledge which is completely free from the theorist's view of man and universe. The systemic analysis method which is used in the study of the logic of scientific discovery in chapter 2, and for the examination of the epistemological foundations of psychological theory in chapter 3, suggests that there are two major views of man and the universe. The first is the closed systems view and the second is the open systems view. Chapter 2 of this work concludes the discussion on scientific discovery with the establishment of a set of criteria on the basis of which one can differentiate the closed systems from the open systems view. It was pointed out that the closed systems view is characterized by linear logic which assumes that events take place in nature as the result of efficient causality. Efficient causality means that there is an orderly sequence such as a cause-effect relationship, where "a" leads to "b" provided that everything else is constant. Consequently, a scientist who holds this view of causality sees man and nature as being in a

state of order and assumes that a state of disorder is not natural, and that man thus constantly strives to reconstruct his relatedness to the environment in accordance with natural laws (i.e., in an orderly manner). Scientists who hold this view do not account for teleological causality or purposefulness as a force of motion which is especially significant for living systems in their process of adaptation. This closed systems view assumes that time and space are static, and thus any event could be replicated under similar conditions which caused the event to occur in the first place. Association principles of temporal and spacial contiguity are seen as central for describing, explaining and predicting the occurrence of natural events. Accordingly, scientists with a closed systems view build their understanding of the nature of man on what they observe without accounting for the subjective element which is inherent in the process of observation. It has been pointed out in this work that the empirical scientific paradigm holds a closed systems view. The scientific paradigm is mainly one-dimensional, its reference is the objective reference, its data are sensory data, and its interpretations are based on linear logic.

An open systems view utilizes a multiplex logic which accounts for the interactive relationships between the external world (objective reference) and the internal world (subjective reference) in the form of unitus multiplex. This type of logic is open systems in nature because it views natural events not only in an orderly pattern but also as possessing a natural dynamic force of disorder. Scientists who hold this view thus account for the subjective element and base their understanding of natural events on the assumption that time and space are dynamic and involved in a continuous process of change which is relative to the

various factors that are dynamically related in the arrangement under which the event takes place. Causality, according to this view, is both efficient and teleological, and these two types of causality are interactively related in the manner of the push-pull force within which the behaving organism functions. Thus scientists who hold this view explain nature not only on the basis of "empirical data," but also by utilizing the intuitive meaning for these data which they understand through their insightful and subjective relation to them.

A systemic analysis of the epistemological foundations of psychological theory shows that such theory by and large tends to fall within the closed systems view. The core principle of explanation which various founders of psychological theory used was the associationistic law of temporal and spatial contiguity principles. Their reference is the objective reference and their view of man and the universe presumes the "orderliness" of nature. The regularity principle of causality dominates the conceptual web of psychology. Chapter 4 suggests that psychologists continue to rotate around the traditional Aristotelian principles of association and around its erroneous offspring assumptions in the empirical paradigm, that the individual's experiences are sensory experiences of objective reference. As long as this is the case, psychologists and professionals in counseling and psychotherapy will continue to function to maintain the status quo rather than to help improve human conditions and thus be agents of "progress" and change in the evolutionary sense.[1]

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[1]Along this line Harre and Maden (1975:1) have ascertained, "There can be no doubt that the Humean conception of causality and its linear descendant, the Regularity Theory, must be wrong. . . . if an adherent of the Regularity Theory and its siblings is troubled by the continual revelation of disparities between what that theory claims ought to be the case in science and nature, and what actually obtains, then we are confident that in joining us he has nothing to lose but his dogmatic scales" R. Harre and E. H. Maden, Causal Powers: A Theory of Natural Necessity, Totowa, New Jersey: Rowman and Littlefield, 1975:1.

It is argued throughout this work that there is a need for a model of man which is coherent with the dynamic nature of the human being. It is proposed that such a model would account for the dynamic properties of an open system. This model would be capable of breaking through the artificial dichotomies which are imposed upon human nature by the empirical scientific paradigm. Among these dichotomies are those of the mind-body, the metaphysics-physics, subjective-objective worlds, woman-man, freedom-determinism, order-disorder, heredity-environment, conscious-unconscious, affect-intellect, rational-irrational, etc.

The previous chapters have suggested that an alternative view of man requires a search for a synergistic principle which unifies the flow of energy within man as one unit as he relates with the energy of the universe. This view can be articulated on the basis of the following assumptions:

(1) The ontological nature of reality involves dynamic exchange or order-disorder in a dialectic pattern which negates the existence of an orderly pattern in any absolute sense inasmuch as it negates the existence of disorder in the form of complete chaos. Disorder is viewed as a dialectic mechanism for the dynamic interplay among the various sub-systems within a given system, a condition which enables the system as a whole to expand its negantropy in a dynamic ontological manner. This view is inferred from the physical science notion which states that everything in nature is in motion, even within the non-living systems.

(2) Living systems differ from non-living systems in the degree of orderliness in the arrangement of the various sub-systems within the system as a whole. Accordingly, objects which are described as "static" are perceived to be so relatively speaking in relation to other systems whose

composite structures are of a less degree of orderliness as compared with these "static" objects. In other words, what makes a given object "static" is the degree of orderliness in the arrangement of its sub-systems, the most indivisible sub-system of which is the energy flow. According to such a view, any system which approaches an "absolute" degree of orderliness in the spatial and/or temporal arrangement of its substructures, ceases to exist in any form of motion. Since according to quantum theory there is no matter without energy and no energy without matter, it follows that a state of complete orderliness in the absolute sense is a hypothetical state and thus static systems in the absolute sense do not exist in this universe. For this reason it is believed that a state of disorder is inherent in nature in the same way as the state of order. In fact both states of order and disorder are necessary and sufficient conditions for a view of dynamic and natural causality in this universe at all "levels" of any change in micro or macro systems.[2]

Since both order and disorder form a "tao"[3] of an ontological reality then it follows that any view of man and/or the universe which assumes a

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[2]"Levels" is used as a descriptive term in this work for lack of adequate terminology to describe the dynamic nature of evolution without assuming hierarchical connotation. According to the synergistic view, any point of transformation which is achieved at a certain time and space could be described as a point of transformation in terms of change without necessarily implying improvement in a quantitative or qualitative sense sense. Both micro and macro "levels" according to the open systems view, follow the same natural principles in their behavior which is defined as a synergistic principle of pursuing order within disorder in the similar manner of creating conditions for the emergence of disorder when order crosses the optimal in degree of orderliness which is necessary for the continuity of motion.

[3]See p. 55 in this work for the meaning of Tao. According to the taoist view, "The yang returns cyclically to its beginning, the yin attains its maximum and gives place to the yang." In this is the main principle of Taoism, a principle of rotational symmetry of yin and yang in which each attains its maximum and returns cyclically to its beginning. Each contains the seeds of its opposite (Capra, 1975:Op. cit.,:9).

regularity explanation without considering the role of the irregularity principles in man's behavior and man's relatedness to the universe is misleading and carries within it a misconception in understanding the nature of things as they exist. Accordingly, a synergistic view of man and the universe accounts for the dynamic interplay among the various sub-systems in any given system and views any system as a whole as a sub-system within any other system to which it relates with a certain positional value of being a group member. A group as such is a sub-system in a community and a community is a sub-system in a given nation and a nation is a sub-system in the international system. This system - sub-system arrangement, however, is not hierarchical in its interrelatedness but rather cyclical in its evolution in terms of its positional value in this universe. What is viewed as a sub-system in relation to one thing is inherently a system in relation to its own composites (or structure-functions of its sub-systems). Therefore, in a systemic analysis there should be a continuous awareness of treating the system under investigation on the macro level as well as on the micro level.

(3) The nature of matter-energy as described in quantum theory is the best analogy for describing the unitas nature of mind-body, physics-metaphysics, or structure-functions of any behaving organism. Accordingly, a synergistic view of man accounts for the nature of energy as it transforms from one form to another and takes this transformation as a principle of explanation for the change in the behavior of the organism. A dynamic view of man and nature in terms of matter-energy interplay, assumes that the only thing which is constant in nature is change.

(4) Change in this work is a process of transformation in both the observed and the observer. It is the product of the synergistic principle

which randomizes the structure-functions of a given system as the dialectic interplay of order-disorder takes place within the system as a whole and between the system and its supra-system in the environment. The change process as such is the output of the transformation of energy flow within the sub-structure-functions of the system and its own "task-environment"[4] within which it functions. Change is, therefore, a process that is explained in terms of negantropy which is a fundamental property of an open system.

Antropy is defined as a state of complete orderliness or complete chaos. Since neither a state of complete orderliness nor of complete chaos is possible in this universe, the state of chaos is viewed as an equipotentiality for a new form of order, and a state of order which approaches the optimal point of restricting the flow of energy is an equipotentiality for a state of chaos. Thus it follows that an open system is characterized by a state of homeostasis which is a dynamic steady

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[4]This term is introduced by Dill (1958) to describe the organizational environment. It is defined as that part of the total environment of management which is potentially relevant to goal setting and goal environment. It consists of inputs of information from external sources. However, these inputs do not represent "tasks" for the environment. By task Dill means, "A cognitive formulation consisting of a goal and usually also of constraints on behavior appropriate for reaching the 'goal.' The difference between 'task environment' and task is that by studying task environment the focus is on the environment as stimulus to which the organization is exposed. While the 'tasks' are the interpretations of the organization to the environmental inputs as to what they mean for the organization behavior. However, these interpretations are subject to errors of perception and to the bias of past experience." W. Dill. "Environment as an Influence of Managerial Autonomy." Administrative Science Quarterly, 1958, 2(4), 411.

Task environment is used by this researcher in a similar sense except that the interpretations which the individual gives to the input in the environment is not viewed as error or constrained by biases. It is rather seen as a subjective way of perception which makes every individual's environment uniquely his own environment. The environment is described task environment in the sense that the individual acts upon it in his own way of perceiving its elements in a meaningful way (i.e., in relation to his own goals at the time of acting upon it).

state of change. The dynamic steady state of change assumes that the various sub-systems in a given whole are randomly arranged rather than arranged in complete order or in complete disorder. The steady state property of an open system allows for the process of transformation which is defined as the process of rearrangement of the sub-systems or the structure-functions within a given whole. Transformation as such explains the change in the positional value of the structure-functions of a system. Transformation then is directed towards the reconstruction of the system and thus it produces a change in its behavior and/or in its positional value as a whole system in relation to other systems in its universe. This property of purposefulness in the transformation process explains why any behaving system is in a continuous process of change.

(5) The purpose of living systems in general and human systems in particular is to maintain the dynamic steady state of change or the homeostasis of its flow of energy as it exchanges energy with its own environment. Homeostasis is a property of an open system which is in contrast with the property of equilibrium in non-living systems, which are relatively of a closed nature. The description of homeostasis in terms of the exchange of energy flow among the various sub-systems on one hand and between the system as a whole and its biospheric environmental system on the other, is coherent with the synergistic nature of man and universe. Consequently, purposefulness is neither separate from efficient causality, nor an input or output of its occurrence. It is in fact concurrently interrelated to efficient causality. This assumption explains the natural causality of ontological reality in a multiplex logic rather than relata, or linear logic. In other words, what is being said here is that the spatial and temporal arrangements of the sub-systems within a

whole is a necessary condition for the motion, but this condition is not sufficient for the occurrence of motion. Unless the spatial and temporal arrangements of the sub-systems are concurrently interrelated with a core principle of purposefulness for the system as a whole, the motion of this system does not take place in any form of behavior which has a holistic characteristic for its motion.

(6) The adaptation process is a dynamic process which follows a synergistic principle of energy flow. This view differs drastically from the traditional view of adaptation which has been described in terms of tension-reduction by the empirical "scientific" psychologists. The assumption in this regard is that the ontological nature of the behaving organism is a simultaneous interplay of tension-reduction and tension-production, where one state creates an equipotentiality for the occurrence of the other. According to this view what is identified as tension reduction for a given sub-system is tension-producing for the other sub-system. The dominance of one state over the other is viewed as a transformational point of a leading positional value at a given time-space domain. It is also a form of readiness or equipotentiality for transformation into a positional value of its opposite. Consequently, the same sub-system carries within itself an equipotentiality for the behavior dynamics of its opposites as it changes its positional value in relation to other systems and to the system as a whole. This explains why as one eats, the stomach which has experienced tension-production because of lack of food is experiencing tension-reduction while at the same time another sub-system is building up a tension-production state over lack of water, or desire to sleep or relax, etc. However, in none of these sub-systems is tension produced or reduced without the entire sharing of the

whole system in deciding the positional value at which this function will occur. Therefore, it is assumed that the interdynamic relationships in exchanging energy within the system are not diadic, but rather multiplex since there is no linear continuity in any exclusive sense from the holistic relationship. It is the thesis of this work to point out that when a sub-system has a leading positional value at any given point in time, it dynamically relates to all other sub-systems individually (in various degrees of relatedness) and to the system as a whole synergistically. For example, when a member of a given group is in a leading positional value he is thus because the dynamics of all members of the group have produced a sharing experience in relation to this leader which is coherent with what this leader can do for the group's adaptation within and beyond or outside its structure. Thus when it is postulated that a sub-system in a leading positional value has the equipotentiality of giving up its position to another sub-system of its own opposite "nature" at that point, it is meant that the emerging sub-system is synthesizing the flow of energy of the whole group to change its positional value from being a follower into becoming a leader.

(7) According to the previous assumption it is inferred that a state of being has within it the equipotentiality of its state of becoming. This view of being-becoming in describing the human system as an open system both on the micro and the macro levels assumes that the time-space domain is dynamic and relativistic. Consequently, the existentialists' question of essence and existence and which one precedes the other is solved. The concept of being-becoming in its synergistic sense dissolves the hierarchical conceptualizations of essence and existence and unites them in one dynamic whole of an ontological nature which encapsulates

both essence and existence at each point of transformation. Consequently a view of man and universe as an energy-matter metaphor dispenses with any sequential pattern or hierarchical structure for the occurrence of events or of viewing one step as a prerequisite for the occurrence of another. In other words, the view of being-becoming in the synergistic sense does not categorize events on a linear scale of time. Time is viewed as relativistic to the event which is occurring, and thus it is not treated in any static sense of before, now and after. In describing the present, in fact, one is describing a point of transformation of multi-dimensional events which carry within this event an equipotentiality of its future. Thus past, present, future are arbitrary descriptive terms for time in terms of a referral point of transformation rather than in reference to a quantified "crude," "objective" reality. The indivisibility of being-becoming, essence-existence is the core mechanism which assumes the responsibility of maintaining a constant change in the flow of energy which unites the being with its becoming and the essence with its existence.

(8) The more complex the system is, in its structure, the "more" dynamic the flow of energy would be and the "greater" the possibility of change in the structure-functions of the system and in its behaving nature. Through this view one can reach a more coherent understanding of the principle of evolution. The evolution principle describes the transformation of species from simple into complex and it also describes the process of composing and decomposing on the micro and macro levels. This is coherent with the view of differentiating the non-living systems from the living ones which was pointed out earlier. Non-living objects are so because the flow of energy in their particles is restricted by a state of

orderliness which has reduced the state of motion to an invisible degree and such objects are thus perceived as static. Non-living systems, therefore, are of less complexity and less dynamic than living systems because of the state of orderliness of their composites. Thus what decides the complexity of a system is not the number of its sub-systems alone but rather the random arrangement of these sub-systems. Consequently, the synergistic principle is manifested in the degree of randomness of the flow of energy in structure-functions. The synergistic principle is the organizing mechanism on its phenomonological dimension and a disorganizer on its equipotentiality or latent dimension. This is the case because it is believed that any mechanism which does not have the equipotentiality of its opposite would never be able to perform its function dialectically. According to this principle of equipotentiality the human being has a complex structure-functions of all sub-systems in this universe. Thus the human system has within it the structure-functions of the animals, the plants, the planets and the various elements from which the universe is composed.

(9) Based on the previous assumptions, it is further assumed that the human system has the equipotentiality of the whole universe within its structure-functions. Thus it could be argued that the energy of the universe is within the human being. However, no human being has reached the transformational point in which all of his or her sub-systems have been explored and reconstructed to a point of utilizing all their equipotential energy. It is assumed that by the time the human being reaches such equifinality, man and universe will become indiscriminate and a complete state of chaos will occur. This then would be the end of man and universe. But since a complete chaotic state is impossible inasmuch as

it is impossible to reach a complete state of order, because of the order-disorder randomness in arrangements, one can conclude that mankind and universe are infinite and will not cease to exist. What could happen is a "degeneration" of mankind and universe in their form of matter-energy as they exist now, and consequently a new form of man-universe would emerge. This might explain the mystic belief in life after death, not in its micro sense but also in its macro sense. However, it is also likely that the transformation of man and universe would continue to evolve for an infinity which means that the expected "life" after "death" is to be experienced at each micro level of individual existence, where man after death is united with nature and transformed into a new form of energy in his physical existence as well as his metaphysical existence.[5] In both cases it could be assumed that evolution advances complexity and dynamism rather than negation of existence in its form of essence.

All the previous assumptions which describe and explain the properties of man as an open system will be discussed in terms of exchange of energy flow after the analogy of matter-energy and the yin-yang metaphor of the Chinese understanding of the Tao. In essence this chapter presents a model of man as an open system which portrays a synergistic view of man and universe in their exchange of energy flow. The model will be presented in four major units which, first, describe the synergistic view of man and universe by exploring some psychological theories of holistic orientation, and, second, presents

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[5]The physical existence refers to his body being transformed into a new form of chemical elements after death, while his ideas, images or whatever he has contributed to the metaphysical world be transformed into new forms of images or ideas as they are picked by other human beings in the exchange of energy flow. This simplistic understanding of the dialectic life-death nature accounts for the principle of conservation of energy, which states that energy is never created or destroyed, rather it transforms its work from one form to another.

the properties of an open system as they are manifested in man's existential universe. It will be argued that the man-environment relationship is synergistic, and in fact what is traditionally called an external environment is nothing more than an externalization of one's universe in the form of sensory data. The third unit is devoted to a discussion of the holistic nature of mind-body as it is manifested in the life principle. This principle functions in the human system from the moment of conception in the structure-function of DNA (deoxyribonucleic acid). The life principle is further described in the model of the psychological processes which is presented in unit four. This model presents the analogy of the psychosynthesis process to the protein biosynthesis process in the living cell. A cognizer is postulated to be analogous to DNA.

In view of this researcher's orientation, the model that will be presented in this chapter as well as the arguments that have been presented in the previous chapters do not represent at any point an innovative theory of man and universe in any exclusive sense. The arguments made in this chapter for the proposed model represent a stream of transformation of previous work on man's nature which was examined in earlier chapters and the work that will be examined in this chapter. The model in this sense is being created through the process of examining other theories which have been formulated by psychologists. Just as these theorists' contributions have been considered as streams of thought which transform others' work, and are affected by the subjective element of the theory builder's personal life, academic training and cultural motif, the same is true of this researcher's work. In other words, since knowledge is transformational, and scientific discovery has a subjective element, it is recognized that this model is no exception. In the final analysis it

is believed that no model of man would correspond completely to the "truth" in any "absolute" sense. What any model achieves is a new transformational point for approximating one's vision in "reality." However, any new model would continue to have an equipotentiality to be further investigated and examined by others including the "originator" of the model him or herself. In this sense scientific discovery is a never-ending process.

UNIT I: A Synergistic View of Man and Universe

A synergistic view of man and universe is a holistic view which accounts for the dynamic nature of man as an open system in his exchange of energy flow with the energy of the environment. Such a view does not deal with the issue of whether man's nature is "good" or "bad," since it is believed that "good" and "bad" are value judgements which do not add to our knowledge of man's nature and hence a discussion of man's nature in these terms is futile. There are no standards, empirical, intuitive or logical, on the basis of which we can come to any universal statement to describe man in these terms. To believe that man is originally good is a positive outlook and indicates an orientation that might help its holder to be optimistic in his interpersonal relationships. In that sense such an orientation could have a positive value. However, it might also be misleading to adopt such a view. An individual need not make value-laden, either/or judgements in order to adopt an open orientation. Such an orientation, which is coherent with the dynamic nature of the world, is readily adaptable to change. A person of certain behavioral patterns could be positively evaluated for adopting such a pattern at a certain time and be criticized when this pattern is not coherent with the overall dynamics of his interpersonal and intrapersonal relationships

at another time. With this kind of orientation, a person accepts another individual as he is, and as he ontologically transforms from one point of positional value to another. Labeling would be less liable to occur within the purview of such an orientation. An individual who is at one time a friend could be at another time an enemy, or vice versa. Similarly, someone who has been seen as "emotionally disturbed" could become at another time, stable, and one who is perceived as a "rational" and insightful decision-maker can at another time be "emotional" and indecisive. In other words, no one is to be viewed as being constantly the same person in terms of his relation to his universe. People change and thus our perception of them must be flexible and follow a coherent pattern. It is assumed that an orientation of a value-free nature would be beneficial for all parties in any encounter. A person with this orientation reciprocates another's behavior genuinely, and thus his communication with them will flow in less constraints of a pre-set stance of an either/or nature. Moreover, the individual will become less vulnerable to the psychological consequences of disappointments. This kind of orientation frees the individual from a uni-directional view and it has an integral characteristic with the unitas multiplex logic. It is also coherent with the nature of man as a flow of energy which is constantly being transformed in the process of exchange with the incoming flow of energy from the "environment."

A synergistic view assumes that man is constantly evolving. However, the nature of evolution is not uni-directional, neither does it progressively advance evenly along time. The dynamic nature of evolution presumes jumps of "progressive" and "regressive" natures,, a state of affairs that is evident in the concept of revolution as a form of evolution. This

could be seen on the micro level (i.e., in individual development) and on the macro level (i.e., in the case of nations that evolve as they revolt and revolt as they evolve). Evolution, according to the synergistic view, is caused by pull-push forces of efficient, purposeful causality. The causality as such is manifested in the process of transformation.

The synergistic view is a systemic view in which relationships among and between various sub-systems in a given whole are described and understood in terms of structure-functions analysis of any given system. Such functions are analyzed according to their positional value within the time-space domain of the system as a whole in relation to its subordinate system(s) and the supra-system. This analysis avoids conceptualization of relationships in any form of linear logic and attempts instead to utilize multiplex logic in accounting for the dynamic holistic nature of the physical-metaphysical nature of human existential behavior at any point. Thus, a synergistic view of man and universe does not aim at prediction or control of the individual's behavior. Its objective is instead to describe and understand the relationships among various subsystems in an attempt to understand the nature of change in human systems in terms of its dynamic relation to its universe. This researcher, in developing such a model, recognizes that the source of knowledge is three-dimensional, namely, empirical, logical and intuitive, and that these three sources are synthesized in a coherent pattern which aims at describing events in holistic terms.

The metaphysical aspect in the experience of reality does not contradict the essence of scientific objectives. Its findings are intuitively arrived at. This idea is presented by Capra (1975) in his

discussion of the similarities between the findings of Eastern mysticism and the findings of Western physicists in their most advanced conceptualization of the physical entities in this universe. Capra (1975:131) noted,

> The basic oneness of the universe is not only the central characteristic of the mystical experience, but is also one of the most important revelations of modern physics. It becomes apparent at the atomic level and manifests itself more and more as one penetrates deeper into matter, down into the realm of subatomic particles. The unity of all things and events will be a recurring theme throughout our comparison of modern physics and Eastern philosophy. As we study the various models of subatomic physics we shall see that they express again and again, in different ways, the same insight - that the constituents of matter and the basic phenomena involving them are all interconnected, interrelated and interdependent; that they cannot be understood as isolated entities, but only as integrated parts of the whole.

The conceptualization of man along the lines of the holistic logic described in the above extract could be somewhat represented in the organismic theory of personality.[6] The following principal features of this theory pertain to the psychology of the person (Hall and Lindzey, 1920:300-301):

(1) Organismic theory emphasizes the unity, integration,

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[6]Formulation of the organismic theory of personality was triggered by the need for a theory which could unite body and mind in a unified organism or an organized whole. It draws some of its concepts from Darwin's theory of evolution, Gestalt conceptualization of the activity of parts within wholes, and the naturalistic view of man as originally good, a view which was emphasized by the French philosopher, Jean Jacques Rousseau. However, the organismic theory transcended all these features of holistic orientation to introduce a body of theorizing based on the assumption that, "The laws of the whole govern the functioning of the differentiated parts of the whole. Consequently, it is necessary to discover the laws by which the whole organism functions in order to understand the functioning of any member component. This is the basic tenet of organismic theory" (Hall and Lindzey, 1970:299-300). Among psychologists who have made outstanding contributions to this movement are: Kurt Goldstein, Andras Angyal, Abraham Maslow, Carl Rogers, Gardner Murphy and Gordon Allport. Although organismic theory has its roots in the views of some philosophers of the late 19th century, its articulation has mostly been made in the first half of the 20th century.

consistency and coherence of the normal personality. Organization is the natural state of the organism; disorganization is pathological and is usually brought about by the impact of an oppressive or threatening environment, or, to a lesser degree, by intraorganic anomalies.

(2) Organismic theory starts with the organism as an organized system and proceeds to analyze it by differentiating the whole into its constituent members. A member is never abstracted from the whole to which it belongs and studied as an isolated entity; it is always considered to have membership character in the total organism. Organismic theories believe it is impossible to understand the whole by directly studying isolated parts and segments because the whole functions according to laws that cannot be found in the parts. The atomistic viewpoint is felt to be particularly cumbersome because after the organism has been reduced to its elements it is then necessary to postulate an "organizer" which integrates the elements into an organized whole. Organismic theory does not require an "organizer" because organization is built into the system from the beginning and the integrity of the organism is not permitted to be lost or destroyed by analysis.

(3) Organismic theory assumes that the individual is motivated by one sovereign drive rather than by a plurality of drives. Goldstein's name for this sovereign motive is self-actualization or self-realization which means that man strives continuously to realize his inherent potentialities by whatever avenues are open to him. This singleness of purpose gives direction and unity to one's life.

(4) Although organismic theory does not regard the individual as a closed system, it tends to minimize the primary and directive influence of the external environment on normal development and to stress the inherent potentialities of the organism for growth. The organism selects the features of the environment to which it will react and save in rare and abnormal circumstances the environment cannot force the individual to behave in the manner that is foreign to his nature. If the organism cannot control the environment it will try to adapt itself to it. In general, organismic theory feels that the potentialities of the organism, if allowed to unfold in an orderly way by an appropriate environment, will produce a healthy, integrated personality, although malignant environmental forces may at any time destroy or cripple the person. There is nothing inherently 'bad' in the organism; it is made bad by an inadequate environment . . .

(5) Organismic theory frequently makes use of Gestalt psychology but it feels that the preoccupations of the Gestaltists with isolated functions of the organism such as perception and

learning provide too narrow a base for understanding the total organism. Although there is much in organismic theory to remind one of Lewin, nevertheless, Lewin's topology is strictly psychological in character and does not include the whole biological organism.

(6) Organismic theory feels that there is more to be learned from a comprehensive study of one person than from extensive investigation of isolated psychological functions abstracted from many individuals. For this reason, organismic theory has tended to be more popular with clinical psychologists who are concerned with the total person than it has been with experimental psychologists who are primarily interested in separate processes or functions, like perception and learning.

This researcher assumes that a holistic view could be developed by studying the nature of person-environment relationships and by identifying the properties of an open system.

Man and Environment Relationships in Organismic and Field Theory Perspectives

The issue of humans and the environment is an important issue in the formulation of any model of personality. This has always been the case, because people do not live in vacuums. From the moment of conception until the moment of death the individual exists within a special time-space domain which has elements that he must deal with in order to survive. Organismic theorists, for instance, have attempted to formulate a holistic approach to the organism-environment relationship and tried to conceptualize the dynamic relationship in terms of holistic concepts. However, the various theorists in this school utilize different unifying frames. In essence, their conceptualization is a valuable aid for the development of a synergistic view of man and universe.

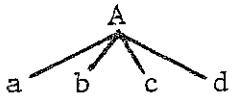
In this regard, Angyal (1941) introduced Foundations for a Science of Personality in which he utilizes the concept of "system" as a central notion in a holistic logic for describing organism and environment. In

order to do so, Angyal (1941:253-254) points out the principal differences between linear logic which describes the relata or relations and holistic logic which describes the systems. He summarizes the differences as follows:

> (1) Relations involve two and only two members (relata). Complex relationships can always be analyzed in pairs of relata. Systems may involve an unspecified number of components, not analyzable in certain respects into pairs of relata. (2) The relata enter into a relation by virtue of immanent attributes, while constituents enter into a system-connection through their immanent attributes but not through their positional value which they have in the system. Secondary relations which are based on positional values of the relata can be established also between members of a system. But the system itself cannot be described even in terms of such relationships. (3) For the existence of systems a dimensional domain is necessary. Systems are specific forms of distribution of members of a dimensional domain. (4) In relationships, the connection between the relata is a direct one. The members of a system, on the contrary, do not need to be directly connected, they are connected within and by the whole.

The value of such differentiation between "relata" and systems lies in the definition of system not as an aggregate of elements connected in a form of relationship but specifically as "specific forms of distributions of members of dimensional domain." This suggests that members of any system would formulate such a system not in terms of their own inherent characteristics but rather in terms of their positional values within the system as a whole. The principle here is that the structures of any system cannot be defined except in terms of its function. Thus the systems concept becomes a description of a "process" and not of a structure. The person then is described as a behaving entity whose constituents are in constant interaction according to their positional value within the system as a whole. This conceptualization is dynamic because it allows the exchange among the various sub-systems in the system as a whole to maintain its unitus multiplex. There is an infinite number of components

or sub-systems within the whole but these components interact in accordance with each one's positional value to the whole system. For example, components of personality, say, a, b, c, d, are not related as a-b-c-d, but rather as follows:



This relationship leads to the proposition that, "In a system the members are, from the holistic viewpoint, not significantly connected with each other except with reference to the whole" (Angyal, 1941:250).

With this frame of reference, Angyal defines the organism and environment relationship in dynamic terms and treats these two entities as integral components of one system which he terms the biospheric system or the realm of life process. The relationship in the biospheric system is described in terms of subject-object, with the subject referring to the organism and the object to the environment. However, communication between these two sub-systems is not described as a relata or "a-b" relationship, where "a" refers to the subject and "b" to the environment. Contrary to that, the subject enters into a "relation" with the "object" by means of its positional value, which defines its function as an autonomous function, while the environment has a heteronomous function which is also decided by its positional value in the biosphere. Biosphere, according to Angyal, is the resultant of autonomous and heteronomous determination. The former refers to the organism and the latter to the environment. Thus these two components of the biosphere are not separable in their functions. They make up a unified system of factors that can only be separated by abstraction (Ibid.:95). According to this view, the external world, or whatever surrounds the individual, is not defined as

an environment unless the organism interacts with it or experiences it as a member of the biospheric system.

Angyal's conceptualization of the organism-environment relatiohship rejects the morphological criterion for defining these two entities as separate entities. The morphological approach assumes that the organism is anything within the physical being of the individual while the environment is anything outside the individual.

Angyal (1941:89) argues that the morphological definition of the person-environment relationship follows a "strange" logic and should be rejected; he says,

> Taking literally the statement that the organism is within the body surface and the environment outside it, one has to consider, for example, that one would accordingly call the food before ingestion a part of the environment, and after ingestion, a part of the organism. It would be very strange logic, however, to regard an object at one time as part of the organism merely because it is located in some internal cavity of the body such as the stomach. Thus the criterion for being part of the environment or the organism would merely concern the location of an object in space. The fundamental difference between organism and - a difference we feel exists - would thus be completely nullified.

According to the synergistic view of man and universe, the morphological criterion would be rejected for reasons that are similar to those given by Angyal, but also because it treats organism and environment as separate entities and conceptualizes their interplay in the form of a shift from one location to another without accounting for the dynamic nature of transformation in the form of exchange of flow of energy. The morphological criterion requires a conceptualization for a person in terms of bounded constraints that separate the individual from his environment, and then deal with such boundaries by inducing an artificial characteristic of the two entities, namely, "permeability." Lewin (Hall

and Lindzey, 1970) uses this characteristic for describing the nature of the bounded entity which he calls a person.

A review of Kurt Lewin's theory might illustrate why a morphological description of the human-environment relationship is not coherent with a synergistic view of man. However, before doing so, it is worthwhile to point out that Angyal's organismic theory also has some limitations in its ability to introduce a dynamic holistic view of man's nature. Unfortunately, though Angyal successfully points out the difference between a relata logic and a multiplex logic by utilizing the "systems" concept in its dynamic sense of positional value distribution of its members as they relate to the whole, he deviates from this logic by adopting the hierarchical analysis for describing the growth of the organism. In summarizing his theory, Angyal (1941:377) says: "The total personality organization was described as a hierarchy of systems and the dynamics of this hierarchy was thus exposed in terms of laws concerning the range of variation of positions in a system, and setting and shifting of systems."

The question is: What is the difference between arranging systems in hierarchy and elements in a relata or linear relationships? Does not the hierarchy imply that a is horizontal or vertical in its position towards b? Does not this imply that what he calls "secondary relations" which are based on positional values of relata between the members of a system (i.e., personality as a whole) are used to describe the "holistic" relationship? This question raises questions about Angyal's ability to comply with his own criterion for describing "systems." It has been noted in his summary as well as his discussion of system connection vs. relata that, "Secondary relations which are based on positional values of the relata can be established also between members of a system. But the

system itself cannot be described even in terms of such a relationship" (emphasis added, see previous quotation on p. 368 in this work).

What might have led Angyal to the adoption of hierarchical analysis for personality organization is the need to express relationships in mathematical equations, in order to use his analysis in empirical studies. It is again the ambition of the theorist to be a "scientist," to be able to describe his ideas in quantifiable terms. Hierarchical analysis will continue to be artifact as long as it induces rigid classification for the description of development in a transformational manner. The individual's body might change in size, weight and shape. This could be quantified and treated in time dimension in terms of quantity and probably be described fairly in terms of "stages" or hierarchies. But even those attributes of the body which are concrete and measureable are liable to pass through latent periods, where the rate of development is comparatively less than it was in a previous period or than it will be in a future one, such as, for example, in middle childhood. The problem becomes more difficult when one starts to deal with psychological processes and attempts to assess their development in terms of quantitative analysis along a hierarchical scale of certain unit values. The approach then stops being "holistic" in the sense that the organismic theorists strive for, especially Angyal with his theory of systemic analysis.

Kurt Lewin[7] prefers to represent his analysis for personality structure spatially because it is easier to be used for mathematical analysis.

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[7]Lewin is not classified as an organismic theorist. His field theory has been utilized by organismic theorists, only inasmuch as it could describe the process of organismic functions in wholes. However, Lewin's theory is criticized by organismic theorists because it does not treat the psychological processes as integral components of the organism as a whole. Lewin's theory is purely psychological while organismic theory treats psychological processes in terms of organismic functions.

Hall and Lindzey (1970) discuss Kurt Lewin's field theory in a comprehensive manner which includes the topological and dynamic components of the theory.

The principal features of the field theory could be summarized as follows: The theory is topological in its representation of the structures of personality and dynamic in its description for the psychological processes. Its initial criterion for describing person-environment relationship is morphological in the sense that the person is represented by an enclosed bounded figure which lies within a larger area. That which is within the bounded figure represents the person and that which lies outside the boundaries is the environment. This assumes that the individual is a separate entity from the environment, and at the same time he is a part of the whole. The choice of such representation of the human-environment relationship follows the common sense description which assumes that what lies within the individual's skin is his personality and that what is outside the skin is the environment. This criterion was rejected by Angyal for reasons that were discussed earlier. However, this representation does not deter Lewin from identifying a property of these boundaries that would enable him to describe and analyze the two-way influence between the person and his environment as well as between the differentiated sub-systems of personality structure. The boundaries are identified as having the property of <u>permeability</u>. This property is viewed as significant for Lewin's purpose in conceptualizing the exchange of influence among various regions. However, in discussing Lewin's theory it will be pointed out how and why this permeability property is not coherent with the synergistic view of man and universe. Hall and Lindzey (1970:210) say that:

> The principal characteristics of Lewin's field theory may be summarized as follows: (1) behavior is a function of the field which exists at the time the behavior occurs, (2) analysis begins with the situation as a whole from which are differentiated the component parts, and (3) the concrete person in a concrete situation can be represented mathematically. Lewin also emphasizes underlying forces as determiners of behavior and expresses a preference for psychological as opposed to physical or physiological descriptions of the field. A field is defined as 'the totality of existing facts which are conceived of as mutually interdependent' (Lewin, 1950).

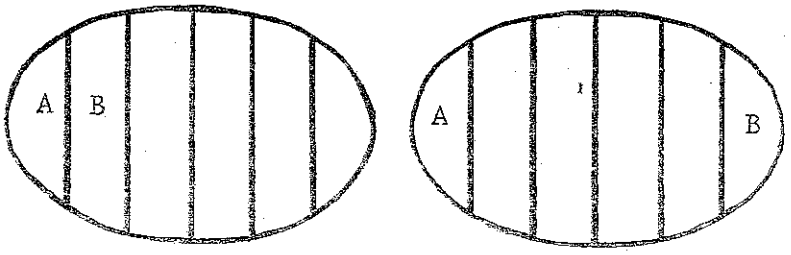
These three features are represented in Lewins' typological psychology of personality structure. He used the spatial representations for personality structure and its environment for the analysis of personality dynamics by using mathematical descriptions for the interaction among these structures. The mathematical representations describe the interconnection and intercommunications among spatial regions without regard to their size or shape. The person is represented by an enclosed bounded circle to differentiate him from non-person. The field or life space is represented in an enclosed ellipse inside of which is a circle to represent the person. The area between the bounded figure of the person's circle and the bounded figure of the field represents the environment. Thus the life space (L) = Person (P) + Environment (E). From this representation of life space, Lewin describes behavior as the function of life space (i.e., $B = f(L)$). Life space, according to him, includes the totality of possible facts which are capable of determining the individual's behavior. However, these facts are different from time to time. Hall and Lindzey (1970:217) point out that for Lewin a fact is any event which is observable or could be inferred from the observable event. A fact could be a physical or psychological entity, it could influence or be influenced by the person. A fact is represented by a bounded figure and its boundaries are characterized by permeability. Thus facts are

communicable when they are connected. Their accessibility follows the same principles of locomotion which describe the influence of one structure of personality on the other.

Locomotion is a term which Lewin uses to describe the direction of movement of the interrelated influence between one region and another. Lewin emphasizes, however, that locomotion is not necessarily physical. According to Lewin, the individual's movement might be social, intellectual or vocational. Thus locomotion in Lewin's field theory is a psychological movement. The principles of locomotion follow the nature of accessibility of region or structures to influence or be influenced by one another. A region for a given structure has access to the influence of another structure according to three dimensions that decide the degree of permeability of a structure's boundaries at the time of occurrence of a given event. The first is that of firmness-weakness. This dimension describes the thickness of boundaries. Structures with thick boundaries are less accessible to influence from other regions than structures with weak boundaries. In other words, the thinner the boundaries, the higher the degree of permeability. The second dimension is that of nearness-remoteness. This dimension describes how far one region is from another and is determined by the number of regions which lie between one region and another. In the topological representation the idea is represented as follows in figure 7:

Figure 7

Nearness-Remoteness Dimension (After Hall and Lindzey, 1970:218)

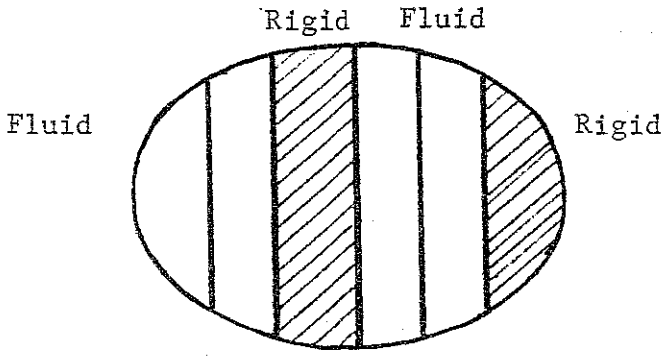


The permeability is greater in the first ellipse in figure 7 for the influence of A on B region than it is the case for these two regions in the second ellipse. This is decided by the number of regions which intervene between A and B.[8]

The third dimension is that of fluidity-rigidity. This dimension represents the characteristic of the medium of the region. The more fluid the medium, the higher the accessibility of one region to be influenced by the other. This is represented in figure 8. A rigid medium resists change.

Figure 8

Fluidity-Rigidity Dimension (After Hall and Lindzey, 1970:219)



In figure 8 there are two regions of fluid medium that are separated from the influence of the two other fluid regions by a rigid region. Such a rigid region makes communication between the two pairs of fluid regions inaccessible or extremely difficult.

These principles of communication among interconnected regions are

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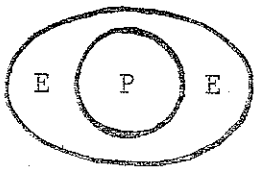
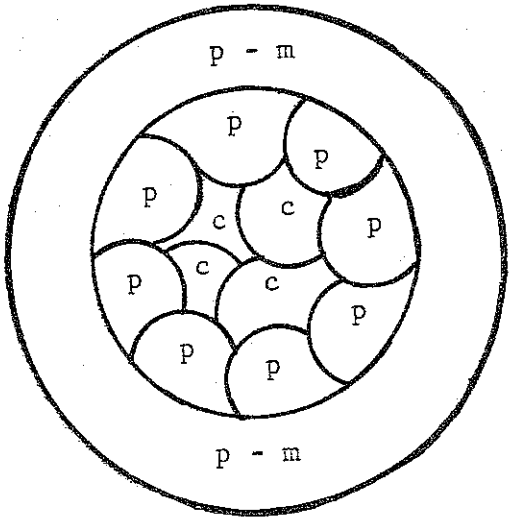
[8]Figure 7 represents two forms of life space. Each ellipse represents a life space differentiated into regions. In the initial representation for the person-environment relationship, the figure was as follows:



E + P = L (environment + person = life space)

also used to describe communication among the various structures in a person's region. A person is differentiated into tow main regions: the perceptual-motor region and the inner-person region. This region is further differentiated into cells, the ones adjacent to the perceptual-motor region[9] (p-m) are called peripheral cells (p), and the ones inside are called central cells (c). Figure 9 shows this representation as follows:

Figure 9 (After Hall and Lindzey, 1970:216)



Any cell inside the inner-personal sphere could be shaded heavily or lightly to represent its fluidity-rigidity dimension and cell boundaries or the boundaries of inner-personal region and that of the perceptual-motor region could be either thin or thick to represent the weakness-firmness dimension. Any region or any cell could be further differentiated into more "regions" and each could be given a letter as symbolic identification and thus account for the nearness-remoteness dimension by

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[9]Lewin differentiates perceptual region from motor region in the sense that perceptual facts come from outside the inner-personal sphere in a flow of input, while motor facts are defined as output in terms of the individual's acts upon the environment. This is why perceptual and motor functions are represented in one region around the inner-personal sphere (Hall and Lindzey, 1970:216).

counting the number of "regions" intervening between one "region and another. However, the differentiated environment in the life-space does not follow strictly the same neat differentiations that represent the personality structure. This is the case because, Lewin assumes, the environment is homogeneous or undifferentiated since all facts in it have equal influence upon the person. According to this assumption the person would have complete freedom of movement since there would be no barrier to stop him. However, Lewin recognizes that such is not the case in the true state of affairs. Therefore, he subdivided the environment into part regions (Hall and Lindzey, 1970:216). Lewin also noticed that those facts that influence the person are not only the ones inside the life-space. There are other facts that could come from the non-psychological environment (i.e., from outside the life-space boundaries) and be influential upon the life-space and thus affect the individual's behavior. This non-psychological area is called the foreign-hull. It is this that makes the prediction of individual behavior extremely difficult if not futile. In this regard, Lewin says (Hall and Lindzey, 1970:215), "Since a fact in the non-psychological world may radically change the whole course of events in the life space, prediction from a knowledge of psychological laws alone is usually futile. One can never be sure beforehand that a fact from the foreign-hull may not penetrate the boundary of life space and turn everything topsy-turvy in the psychological environment."

What is being said so far in Lewin's topological psychology of personality structure is that the person and environment are two different entities and that the influence between both is two-way. The communication between interconnected structures is made possible because the structures' boundaries are characterized by permeability. However,

permeability could be constrained by the nearness-remoteness, the weakness-firmness and the fluidity-rigidity dimensions of the regions in communication. With this theoretical construct Lewin aims at describing the innerconnected nature among the various structures of personality in mathematical representations. This aim is based on the belief that mathematical description is more precise than any form of verbal description.

This researcher argues that the morphological criterion for separating the person from the environment is helpful for systems analysis which is based on linear logic. This is especially the case when permeability is taken as the only characteristic of the structure that decides its openness in its function. However, in a dynamic state of affairs such as the constant exchange of input-output which is mediated by a transformation process within the organism, it becomes inconceivable to adopt Lewin's topology. Lewin's topology is misleading for the following reasons: (1) The psychological system is not a concrete system which could be divided into regions. The psychological system is a flow of behavioral and experiential processes that are indivisible from the physical or the physiological process of the human system. (2) The abstraction of the psychological system from the bodily functions and its reduction to the perceptual-motor processes in terms of structures is not truly representative for the various other systems from which and through which the human behaving system is organized. (3) The permeability characteristic of the boundaries of personality structures and/or the life space structures presumes an immanent attribute for the various sub-systems of personality on the basis of which their functions are decided. It is argued in this work that the function of any sub-system is decided on the basis of its positional value in the system as a whole. This last assumption which is

adopted by Angyal for describing the organismic functions of personality in holistic terms is more coherent with the nature of organism-environment relationships as one experiences them. The various elements with which the individual interacts and acts upon in his environment have different values for the individual at different times. Thus, "permeability," like other structure-functions, is decided by the individual's perception of the elements in the perceptual field. In other words, permeability is an effect and not a cause as Lewin's theory might suggest. This is believed to be the case because the organizer is an intrinsic characteristic of the organism. This view is consistent with Darwin's observation (1936: 15-16), "It is shown that in every case of variation under domestication there are two factors, namely, the nature of the organism, and the nature of the conditions. The former appears to be much more important for similar variations sometimes appear under dissimilar conditions, or on the other hand, dissimilar variations arise under conditions which appear to be nearly uniform."[10]

The fact that permeability is a characteristic of structures' boundaries indicates that the structures of personality sub-systems are nothing more than containers of "events" which pass through these structures or interact within them. This description dichotomizes structure from process, and thus does not look at systems functions in terms of their positional values within the time-space domain in which the description becomes limited to structural-functions. Thus, one is describing processes and not structures containing processes. Personality is not a "building" of "blocks" with "doors" and "windows," as Lewin's topological analysis might suggest in

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[10] C. Darwin. Origin of Species. New York: Bennett A. Cerf, Donald S. Klopeer, The Modern Library, 1936 (1st ed., Nov. 1859):15-16).

its "permeability" concept.[11]

Hall and Lindzey (1970) point out that Lewin conceptualizes the psychological environment of the individual in terms of dynamic concepts. These dynamic concepts are: energy, tension, need, valence and force, or vector. In fact his core concept is that of need. A need is defined as a psychological construct that has a region or relates to regions in the inner-personal sphere. A need could be stimulated by an internal tension and/or by an external stimulation. A need releases energy which is psychical. Energy produces tension in the inner-personal systems. However, this energy seeks equalization of tension by need satisfaction. Once the need is satisfied, the equilibrium of inner system will be restored and the system is described as being at rest. But at no time will the system be in a state of complete rest and still be alive. There is always a degree of tension in some psychological regions which will release energy in the system as a whole. Energy is manifested in a psychological process. The individual who has a need for something or a semi-need (like a kind of intention) will act upon it psychologically by interacting with the environment until the need is released. A need is a kind of motivational force which has a direction and a goal. But both the direction and the goal are outside the person in his psychological environment. The location of the goal in relation to the individual acts as a coordinator with the need to decide the direction of the individual act. However,

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[11]The part-whole relationship as described by Kurt Lewin's structural topology might lead to a need for an organizer to integrate the part-whole relationship into one whole. Especially that Lewin's theory is strictly psychological in its character and does not include the whole biological organism. "Organismic theory does not require an 'organizer' because organization is built into the system from the beginning and the integrity of the organism is not permitted to be lost or destroyed by analysis" (Hall and Lindzey, 1970:300).

this direction which is termed vector or force is not decided on the basis of the location of the goal alone. The other attribute of the goal that shares in deciding the direction of the individual is the value of the goal to the individual at the time he or she is experiencing the need. This value is termed "valence" and it could be positive or negative. However, the valence of a given object in the psychological field of the individual is not solely dependent on the quality of that object alone, but also on its relation to other regions in the environment. The same object which could have a positive valence in one location could acquire another valence of being negative when it is adjacent to other regions with negative valences to the individual's need at the time. Thus the locomotion of the individual for satisfying his need is not decided by the force of the object alone, but also by how this force or vector relates to the valence of the given object at the time of experiencing the need.

A force has three qualities: (a) direction, (b) intensity, and (c) point of application. But these qualities are not independent from the valence of the object in the environment at the time the need has to be satisfied. Since both valence and vector are outside the individual or they are properties of the environment, therefore they act as external release of tension or energy in activating the individual to act, and/or source of satisfaction when the release of tension is reduced by acting upon these properties. However, the relation between the psychological environmental properties and those properties of the inner-personal regions is an interactive relation. Thus the system of analysis at this point is a dynamic one.

The dynamic nature of structure-function appears in Lewin's description

for the direction of locomotion. Lewin says, "One can treat everything as environment in which, toward which, or away from which the person as a whole performs locomotion" (Hall and Lindzey, 1970:223).

One might wonder at this point whether Lewin applies the concept of environment to the internal structure of the individual inner-personal sphere. Does Lewin consider, for example, the image of one's country which is a psychological "structure," an internal environment or a psychological process of remembering? Can one, in other words, treat such an image as a region toward which or within which memories, feelings, and hopes are directed? If such a question would receive a positive answer, can one then conclude that the morphological criterion which separates the internal environment from the external one is arbitrary? In fact, when one tries to visualize the application of the locomotion principle which Lewin describes in the topological and dynamic versions of his field theory, it would seem legitimate to argue that internal and external environments are one psychological field under the organizing principle of the organism which is inherent in the individual's system as a whole. Consequently the concept of biosphere which is emphasized by Angyal is more coherent for describing organism-environment relationships in dynamic and holistic terms than the conceptualization of man-environment as two separate entities, as Lewin views them in his topological analysis.

It is recognized that the properties of the dynamic concepts (energy, need, tension, valence and vector or force) are helpful in understanding the dynamics of psychological processes, especially since these dynamic concepts are smoothly applicable to the kind of conflicts which the individual experiences as he interacts with the "environment." The individual either approaches or moves away from a given goal in the environment.

Thus Lewin describes three types of conflicts which the individual encounters in his interaction with the environment.

The first type is the approach-approach conflict. This conflict occurs when two needs are aroused at the same time and their goals in the environment have positive valence, but one has to make a choice according to the vector of these goals. This conflict is solved through choice of the goal which has a stronger vector (i.e., is closer to the individual) and which is related to a stronger need in the sense that the vector applies at a point where the need causes more tension or releases more energy. The underlying principle for solving this problem is that the closer the individual comes to the object, the more attractive this object becomes (i.e., the more positive the valence of the object would be). In making the choice for object "A" rather than for object "B" the tension related to the need for object "A" is decreased but still remains as a result of the need for object "B." This tension will be distributed throughout the entire system in order to be equalized and equilibrium will be restored.

The second type of conflict is that of approach-avoidance. This happens when the same object in the environment has positive and negative valences at the same time. In other words it occurs when two antagonistic needs are directed toward the same object. An example would be the case of a man in love with a woman who is a member of an enemy group. The need for the woman would be satisfied by marriage (i.e., approach) but making such a decision would entail for the man the danger of being attacked by her family or by his own people (i.e., a negative valence of the love object which entails avoidance). In this case the solution of the conflict is based on the assumption that the closer the individual comes to

the attractive goal the more attractive that goal will be, but at the same time the closer the individual comes to the negative object, the stronger the need to avoid it. Thus the individual will tend to oscillate until he chooses a point of no approach-no avoidance - a point of balance - on the psychological level.

The third type of conflict is that of avoidance-avoidance. This type of conflict is aroused when the individual is under the forces of two objects that have negative valence and when he in effect is experiencing tension which can be reduced by avoidance. However, avoidance of one object in such a situation directs the individual toward the other negative object which also propels him to avoid its negative valence. The oscillation between the two objects increases the tension in the whole system and equilibrium is attained at a high level of tension which is manifested in diffused acts or uncoordinated motoric moves. The point at which the individual can no longer move away from or toward "a" or "b" objects is a balance point in the psychological environment. However, tension is not reduced from the two regions of needs at this point but rather it is distributed in the system as a whole. The psychological system is described as being at equilibrium in terms of energy distribution but the tension remains at a high level. This conflict is viewed, therefore, as the most difficult conflict. Very often the individual psychologically withdraws from such a field in the sense that he no longer acts upon the field by motoric movements, and/or starts to think or feel of other situations that are not related to the field of conflicting needs at the time (Hall and Lindzey, 1970).

This researcher recognizes the value of Lewin's description of psychological dynamics which emerge in conflict situations. However, it is

argued here that the solution for the conflict is not necessarily a two-way relation between the need and the object. It may rather lie in the cooperation of all the individual's psychological and physical system as they are united in one whole by the organismic organizer which goes beyond the physical conditions in an intuitive manner which encompasses all forces which act upon the individual at that point in a multiplex manner. A resolution to any of these problems, especially the third type of conflict, might not follow any kind of rational analysis but still it could occur. The layman describes solutions of this kind as miracles. But in systemic analysis, one can say that the synthesis of all the forces into a united force creates energy which might involve many resources of the individual's "cosmic"[12] structure. In Lewin's terms, what used to be a foreign-hull region becomes part of the life-space and thus in an unpredictable manner facts from the foreign-hull find their way to enrich the individual's dynamic and to restore the balance in the psychological field.

According to this analysis, it seems that the topological analysis of an individual's dynamic would fail to meet the criterion of accounting for the complexity of his psychological dynamics and the interaction of these dynamics with the physiological functions of the body. The following section will present a view of the man-environment relationship in terms of synergistic principles or in terms of the properties of man as an open system.

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[12]Cosmic in the sense that the energy of the universe is within one's structure and at certain points it is acutely united in a holistic manner that could reconstruct the biospheric environment in a coherent pattern.

UNIT II: The Properties of an Open System and the Man-Environment Synergistic Relationship

The relation of man-environment is best described as a life process in which man utilizes all his properties as an open system. It is a system which feeds on negantropy by its intrinsic characteristic of being a self-organizer. These concepts - life-process, negantropy, and self-organizer - will become clear as the discussion on properties of open systems unfolds in the direction of formulating a model of man as an open system.

A system is defined in this work as a set of elements which functions in an interactive manner and constitutes a whole dynamic unit of special arrangements for the distribution of its members in the two-dimensional domain of time and space. Systems are classified into two types according to the nature of their relationships with their environment. Systems according to this criterion of classification are either closed or open. Closed systems are usually identified as systems that are isolated from their environment. However, in view of the dynamic nature of the universe, it is argued that isolated systems in the absolute sense do not exist. Systems usually change their energy by exchanging their elements and energy with their environment. However, Kremyanskiy (1968:78) points out, "In the changes of closed elements, the exchange of energy and elements with the environment does not play a very important role for a very long time."[13]

The first property of an open system is that of importation of energy.

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[13] V. J. Kremyanskiy. Certain Peculiarities of the Organism as a "System" from the Point of View of Physics, Cybernetics, and Biology. In Walter Buckley (Ed.), Modern Systems Research for Behavioral Scientists. Chicago: Aldine Publishing Company, 1968:76-80.

This property is identified by Katz and Kahn (1966) as referring to the fact that open systems are not self-sufficient or self-contained. The system imports energy from its environment in the form of an inflow of stimulation to make up for the entropy of the system. Entropy is defined here as a state of losing the internal organization which is the core subsystem of the individual's organism and is inherent in the nature of living systems, enabling them to function in a coherent synergistic manner. The traditional definition of entropy as it is used in physics is expressed in the second law of thermodynamics. According to this law, entropy is defined as a measure of disorder. It is the change in the degree of disorder (ΔS) which is equal to the change in the quantity of heat (ΔQ) taken from or added to the system and divided by the degree of temperature (T) of the system at the time of change. The second law of thermodynamics is expressed in the mathematical equation $\Delta S = \frac{\Delta Q}{T}$. However, the third law of thermodynamics states that an absolute degree of entropy is impossible to reach. The absolute degree of entropy is an absolute degree of zero point of temperature (i.e., approximately -273°C).[14] Since an absolute degree of disorder is impossible, a state of absolute

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[14] E. Schrodinger. Order, Disorder and Entropy. In W. Buckley (Ed.), Modern Systems Research for Behavioral Scientists. Chicago: Aldine Publishing Company, 1968:143-146. In this article Schrodinger says entropy "is not a hazy concept or idea, but a measurable physical quantity just like the length of a rod, the temperature at any point of a body, the heat of fusion of a given crystal or the specific heat of any given substance. At the absolute zero point of temperature (roughly -273°C.) the entropy of any substance is zero." Moreover, the understanding of thermodynamics in this work is based on the discussion of these principles in J. Fay. Molecular Thermodynamics. Reading, Mass.: Addison-Wesley Publishing Co., Inc., 1965. Fay states that, "The third law of thermodynamics: a system which is at equilibrium under fixed constraints (such as pressure or volume) in its state of least energy has both zero absolute temperature and zero entropy. . . The third law of thermodynamics cannot be tested directly because the absolute zero of temperature cannot be reached" (p. 257).

order is impossible as well. In fact, the third law of thermodynamics provides some evidence for adopting a view of nature as existing in a random state of order-disorder. This view is basic for understanding the dynamic nature of things and the law is in full agreement with the theory of relativity and quantum mechanics which says that everything is in motion. It is possible to see why order-disorder dynamics are necessary for the occurrence of matter in motion. These two dialectical opposites create conditions for matter to be in continuous search for its equilibrium.

Before trying to go any further with the analysis of order-disorder one needs to examine the first law of thermodynamics and then to see the relationships among these three laws as they are observed in any systems functions. The first law of thermodynamics states that inducing energy on any closed system increases the energy within this system and/or adds work. Fay (1965:153) points out that "the first law of thermodynamics . . . states that energy E is increased by the heat added to the system and decreased by the work done by the system on its environment. This is a macroscopic statement of the conservation of energy in the interaction of a system with its environment." The typical example which illustrates this law is the case of a gas tube that is tightly closed by a lid. If one introduces heat to the surroundings of the tube, according to the first thermodynamic principle, the temperature is changed inside the tube and thus the gas molecules would be in a different motion, i.e., energy is increased in this closed system. However, some work might also be added which is inferred from the observation of the opening of the lid. If the lid is opened then the induced energy is said to have added some work to the previously "closed" system - a system which becomes no more

closed at such a point. The first law of thermodynamics, called the law of conservation of energy, illustrates that a closed system will continue to be in equilibrium until input is introduced from the external environment. Such input would increase the entropy of this system by decreasing its state of orderliness. In this case energy is not imported by the system but rather is induced upon the system. However, the case is different in open systems. Open systems have the property of importing energy. Rapoport (1968:xviii) points out that closed systems are differentiated from open systems in that,

> The former are isolated from the environment and therefore are subject to the action of the second law of thermodynamics, which states that entropy (roughly a measure of disorder) of a closed system will always increase toward a maximum, attained in equilibrium. At one time the vitalists invoked this law to argue that living systems 'disobeyed' the second law, since at least in their developmental stages they become more organized instead of disorganized. However, this argument is invalidated in view of the fact that no living system is a closed system, and so the second law does not apply to it. Still the refutation is only a negative argument. A constructive argument would have to show how non-equilibrium states can actually be maintained in open systems.

In an answer to this question, Bertalanffy, the most eminent authority in systems theory, argues that the change in the open system does not come from the outside agent - input - as is the case in closed systems. Human systems are self-organizing in the sense that they move through progressive differentiation, evolving from states of lower to states of higher complexity. In living open systems or in self-differentiating systems entropy is decreased as the system evolves towards higher complexity. That this state of affairs is only possible in the case of living systems, is paradoxical with the second law of thermodynamics. Bertalanffy (1968: 18) asserts,

> Open systems show thermodynamic characteristics which are

> apparently paradoxical and contradictory to the second principle, 'The general cause of physical events (in closed systems) is toward increased entropy; leveling down of differences and states of maximum disorder.' In open systems, however, with transfer of matter import of 'negative entropy' is possible. Hence, such systems can maintain themselves at a high level, and even evolve toward an increase of order and complexity - as is indeed one of the most characteristics of life process.

The property of importing energy increases the negantropy instead of the entropy. Negantropy is defined as a state of negative entropy or an increase in orderliness. Open systems feed on negantropy. Rapoport (1968), in explaining this phenomenon, starts with the assumption that"living systems avoid the decay." They eat, drink, breathe, etc. The technical term for this physical phenomenon of importing energy is metabolism, which refers to an exchange of material or energy. However, from this researcher's viewpoint, metabolism might better be described as a process of transformation of external imported material into a new form of energy within the biological structures of the living organism. The human system, according to Rapoport, continually increases its entropy. This is because everything in nature that is going on reflects an increase in entropy in the part of the world where it is happening. Thus to avoid approaching the dangerous state of maximum entropy, or death, a living system feeds on negantropy. This means that living systems avoid death by continuously drawing negative entropy from their environment. In other words, individuals import energy to transform it into new forms of energy. Human beings avoid death by satisfying their physiological needs. According to Kremyanskiy (1968:78), "This exchange can serve as the basis for the perpetuation of this form of existence and as the basis for the decrease or relative constancy of entropy only when the system possesses certain features of internal organization and interaction within the environment."

Such, therefore, is the case with living systems which have these two main features - internal organization and interaction with the environment.

So far, it has been pointed out that human systems import energy and act upon it in such a way that would increase their negantropy. The human system, as an open system, imports energy and acts upon it, and in this sense it feeds upon negantropy. Moreover, the human system has sources of energy within its organismic conditions. The outside sources and inside sources of energy are synergistically flowing within the human system and this energy is manifested in the ability of this system to self-regulate such energy flow in a steady state of homeostasis.

The second property of an open system is a steady state of dynamic homeostasis. According to Katz and Kahn, the steady state is a state in which the system maintains its constancy in energy exchange. However, homeostasis, according to this work, is a property of living systems in contrast with equilibrium which is a property of non-living systems. This is believed to be the case because only living systems have the organizer inherent in the organism. A dynamic homeostasis is characterized by the distribution of energy in a random manner, while in equilibrium energy is distributed in a higher level of orderliness. Moreover, while all non-living systems constantly increase their entropy and thus need an external regulator to maintain their equilibrium, the living system can maintain a steady state of dynamic homeostasis without an external regulator. In fact, external elements, such as reinforcements which Skinner identifies as controllers, or external regulators of behavior, are first mediated by the organism in a holistic dynamic transformational process. Thus what is called "external regulation" in the empirical paradigm, is considered here as an imported energy by which, among other things, the system expands its

negantropy.

The third property of an open system is the selectivity of imported energy. This property relates to the ability of an open system to maintain its dynamic steady state. Non-living systems do not have the ability to select the input; the input is induced on them by the external regulator. In contrast, it is almost common sense to know that human systems are selective. The selectivity of stimuli as well as the selectivity of response are related to the perceptual-motoric relationship and are regulated respectively by the internal dynamics of the human system in a multiplex manner. The sense organs do not attend to the external stimuli as a consequence of the impact of the attributes of sensory data (stimuli) in the "sensory field." The attributes of sensory data, be it primary or secondary, are identified as such by the individual as the result of synergistic interaction among various sub-systems of the human organism as the system relates to these data as a whole pattern at the time of its interaction with them. According to the multiplex logic of this work, the human system as a whole has to be ready to select certain stimuli in accordance with the needs that have a leading positional value at any given time. A mother who is sleeping next to her child might not attend to a sound of a high volume which occurs in her surroundings, but the least cry of her baby might be enough to awaken her. The voice of the baby has nothing intrinsic about its sound structure in terms of its wave length, intensity or velocity, but it has a special meaning for the mother and thus she attends to it. This readiness to attend to one stimulus rather than another is a property of an open system.

The property of selectivity characterizes all living systems. However, it is more complex and dynamic in human systems than in other living

ystems. This is believed to be the case because human systems include ultural and symbolic meanings in the criteria of their selectivity of mported energy. Allport (1973:22) stated in this regard that, "Man lone has the capacity to vary his biological needs extensively and to dd to them countless psychogenic needs reflecting in part his culture no other creature has a culture) and in part his own style of life . . . no other creature worries about his life style)."

The human being is selective in importing energy and active in ransforming what he imports. However, as the needs of human systems ransform from physiological to psychogenic needs, it is assumed that he positional value of cultural and symbolic meaning for the imported nergy transforms respectively from subordinate value into a leading ositional value in the criteria system of selectivity. However, in ther living systems the criteria of selectivity do not include the cul- ural meanings of the imported energy and thus selectivity tends to be ased mostly on"physical"instead of "psychological" criteria. In the ase of a human system, the fulfillment of a physiological need includes ultural meaning, but even this changes from one situation to another. ne satisfaction of hunger, for instance, in a social situation differs rom the fulfillment of the same need when the individual is alone. In ne former case the individual's selection of food and the manner in nich this food is selected is affected by cultural meaning, more than t would be if the individual were eating alone. Such is not the case n other living systems. What decides the choice of the act in human ystems is the meaning the individual attaches to the act as a whole in

its biospheric nature (i.e., organism-environment relationship).[15] The point is that the positional value of a given sub-system in relation to the system as a whole is the main factor that decides the function of that sub-system.

According to the law of conservation of energy, the energy in its quantitative dimension is constant. Energy is never lost, it flows from one sub-system to another in this universe and as it flows it transforms its work from one form to another. This macro-thermodynamic law of energy which was previously mentioned in defining the first law of thermodynamics, applies to human systems in its essence (i.e., in the sense that imported energy increases energy in the human system and decreases energy in its surroundings). The difference, however, is in the kind of work the imported energy could be transformed for and the manner by which transformation takes place.

In short, it has been argued that the individual imports energy selectively in the sense that what is imported is coherent with his system as a whole. However, what is coherent with the system at a certain point in the time-space domain is not necessarily coherent with that system at another point. This implies that there is nothing inherent in the individual who is importing the energy or in what is imported, since both form a biospheric system which is constantly transformed into a new form of arrangement for the positional values of its constituents, and that such transformation is done synergistically. This implies also that nothing

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[15] Organism-environment relationship is used here since the structure of the argument has not yet reached the transformation point where the term "environment" is transformed into that of "individual's universe" to indicate that in fact the individual and the environment at every point are one system and what is outside the system is nothing more than elements which the individual can act upon and transform into a new form of energy in his or her holistic universe.

in the system is destroyed or extinguished, the only thing that occurs is a transformation of energy from one form to another.

This conceptualization of selectivity departs from Darwin's view of natural selection. Darwin (1936) describes the principle of natural selection as the underlying principle for the adaptability of the organism with the environment and consequently for explaining the evolution of species from one level to a more "advanced" level of differentiation. Natural selection is taken to be an explanatory principle for variations of species on the scale of evolution. According to Darwin, the living organism or part of it continues to survive as long as it is useful, thus structures which are useful are naturally selected to survive while those which are not useful are naturally selected to become extinct. This is described in terms of the survival of the fittest. Darwin (1936:13) says,

> Any being if it vary however slightly in any manner profitable to itself, under complex and sometimes varying conditions of life, will have a better chance of surviving and thus be naturally selected. From the strong principles of inheritance, any selected variety will tend to propogate its new and modified form.

The above quotation implies that what is naturally selected at a certain point would continue to exist. This in the long run contradicts the idea of mutation by extinction since what was selected at one time could be not selected at another time.

The principle of natural selection explains how it is inevitable that some structures of organisms and even some species be extinguished over time if they are characterized as lesser forms of life, or if they are unable to adapt to environmental changes. Natural selection also explains what Darwin calls divergence of character. The variation under domestication suggests that the conditions of life appear to act in two

ays: directly on the whole organism or on certain parts alone, and ndirectly by affecting the reproductive system. However, Darwin (1936: 5-16) points out that, "In every case of variation under domestication here are two factors involved, namely, the nature of the organism, and he nature of the conditions. The former appears to be much the more mportant, for the similar variations sometimes appear under dissimilar onditions, and on the other hand dissimilar variations arise under conitions which appear to be nearly uniform."

The variations due to conditions are shown to be indefinite, in the ense that they are not predictable. However, though such conditions layed a more important role in the formation of domestic races, this as due to the sensitivity of the reproductive system to the changes in onditions.

Darwin (1936:508-509) identifies the relationship between natural election and the struggle for existence and in doing so he explicitly aintains a strong positive stance towards the principle of survival of he fittest. He says,

> Natural selection follows from the struggle for existence and this from a rapid rate of increase. It is impossible not to regret bitterly, but whether wisely is another question, the rate at which man tends to increase; for this leads in barbarous tribes to infanticide and many other evils, and in civilised nations to abject poverty, celibacy and to late marriage of the prudent. But as man suffers from the same physical evils as the lower animals, he has no right to expect an immunity from the evil consequent on the struggle for existence. Had he not been subjected during primeval times to natural selection, assuredly he would never have attained his present rank. Since we see in many parts of the world enormous areas of the most fertile land capable of supporting numerous happy homes, but peopled only by a few wandering savages, it might be argued that the struggle for existence had not been sufficiently severe to force man upward to his highest standard.

One might wonder at this point whether Darwin regrets that what he

calls "civilized" people did not struggle enough to eliminate the so-called "savage" people and take over their fertile land, or that these "savage" people have survived in spite of not being the "fittest" for such fertile land? In either case, Darwin does not seem to tolerate a different style of life from his views of what is civilized. He tends to see any people who are different from the Anglo-Saxon race as less evolved and that they thus should be denied survival. It is puzzling to Darwin that a form of human species is surviving in spite of not being the fittest. Thus, he concluded that the struggle for survival is not severe enough. Had Darwin considered the principle of transformation as a natural flow of energy which is expressed by different forms, he would have seen that variation is natural and that a non-Western style of life is neither inferior nor superior to a Western style of life. Darwin has even chosen to interpret the modifications in behavior as having the potential to become hereditary. In other words, mutation is explained in terms of the principle of natural selection. He says (1936:44), "We should bear especially in mind that modifications for some useful purpose could probably become firmly fixed, and might long be inherited." According to this principle, the individual who lives in an environment which has a certain kind of virus could develop immunity to the virus and when this immunity becomes firmly fixed it could be transmitted from the parents to their offspring. It would thus become part of their physical structure. What would happen, however, if these offspring happen to live in a different environment than their parents, one that does not have the virus? Would their "acquired" heredity factor be weakened and become extinct over time, or would they die because their bodies contain certain biochemicals that are no longer suitable to the new environment? These

questions can be left to the biochemists to examine. However, the question remains whether Darwin's view of natural selection and the survival of the fittest as the primary agent of change is not out of proportion with the nature of things as they occur. It seems that Darwin's emphasis on the survival of the fittest is at least out of proportion when it is used to describe or explain a nation's positional value at a certain period in its history. In this regard, Darwin (1936:508) states,

> The remarkable success of the English as colonists, compared to other European nations, has been ascribed to their daring and persistent energy; a result which is well illustrated by comparing the progress of the Canadians of English and French extraction, but who can say how the English gained their energy? There is apparently much truth in the belief that the wonderful progress of the United States, as well as the character of the people, are the results of natural selection . . . all other series of events - as that which resulted in the culture of mind in Greece, and that which resulted in the Empire of Rome - only appear to have purpose and value when viewed as connected with, or rather as subsidiary to . . . the great stream of Anglo-Saxon emigration to the West. Obscure as is the problem of the advance of 'civilization,' we can at least see a nation which produced during a lengthened period the greatest number of highly intellectual, energetic, brave, patriotic and benevolent men, would generally prevail over less favoured nations.

One does not even need to comment on this generalization in view of the fact that "Great Britain" is no longer "great" in any sense of dominating what Darwin calls "less favoured nations." The fact that Britain is no longer in power in the traditional colonial sense poses a challenge to Darwin's argument that the British are the fittest and thus would continue to survive as dominant over the "less favoured" nations. Some might argue that traditional colonialism has today been transformed into neocolonialism and thus the fact remains that "less favoured" nations continue to be dominated by the Anglo-Saxon race. The question is still open to the possibility that in the process of transformation, as the "Yang" reaches its climax it gives up its positional value to the "Yin" in a

cyclical manner so that the "Tao" would continue to be in one unit. Perhaps transformation has not yet reached a point whereby nations have exchanged their positional values in a remarkable sense. However, it is inevitable that no single nation will continue to be in the same positional value forever, especially since communication among nations due to technological advancements has paved the way for cross-cultural interactions. This condition creates more chances for transformation of man as a human species rather than merely in terms of race. There is today no nation that could be labeled as racially pure. The thrust of this whole argument is to point out that Darwin's theory has the potential to give a rationale for colonialism, racism and imperialism, a trend of life that is incoherent with a humanistic orientation and the synergistic view of man and universe.

If transformation follows the principle of natural selection in the way it is described by Darwin's conceptualization for the survival of the fittest, then the "strong" nations would continue to be stronger, and the "weak" nations would continue to be weak. Historical evidence suggests that no single nation had been constantly dominant over other nations all through history. There has always been a motion of a dialectic nature in the concept of rising and falling nations. A nation could reach a leading positional value in the global system of nations at a certain point in its transformation, but as nations co-evolve and synergistically exchange their positional values, a leading nation is replaced by another which at some time has had a less favorable position. The relations of nations to one another is that of sub-system to sub-system through the synergistic principle of relating to the whole global supra-national system. This is similar to the view of synergistic relationships among the various sub-systems in the individual as a whole system.

If what one acquires through its transformation becomes "fixed" and hereditary over time as Darwin maintains, then the positional value of any given nation in relation to other nations will continue to be the same. Moreover, there will be no peculiarities in heredity and evolution for all species both on the micro level (in an individual) and the macro level (a family in a race) will constantly "progress" until the variations among individuals are reduced to an insignificant point. This is especially so if one accepts Darwin's assumption that every species evolves from a less evolved species. If mankind belongs to one kind of species, why then are the variations so wide among human beings? Darwin (1936:512) answers, "Man has multiplied so rapidly that he necessarily has been exposed to the struggle for existence, and consequently to natural selection. He has given rise to many races, some of which differ so much that they have often been ranked by naturalists as distinct species."

Still it is not clear what is meant by "natural selection" and what kind of nature works favorably for certain races and unfavorably for others. If all species follow the same natural law, it would be expected that such a law would apply to all species in the same way, whether at the "initial" point or at the point of finality and whether on the micro or macro level. Consequently, if multiplication is rapid in human species, it would have created an equipotentiality for some individuals to be in a certain positional value at a certain time while the very same positional value is potentially and equally existing in other individuals to be actualized at some other time. Thus what is "strong" at time-space point "A" could be "weak" at another point, where it exchanges its positional value with the other sub-system. It seems more coherent with one's observations of his own development and of the evolution of nations, or in Darwin's terms,

"races," to adopt the synergistic view of evolution rather than the natural selection viewpoint. The struggle for existence, in view of the synergistic principle, is not based on the survival of the fittest. It is rather a form of exchange of positional values that allows the exploration of one system (i.e., species) for all its possible variations over time. The struggle for existence does not necessarily mean extinction of one organism in whole or in part so that the other organism will survive. It is instead a form of reconstruction of the flow of energy in different forms for different purposes and as all these forms interactively relate to continue their survival by sharing the natural resources. If anything, observation tells us that individuals or nations that function with the purpose of destroying others in order to survive have been "destroyed" instead.

According to multiplex logic, it seems that evolution or mutation of any given organism in part or in whole (part-whole are not exclusive) is more probable to occur in a random manner in which the various sub-systems of a given system are in constant motion in exploring their structure-functions in terms of exchanging their positional values. This motion might lead to a shift in the arrangement of the various sub-systems which is necessary and sufficient for a change to occur. This shift explains how at a certain time in man's history he has vigorously transformed his energy to create more favorable conditions for his existence, and at some other times has created conditions that are problematic for his survival. There is nothing inherent in any sub-structure of any given living system. All sub-systems according to the synergistic view are inherently the same structure-wise; what makes them different is their positional value to the function of the whole. Recently, a group of scientists, some known as

neutralists, have found evidence which supports this view. They present the evidence[16] in recent research on enzyme and protein diversity in human populations. They argue that mutation in any of these variations is the consequence of random genetic drift and thus observed evolutionary changes in function should not be ascribed to the operation of natural selection.

The fourth property of an open system is that of "feedback," a term which is used by Katz and Kahn (1966) and is often used by systems analysts. However, the term is used here with the proviso that it has limitations and that a new descriptive term must be coined which is more coherent with the human system. Katz and Kahn argue that negative feedback is a kind of input which is not only energetic in living systems but also carries information about the environment. This kind of information functions in a way to correct the systems deviations from the "correct" course. When a system's negative feedback discontinues, its steady state vanishes, and at the same time its boundary disappears and the system terminates. Moreover, Katz and Kahn emphasize that the reception of input into a system is selective. The selection occurs in that only the elements that are congruent with system adaptation are taken throughput.

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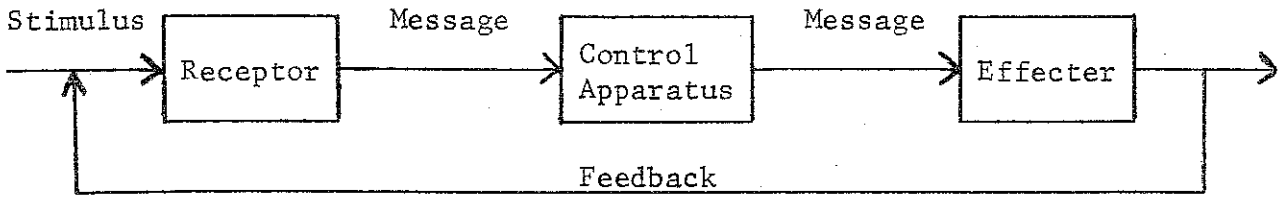
[16]The neutralists argue that differences in the amino acid sequence of a particular protein in different species are simply the consequence of neutral mutations which have been fixed by random genetic drift. This argument is exactly the opposite of the classical view which ascribes the observed evolutionary changes to the operation of natural selection. According to the neutralists, neutral mutation - random drift hypotheses assume that the structurally different variants of any particular enzyme or protein polymorphism must be functionally equivalent. It should make no essential difference to the organism whether it has one or the other. Kimura and Ohta (1971) give evidence for this argument and maintain that the common enzyme and protein variants observed in population surveys simply represent a phase of molecular evolution by neutral maturation. H. Harris, The Principle of Human Biochemical Genetics (2nd ed.), Amsterdam: North Holland Publishing Co.; New York: American Elsevier Publishing Co., 1975:279-338.

The problem with the aforementioned conceptualization of feedback is that it is static in the sense that it treats input as a regulator of the system function and thus accepts the logic of Skinner's reinforcement principle[17] and treats men like machines. In fact it is argued here that the "feedback" is not from outside the system to within, but rather from within to without, because the regulator is the synthesis of the internal conditions as they interact with the external ones. Input is to be treated as an energy flow upon which the system acts and not the other way around. Bertalanffy (1968:16) makes a clear distinction - which Katz and Kahn seem to accept - between the concept of feedback as it is used in cybernetic theory in describing mechanical behavior and the concept of "feedback" as it relates to the dynamic homeostasis, which is a property of an open system. The figure which is traditionally used to illustrate the concept of feedback in machines is as follows:

Figure 10 (After Bertalanffy, 1968:16)



Bertalanffy (1968:18) emphasizes that such a model would be abandoned in mature, higher organisms. He adds:

> It is clear from the scheme (figure 10) or any other flow diagram that feedback represents a machinelike arrangement, that is, an order of processes based upon fixed arrangements and representing linear, though circular, causal trains. The

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[17] See Skinner's principle of reinforcement in chapter 3.

> primary phenomenon of organic regulation, e.g., the regulation in early embryonic development, in regeneration, etc., appear to be a different nature. It seems that the primary regulations in the organism result from dynamic interaction within a unitary open system that re-establishes its steady state. Superimposed upon this by way of progressive mechanization are secondary regulatory mechanisms governed by fixed structures especially of the feedback type.

In view of the fact that the individual imports energy and acts upon it to maintain a steady state of continuous change in the positional values of the various sub-systems, one can see that the regulator is not external to the organism and thus feedback is not a coherent term to describe this mechanism. The regulating principle should not be described as a feedback nor as a progressive mechanism, because neither term implies acting on input which comes from one source. The first term implies a direction from outside to inside the organism and the latter term implies a direction from inside to outside. According to multiplex logic, the regulator acts upon the interaction of energy coming from within as well as the energy coming from outside the system. The manifestation of such a regulator's action is inferred from the adaptability of the individual to his environment or what was previously described as homeostasis. Thus, in the present model, the property of an open system in relation to the steady state of dynamic homeostasis is the synergistic characteristic of the energy flow which unites the human system with its environment in a holistic manner.

So far it has been argued that an open system has the properties of: importing energy, selectively expanding negantropy, maintaining a steady state of dynamic homeostasis, and transforming the energy input whether from internal or external resources in a synergistic manner. These properties imply that the open system is constantly active, constantly in

motion and constantly changing the positional values of its various sub-systems in a multiplex manner that allows one sub-system to take a leading positional value for the system as a whole. The synergistic principle is both a descriptive and an explanatory principle for the phenomenon of living systems which are self-regulatory and constantly behave in an active manner.

Since the human system has the characteristic of self-regulation it has been argued here that it is selective. To further illustrate how this property of selectivity works from the perspective of energy, some examples of this phenomenon will be useful. Consider, for instance, the experience of identifying oneself with another party in a social encounter. When two people enter into a social act, a flow of communication is taking place between them: communication starts when someone sends a message and another acts upon it (or in traditional terms, receives it). When X person initiates a message in a form of verbal and/or non-verbal behavior (codes), the message involves a form of energy input which Y person is expected to act upon. "Y" has an infinite number of possibilities as to how to act upon the given message. Phenomenologically speaking, the possibilities of how to act upon it might be categorized in three major ways, namely: (a) to move toward the message (i.e., view it positively), (b) to move against the message (i.e., view it negatively), and (c) to be neutral (i.e., view it as irrelevant and decide to ignore it). These categories follow Kurt Lewin's field theory model for the dynamic behavior of the individual. However, from a synergistic viewpoint, all these categories are present in one whole at the moment the message is given; they form a system of responding on the part of "Y" and are distributed therefore in accordance with their positional value within the system of

the individual as a whole. Thus these three major phenomenological categories in their totality form a sub-system of the whole system on the macro level (in relation to the person as a whole), and each of these categories is a sub-system in relation to the communication system of "Y" at that point of space-time domain of his communication with "X". The decision over how to respond to "X" is made according to the synergistic principle. What happens in such a case is that energy from "X" flows to communicate his whole system through one sub-system which has a leading positional value at that point. Suppose "X" communicates an expression of love to "Y" and this expression hits a core in "Y's" system as a whole. If the core which "X" hits in "Y's" system happens to have a leading positional value and "Y" further has the same or similar properties of energy flow as are communicated by "X", then the input energy is more likely to be reciprocated by "Y" in a favorable manner. What follows, then, is a flow of energy from "X" to "Y" and from "Y" to "X" which is enriching to both "X" and "Y" but in a synergistic manner which is different from the initial condition that was expressed by "X" or felt by "Y". This synergy is a property of an open system. As Bertalanffy (1968) expresses it, no other system would have an equifinality different from the initial point except human systems. However, according to this work, equifinality is a property of all living systems, man is no exception. Communication occurs between the two systems, not by mere rational, intellectual or mathematical evaluation of the value of the given message, but rather by an intuitive sensing of the value of the message. In this kind of analysis, it should be noted that there is nothing inherent about the message(s) exchanged between "X" and "Y". Acting upon the energy is not due to the characteristic of the message but rather to the positional value of its source in the "sender" and "recipient." This explains why the same message given by the same

individual to the same recipient, but at different times, might have a different impact upon the communication flow. To an empirically-oriented person, this might mean that time is treated here as an independent variable and the impact of the message on communication is treated as a dependent variable, thus there is linear relationship between them. However, the concept of "time" in the above statement refers to a transformation of multidimensional forces with which the individual has dealt up to the point of encounter with the new message. Thus time is not treated as static, nor is it viewed as an independent variable; it is rather seen as a duration within which the life process is taking place (i.e., transformation). In other words, the dimensional domain of time and space in this work is not described as a cause which is followed by an effect but as an existential frame of reference for events that are taking place within the system at this point. With this kind of analysis, one can see why it is not possible to make an accurate prediction as to which direction the individual will take in dealing with a given situation. According to this logic, natural unfolding of one's intention or genuineness is the only guarantee for generating natural, genuine communication between two or more systems in a social act or any kind of human dialogue. It is assumed in this work that individuals who attempt to manipulate others by using artificial communication systems of a step-by-step nature create conditions for an equifinality of being discovered by those who are being manipulated and thus their intention would be known and they would be turned down. In other words, "success" which is planned through artificial communication measures is a mechanism for developing the equipotentiality of its opposite (i.e., failure). A simple conclusion which can be reached through this logic is that genuineness generates genuineness, while

artificiality generates artificiality. This principle applies to the energy exchanged between one system and another, since the principle of synergy applies for systems on the micro level as well as for systems on the macro level. The two systems in communication behave in the same way as the various sub-systems in a single system, since the two systems form one supra-system in which each one is a sub-system in the whole. Since nature refuses to comply with artificial rules it is seen that individuals who follow the artificial rules are experiencing a dichotomy within themselves and in their interrelationships with others.[18] If two individuals who are communicating happen to meet at odd points in their transformation, the awkwardness can be overcome by sincerity when each person expresses his perception to the message in the way which is most congruent with what he feels. The synergistic principle also explains how a flow of energy could be united in communication between two individuals who take opposite positions in relation to the same object. If the intensity of energy in its negative form from "X" person in relation to an object is equal to the intensity of energy in its positive form from the same object(s), the communication flow becomes stronger in its generation of energy from one system to another. Under such conditions, the positive and negative valence of the two perceptions will be exchanged in a "current" of communication which might lead to an equifinality that is

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[18] Maslow (1967) calls the failure to communicate genuinely "splits within" and this failure to unite all aspects of personality in one whole, according to Maslow, is revealed in the interaction of the knower and the known. The internal dichotomy is reflected in dichotomizing oneself from others as one communicates with them; thus a person who breaks through the dichotomies within himself will be able to break through the dichotomies within others., A. Maslow. Isomorphic Interrelationships Between Knower and Known. In F. Matson and A. Montagu (Eds.), The Human Dialogue: Perspective on Communication. New York: The Free Press; London: Collier-Macmillan Limited, 1967(B):195-206.

different from the "initial" point." Communication under such conditions could level the disagreements and bring a new common perception and/or separate the two persons into holding opposite views on the same subject and thus break the flow of energy between them in such a way that each system self-regulates around his own new perception and becomes closed to the energy coming from the other systems. At this point, each one becomes an independent system from the other and his energy is transformed toward other systems in his"surroundings." Here negantropy expresses itself by importing energy from other resources and the two systems are said to be in two different positional values in regard to the object of communication and in regard to each other, in a way that neither positional value is more relevant to any sub-system in a leading positional value.

Selectivity of imported energy and selectivity of its corresponding internal energy are synergistically transformed into a new form of energy that expands the individual's negantropy autonomously (i.e., by the self-regulator mechanism which is inherent in the system as a whole). This property is consistent with the law of conservation of energy in the sense that energy is never destroyed but it is transformed from one form to another. However, in open systems it should be kept in mind that transformation is regulated by the internal synergy principle.

It has been argued so far that the internal "mechanism" of self-regulation is a synergistic principle which has the capacity of transforming energy from one form to another. Thus, such a principle does not follow linear causality since its purpose is to unite the flow of energy coming from various sources into a unitus multiplex. Moreover, it is argued that such unity is not induced upon the system by any external regulator as is the case with a closed system (see the first law of

thermodynamics) but rather it is inherent in the organismic nature of the living systems.

The question, then, is whether one can differentiate the human system from its external world, and if not, whether it is logically justifiable to argue that man-environment relationships are morphological. In view of the previous discussion on the behavior of the human system in expanding its negantropy through the importation of energy and acting upon it synergistically, it is maintained here that the man-environment relationship is not dichotomized. Nothing exists in the "external" world unless the human system interacts with it synergistically. It is worthwhile to bear in mind that the behavior of the living system in expanding its negantropy does not comply with the second law of thermodynamics. This has been argued to be the case because living systems have an internal regulator. Moreover, the internal regulator has the property of synergistic selectivity. Living systems not only import energy from "outside" but they can also expand their negantropy by acting upon internal sources of energy. The value of this property (i.e., an internal source of energy or self-generating energy) is that it adds to the power of living systems to maintain their homeostasis under constraining conditions. In fact, according to this present work one can argue that external constraints are interpreted by living systems in general and human systems in particular as a form of energy which the system is capable of transforming in a coherent form by acting upon it as it interacts with internal energy. For example, the individual who is faced with threatening conditions, such as torture with no possible chance to fight back and free himself from the torture, is still capable of "survival." His mind might start to create symbolic meanings for torture and in the process of doing so he may stop feeling

physical pain. Many prisoners have reported that physical pain stops being felt under such conditions. It seems that the reconstructing of induced energy by the internal regulator has been able to control the external constraints and even transform them into a source of strength.[19] It is not surprising to read about the experiences of individuals who had been under torturous conditions and who had been able to transform the "strength" of their captors into weakness by communicating a message of resistance through their non-verbal responses. A prisoner could captivate the energy of his captor by concentration on symbolic meanings through which he is able to transcend physical pain. It is assumed here that the torturer - as a human system - also has a cyclical nature and he transforms his flow of energy into its opposite, especially when his act is mirroring a message which contradicts what he wants to accomplish. It is a fact that some people die under torture, but in such cases their systems have failed to expand their negantropy and/or they have chosen to stop importing energy and to avoid further torture by death. Moreover, systems of their torturer might have failed to transform its "animal" sub-system into the "human" system. However, one cannot conclude from this that entropy is caused by the "external" regulator. It is rather caused by the weakening of the internal regulator. However, the weakening of the internal regulator is by itself an effect which has multiple causality, part of which is the evolution of the self-regulator during the individual's

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[19] Reports on the perception of torture by prisoners and their ability to transform physical pain by creating symbolic meanings for their suffering appear in V. Frankl (Op. cit.) and in Uri Davis and Norton Mezvinsky (eds.), Documents from Israel, 1967-1973: Torture in Israeli Prisons; The Case of Suleiman Najb. Israel: Zuha-Derech, Rakah: June 12, 1974.

life-space until such torture took place. An individual could reach a point of transformation to resist torture if he has explored such experience in dreams or through conscious analysis of the meaning of torture by exploring the entity of the torturer as a sub-system in himself. This exploration for possible constraining conditions such as torture expands the individual's negantropy and consequently strengthens his synergistic power of self-regulation. This is in a way similar to the function of the body in resisting poisonous chemicals when the body has been exposed to smaller doses of such poison in the process of its "evolution." This is assumed to be the case because energy is never destroyed, thus when particular "matter" is taken by the individual and/or being transformed into a new form of energy, the system itself has been exposed to such experience through which it has developed a sense of its impact. Consequently the sub-system which was active at that point would acquire an equipotentiality for taking the leading positional value when a similar situation occurs, especially since other sub-systems have been involved interactively and thus in a holistic sense the entire system is ready for it when it happens.

This researcher suggests that the individual's ability to expand his negantropy develops through his exploration of his "potentialities"[20] as he relates to his universe synergistically. Training could help to expand negantropy, only in the sense of being perceived as an input to be imported and that this imported energy has its corresponding point in the

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[20]Potentialities are defined in this work in a special sense. Any sub-system of the individual: physical, psychological, spiritual, mental, emotional and/or any of these sub-system derivatives are parts within wholes and they are all treated as functions or processes rather than structures, being transformed from one form to another. Each potentiality is a constituent of the others as well as a related interactive member of the individual's system as a whole. Potentialities are states of readiness to act upon imported energy.

individual's system. Joshi (1979) proposes a design for a robust human system. The term "robust" is used by Joshi to describe what this researcher calls a system which is capable of expanding its negantropy. Joshi defines robustness in terms of "strength" as manifested in the person's ability to neither fall prey to disease nor collapse under ordinary physical constraints. Joshi (1979:197) says, "A living system is robust when it can adapt itself to changing environment - reorganize itself and even replace itself - reproduction." Joshi suggests that robustness can be built into synergistic control of human systems through the cybernetic interaction of technology, culture and religion.

However, these three sources of "external" control upon which the human system acts are used by Joshi in a special sense. The term technology refers to utilization of scientific and technological knowledge by human systems in response to internal and/or external conditions. In other words, technology is a means which is used by the individual to retain a desirable state in which he exists, or to reach a state which is more desirable. However, Joshi points out that unrestrained growth of technology could lead to dynamic instability of the human system. Culture refers to the manner which is selected by human systems in their constant response to "stimuli." It is a style of life which includes individual style, group culture, organizational culture, technological culture, national and international culture, etc. Joshi argues that culture cannot be designed or planned, since culture is the manner in which human systems find it most convenient or satisfying to perform a function. Culture, from Joshi's view, influences relatively the static stability of systems, and negatively the dynamic stability of such systems at the same time. Religion is the missing link between technology and culture. It

refers, according to Joshi, to the adherence to a certain ethical code for self-government while the individual conducts any activity. In this sense, religion is the belief in the rules of self-regulation. It is in this sense that religion is a dynamic concept which guarantees optimal self-control and efficiency. Joshi argues that the three control functions are needed and in order to have them, he proposes that one must distinguish between: (1) truth and falsehood (technology), (2) right and wrong (culture), and (3) good and bad (religion). The robust human system has to treat these three elements synergistically to meet the goal of self-organization. Joshi's proposed robustness model is based on Beer's assumption which Joshi quotes (1979:200): "Human systems being heuristic in nature, that is, follow a set of instructions for searching out an unknown goal by exploration, which continuously or periodically evaluates progress according to some known criterion."

This researcher argues that Joshi recognizes that human systems are self-regulators, and that their robustness in this regard could be explained heuristically, but he seems to emphasize rationality in acting upon "external controlling" systems by not accounting for the sensibility of the individual's sincerity as he relates or imports these elements from the "environment."

The three categories which Joshi identifies as part of a robust human system are not mutually exclusive. He emphasizes the synergistic nature of the human being as any of these three categories is acted upon. However, none of these categories could be presented to an individual in any special form to make him effectively act upon them. In the final analysis, it is always the individual's choice which makes any of these environmental elements significant in the construction of his own

robustness. Thus, robustness is viewed in this work as an output of the individual's awareness of what is happening in his sensory world and what is happening to him as he relates to this world rather than as an output of the presentation of the external environment (i.e., sensory world) in any special way.

The environment (sensory world) is essentially man-made in the sense that what is called environment is in fact what is percieved to be such by the individual who interacts with it. Moreover, the systems which are identified by Joshi as components of the environment are also man-made in the transformational sense. Culture is the output of man's interpersonal and social communication system over a period of time in a certain place that is "transmitted" transformationally from one's generation to another. Religion behaves in the same way, except that the initial introduction of religion comes from a specific individual or a group of individuals who are viewed as prophets and cause at the time an anti-environment in the cultural system. Technology behaves in a similar way as religion and culture (i.e., it starts as an anti-environment introduced by a small group within society). But the overall dynamics of the three components follow the same principles of transformation which is basically synergistic in nature. McLuhan (1967) presents his views on this subject in "The Relation of Environment to Anti-Environment."[21] He points out that, (1) In a sense, all technology is a mirror of man's bodily power, which creates new environments. However, every extension in bodily power not only colors and enlarges one's life but also extinguishes a part of him.

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[21] M. McLuhan. The Relation of Environment to Anti-Environment. In F. Matson and A. Montagu (Eds.), The Human Dialogue: Perspectives on Communication. New York: The Free Press; London: Collier-Macmillan Limited, 1967:39-49.

Extension serves by "closure" to suppress a variety of human perception and actions. (2) Moreover, with technology, man becomes more deeply involved in other lives as portions of his own "unconscious." Greater awareness of his actual relation to the corporate life of mankind has bred the utmost doubts concerning the private character of his own consciousness. Thus, the quest for identity has become the obsession of Western man during the past century (McLuhan, 1967:41). (3) Technology creates a new environment which is termed by McLuhan as anti-environment. It is an anti-environment in the sense that it destabilizes the old environment and causes awareness of it in the minds of people who are living in such an environment. The anti-environment is caused by ten to twenty percent of the people in the environment. This minority group which introduces the anti-environment causes the awareness of a social change. McLuhan gives an example of the technicians and engineers who were among this ten percent of the population and who first introduced television, thus causing environmental problems for adults and children, including descriptions of family and classroom life. (4) The old environment acts as a control system for the new environment in the cybernetic sense. However, the anti-environment raises the awareness of people of new strategies of attention and perception of the old environment. (5) McLuhan (1967:43) maintains that anti-environment can also emerge in a technological environment by means of "a technological extension of consciousness itself. The awareness and opposition of the individual are in these circumstances as irrelevant as they are futile."

This last point contradicts the evidence that Americans in general are left in the role of automata, in the sense that technology is generating technology without creating an anti-environment for change. However,

this researcher argues that, contrary to McLuhan's belief that awareness and oppositions are irrelevant and futile, it is these two interactively related factors that would create conditions for the development of a new form of anti-environment where change can occur. This would be the case in the same way that technology as an anti-environment has emerged. This researcher believes that man's self-regulation and self-generation in the "archetypic"[22] sense does not reach a point of no return in any style of life. There is always a possibility of change in the dynamic sense (i.e., a change emerges as an output of transformation). Since people in any society do not transform at the same rate or in the same direction, there is always a possibility that there exist individual(s) whose transformational pattern has reached a point of becoming an "outliner"[23] to the whole population. When other members of a population catch up with the transformational pattern of these individual(s) and start to work on similar projects, an integration of these projects might bring an output which is recognized by ten or twenty percent of the population and change will follow. However, this change cannot be viewed as having been caused by the group's contributions per se but rather, that the contribution is

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[22]According to Jung, "An archetype is a universal thought form (idea) which contains a large element of emotion. This thought form creates images or visions that correspond in normal waking life to some aspect of the conscious situation" (Hall and Lindzey, 1970:84). However, the term archetype is used here to mean all elements that are constituents in any human system which has been transformed through man's evolution and become typical of human nature. Thus, archetype here is used in a broader sense and not in reference to universal thought forms or images only.

[23]Outliner is a descriptive term, borrowed from statistics, for members of a given population who do not fit into the normal curve. For example, when a population of a given age ranges in height from 5 feet to 8 feet, a person who is 12 feet tall is not accounted for in calculating the average height of the population. However, his existence is still recognized by being plotted outside the normal curve.

imported by people as a new form of energy which is transformed by them into a new value or meaning depending on how it is perceived and regulated into their system. The role of anti-environment is thus to trigger awareness in the human system.

The key point in the previous argument on the man-environment relationship in regard to expanding one's negantropy is that, negantropy is the function of self-regulation which is synergistic in nature. However, one might still argue that the regulator mechanism is controlled by external conditions. Held and Freedman (1968:329) in this regard find that,

> The maintenance and development of sensory guided behavior depend in part upon bodily movement in the normal environment. Ordered information entailed in the motor-sensory feedback loop is responsible for the stable functioning of the plastic systems of coordination. It is found from results of experiments on vision and hearing that the introduction of disorder into the motor-sensory loop changes the state of these systems and makes performance imprecise. In space, a freely moving astronaut will be exposed to a condition analogous to that of the subjects of these experiments. Consequently, he may lose his ability to perform certain tasks requiring precise sensorimotor control.[24]

The principle underlying Held and Freedman's experiment is that an organism's adaptation is related positively to the regularities of its environment. This supports the isomorphic principle which states that there is a one-to-one correspondence between motoric acts and sensory feedback. The experiment also suggests that self-regulation in the human system could be destabilized under conditions in which distortion in the perceptual field is accompanied by induced restraints upon the movement

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[24] R. Held and S. Freedman. Plasticity in Human Sensorimotor Control. In W. Buckley and A. Rapoport (Op. cit., 1968:321-329). A special apparatus was used for rearranging eye-hand coordination and for testing the consequences of this rearrangement. The apparatus was designed in a way that distorted the visual field and restricted the movement of the hand in pointing at the location of items in the visual field. It also reflected a distortion of hand movement and thus sensory feedback was based on distorted information. This condition disturbed the hand-eye coordination in compensating for the error in the perceptual field.

of the organism. In other words, environmental conditions could reduce the ability of the individual to expand his negantropy under special conditions. This suggests that the synergistic principle could be weakened and might partially explain the behavior of some individuals under torture when their systems are no longer able to draw from their internal energy to compensate for the deprivation from the system as a whole the freedom of importing energy selectively. It should be noted, however, that the individual's adaptation is still originally dependent on his "robustness" in dealing with the environment. It would not be surprising to find that some individuals will not yield under similar conditions to those described by Held and Freedman if their systems have been accustomed over a long period of time to dealing synergistically with the complexity of distortion. If Held and Freedman's experiment is analyzed from a synergistic open systems view, one can find ample reason to argue that the behavior of the organism supports the multiplex logic of the interactive effect of the various systems within the whole, where sensory-motor systems are in a leading positional value at that point of the individual's transformation. The only problem which is left to be explained is whether such evidence includes the metaphysical dimension of the coordination process. This researcher believes that eye-hand coordination is a manifestation of a metaphysical component, since it is dynamically arranged in the whole system and could compensate for the distortion in the perceptual field synergistically and not by mere physical reconstruction of the environment.

The environment in this model is defined as a perceptual entity which is regulated by the living system in a synergistic sense. "Environment" here includes all "realities" with which and within which the individual has direct or indirect experience. Direct experience is that which is

sensed to have a leading positional value in affecting the individual's selection of certain behavior, and indirect experience is that which is sensed to take a positional value of equipotentiality for altering the course of action which the individual selects. In this sense one can define the environment as an individual's existential world or his universe. The boundaries between "subjective" and the objective realities become irrelevant and both groups of realities are transformed into one existential reality. In fact, classifying the individual's environment into internal and external worlds becomes meaningless and nullified. To use this concept in a clear example, a person who is physically located in X time-space domain at a certain point of his transformation is not necessarily living existentially in that physical or objective domain. He or she interprets the physical location - say country X or region X at a certain point on the map - as a location for physical movement. This subsystem of his universe is a sensory field; however, it does not stand in isolation from all other fields in his existential world including those within the universe with which he or she is familiar and those which he or she has not yet explored. The meaning which is given to the sensory field is the output of the multiplex forces within the individual's existential universe. The meaning is the decoded output from the transcription of the encoded sensory data by which the self-regulator follows random selection and thus translates the data differently at different times. The self-regulator establishes a set of translating principles to maintain a steady state of perception of the sensory data. This makes the categorizing of attributes available in the organizer (i.e., self-regulator) available for selection at any time to include shape, size, distance, color, smell, touch, etc. However, the plasticity of the organizer as it

relates to the whole system accounts for the variations in the symbolic and psychological meaning among the established set of meanings. The individual says, yes, I am living in "X" city at "Y" address in a house of such and such a shape, size, color, etc., and I must travel X distance to reach school. But, how he relates his house to the location of the school or office or market or any other place is determined by his own unique "cognitive map."[25] This simple organization (i.e., the cognitive map of his physical movement) of the individual's universe is constantly practiced that relating to its sensory world becomes habitual. But when one attempts to define the boundaries of the individual's universe, the picture becomes more complicated. It is believed that the individual experiences his existential universe in the manner of a Gestalt switch which occurs between any two sub-systems regardless of their geographical temporal or spatial relation in the "sensory world." An individual who is living in Buffalo, New York might at a certain point switch psychologically to another location in Europe or the Middle East or any part of the world depending on his transformational point of importing energy. Thus London may become closer to Buffalo than New York and/or London might in another Gestalt switch be spaced away from New York by Jerusalem. This, however, occurs systemically in the human system without any loss of contact with

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[25]Tolman refers to cognitive maps as sign - Gestalts - expectations or readiness. The cognitive map is built up of sign - Gestalts which are learned relationships between environmental cues and the animal's expectations. E. Tolman (Op. cit.:454). However, in this work it refers to a sub-system of man which has the function of classifying its externalized energy in terms of relationships among various entities which are imported and acted upon by the whole system. As a sub-system, it relates to the system as a whole and has its function in terms of its positional value at any given time. In fact, the cognitive map is the net of reference which is a property of the self-regulator. Thus, it does not necessarily reflect the rational component of personality, as it is meant in the traditional sense.

the sensory world.

So far an attempt has been made to describe the geographical locations in the "cognitive map" of the individual's system. But it is apparent that this cognitive map is not bounded by "objective" reality; it is beyond what is defined as an environment in the traditional sense. One might even suspect that the sensory environment is nothing more than an image which the individual has developed as he evolves. In this sense there is no such thing as external and internal environments but rather an existential universe in which the experiences of all individuals are synergistically united in one whole. However, although this holistic environment is seemingly enclosed within the human system, it is in fact open as the human system expresses itself in its interaction with the sensory world and even more so when the system unites with its transcendental nature (i.e., the need to unite with a divine entity, which is also a conceptual construct).

Stachelin (1975)[26] argues that the stream of social sciences excludes the soul's transcendence, and thus he proposes that social scientists must account for this reality by describing and understanding man's nature. According to Stachelin, differentiation must be made between two forms of realities. The first reality comes to man through his five senses while the second reality comes to man through intuition or the sixth sense which includes a mystical sacred perception of the eternal Absolute which is beyond all relativity. Stachelin draws a diagram to present the first reality as that within which the individual exists inside the bounds of time, space, history and relativity. The second reality is represented as

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[26] B. Stachelin. Confronting the Transcendental. Fields Within Fields, Winter 1975, 14, 54-58.

being beyond time, space and individuality. It is a reality which represents unity with all creation. According to this view the individual psyche experiences the primordial image of the Absolute or the experience of the ultimate Transcendence, and the soul becomes a unity with the Absolute. The road to the second reality, according to Stachelin, is the inner way which is reached by various techniques of daily meditation.

Although Stachelin argues for a holistic conceptualization of man's reality, it is not clear whether he views the unity of man and universe in any synergistic sense. The differentiation between the two forms of realities seems to be rather dualistic. This seems to be inevitable in any attempt to construct a holistic model, perhaps due to an inherent property of the language by which one expresses one's ideas. It is for similar reasons that this investigator feels a heavy constraint in defining environment without reference to what is called "external" world or "objective" reality. It seems that the only coherent way of expressing the holistic nature of man-environment is to assume that nothing exists outside man's universe. According to the synergistic view, man's universe is a multiplex of the physical-metaphysical interaction at every point. Things that seem to exist outside man's world are nothing more than perceptual existential realities. Such a statement may sound irrational and does not stand the empirical evidence of one's daily experience. Man moves in a sensory world and has reason to believe that this world exists by its own right! However, the sensory world is nothing more than an externalization of the individual's existence.

Many social scientists attempt to conceptualize the man-environment relationship in terms of a subject-object relationship. For example, Harvey, Hunt and Schroder make this proposal in Conceptual Systems and

Personality Organization (1961). According to Harvey, et al., the external world is an object upon which the individual acts. The individual as such is a subject, and the output of his interaction with the object is a system of concepts. Harvey, et al. (1961:1) say:

> A concept is a system of ordering that serves as a mediating linkage between input side (stimuli) and the output side (response) . . . it is with the nature and development of these subject-object ties and with facets and effects of variations in the kinds of conceptual linkage between the individual and his world that this book is concerned.[27]

Their argument emphasizes that subject-object connections are presumably independent of the content or the nature of the object. These connections are regulated by the organizational properties of concepts as they are formed by the subject and they are not restricted to any particular referent object. Figure 11 is inferred from Harvey, et al.'s argument and represents their view of the conceptual system in relation to personality organization. The figure shows that the conceptual system has three dimensions: (a) structure, (b) operation, and (c) function. These three dimensions are interactively related in one whole, i.e., the conceptual system. The structure presents the developmental stages of the concreteness-abstraction property of the concept. The stages are transformational. They start with diffused wholeness, develop through more differentiated wholeness, to reach the stage of integrated wholeness. This development of conceptual structure occurs as the result of two simultaneous operations, namely, differentiation and integration. The

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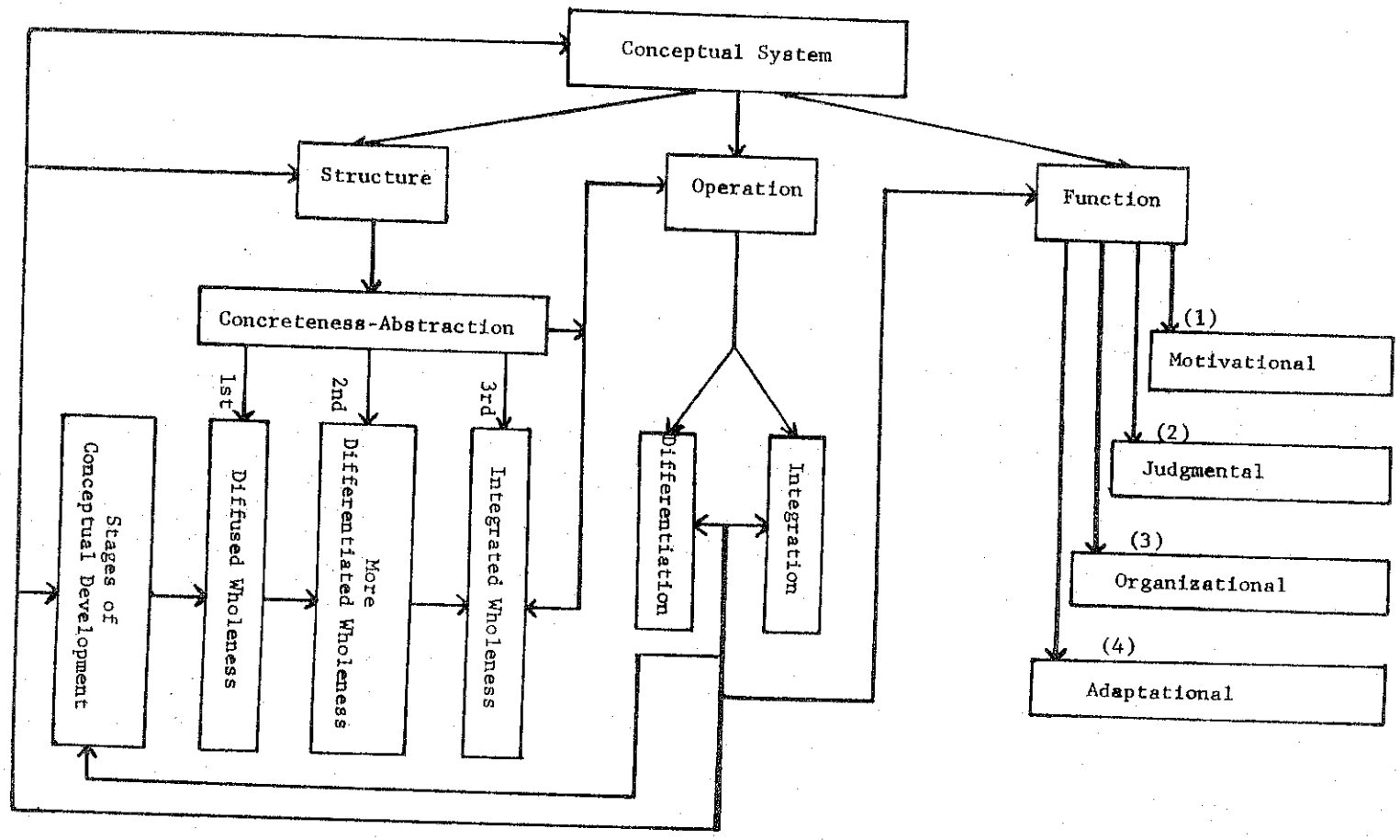
[27] D. J. Harvey, D. Hunt and H. Schroder. Conceptual Systems and Personality Organization. New York, London: John Wiley and Sons, 1961. This is the book that Harvey, et al. refers to.

Figure 11

Conceptual System and Personality Organization:
A Model Designed on the Basis of Harvey, et al. (1961)



conceptual structure has four major functions which are helpful to the individual's interaction with his environment: (1) motivational, (2) judgmental, (3) organizational, and (4) adaptational.

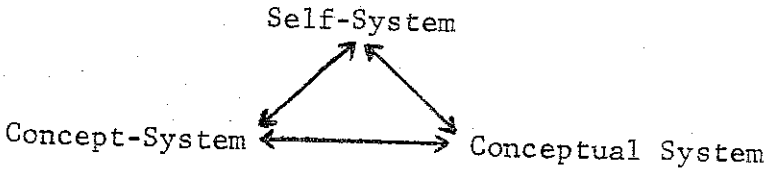
The conceptual systems and personality organization which is modeled in figure 11 yields the following propositions:

(1) Conceptual systems function in a transformational fashion on the basis of confirmation and refutation. The output of the process is the structural concept (i.e., its centrality and interrelatedness).

(2) Concepts have the function of organizing and ordering in a way which is least threatening to the self. The purpose of concept formation is adaptability and this leads to homeostasis.

(3) Concepts are judgmental of events outside the self-system, in relation to the self-system itself and in relation to the whole conceptual system. Figure 12 shows the triangle relationship between the self-system, the concept-system and the conceptual system.

Figure 12
Conceptual System and Self System



(4) Concepts have motivational functions; they motivate the individual to either approach or avoid the object or else to be neutral in relating to it.

(5) Concepts develop through the process of differentiation and integration. However, these two processes proceed "saccadically."

(6) Conceptual development is an evolutionary process; it is continuous at the "genotypic" level and discontinuous on the "phenotypic" level.[28]

(7) Concepts develop from undifferentiation to differentiation to integration (Harvey, et al., 1961:21).

(8) Conceptual development follows stages only in as far as the concreteness-abstraction level of each process is concerned. The developmental stages are also decided by the maturational level of the individual.

(9) The term "stage" refers to a more or less constant rate of some index of performance or behavior - maturational, motor, linguistic, social and other - over a time span of varying length. No stage level of concreteness-abstraction is absolutely constant.

(10) Individuals with great concreteness respond on the stimulus oughtness, are governed by rigid external rules, do not shift in strategy according to new changes, have short memory spans, lack synthesizing, categorize events stereotypically, are absolutists, are negativistic, and are disposed toward ritualism. These characteristics are most outstanding in children. However, concreteness can be practiced by any individual regardless of age or level of education.

Harvey, et al.'s (1961) work does not conclusively resolve the

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[28] Genotype originally referred to all characteristics common to a biological group or species, or a trait which can be transmitted by an individual. Lewin uses it to mean behavior as explained in causal terms. Mischel differentiates between genotype and phenotype by considering the former as continuity, and the latter as the change in personality development. W. Mischel. Continuity and Change in Personality. American Psychologist, 1969:1012-1018. Harvey, et al. (Op. cit.) use the two terms both in the original sense and as it is used by Mischel.

problem of "subjective" and "objective" reality. Basically, they still assume that man is a separate entity from the environment. However, the value of their work lies in their argument that environment is nothing more than a conceptual structure, a structure that is processed developmentally by differentiational-integrational operations which have the purpose of maintaining the steady state of the individual's adaptation to what he interacts with. The second value of Harvey, et al.'s model is seen in their conceptualization of the wholeness of structure-function. At every "stage" of conceptual development the individual conceptualizes the "world" as a whole, however, the wholeness is transformational from a diffused to an integrated entity. This researcher argues that the conceptualization of wholeness follows the principle of synergy at any point of the individual's transformation (i.e., stages). Thus what Harvey, et al. call "diffused" wholeness is better described as less differentiated wholeness. Since wholeness by definition is an integrated entity, an entity which is diffused cannot be described in terms of wholeness.

The subject-object view of the man-environment relationship has motivated social scientists to find ways by which they can measure the subjective world of the individual. Glanville, et al. (1979) assume that the individual has his own way to develop constructs for the world he lives in, and that these constructs could be measured by non-verbal techniques. In defining personal constructs, Glanville, et al. (1979:852) say, "Constructs are supposed to be a means of externalizing the thought process in a manner that reflects this process." The evidence they give is based on the findings of a study in which college students were asked to draw a map of London. Students drew their map in accordance with their own experience of London. The London constructed by each student did not

represent the geographical structure of an objective map but rather a selective construct for locations in which each individual moved physically and psychologically. The writers suggested that non-verbal techniques are useful in assessing an individual's personal constructs. Such techniques might also be used in the form of a game, in that different people drawing maps of their thought processes in relation to a given object can discover the commonalities among them.[29] However, it is argued here that even non-verbal techniques are not sufficient to assess an individual's personal-constructs or, in the terminology of this work, the individual's existential universe. The fact remains that the message

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[29] R. Glanville, A. Pedrett and P. Jackson. Ruing Constructing. In R. Ericson (ed.), Improving the Human Condition: Quality and Stability in Social Systems. Proceedings of the Silver Anniversary International Meeting of the Society for General Systems Research, London, 1979:850-857. In this article, R. Glanville, et al. examine G. Kelly's theory of a "personal scientist" constructing the world. The writers challenge Kelly's theory on the theoretical and methodological bases. According to Kelly, there is in each individual the intent to discover and develop a repeatable set of attitudes that will permit the individual to construct a personal and useful view of the world. Besides, constructs of individuals' world views could be placed in bi-polar constructs in which elements like perceptions and their tokens could be placed according to their conformity with the pole ends. Kelly proposes that in order to ease out these constructs the subject be provided with three elements and be asked to arrange them so that two hold a property in common and one is different. The pair quantity is one pole of the construct and the different quantity is the other. Other elements then are arranged in between according to the degree of difference. The subject can reconstruct the elements in families between the two poles. However, in analyzing this experiment, Glanville, et al. ask: Is the personal scientist structure of the world really as universally applicable as Kelly suggested, and is its structure as open as Kelly maintained? The answer to both questions is negative, and the suggested alternative is to use non-verbal designs to communicate the process of thought in the individual's mind as was done in construction of the map of London. They argue that verbal labeling does not communicate the process of thought as is, but instead adds meanings that could be interpreted differently by different evaluators. Once the individual's structure is defined verbally the non-verbal construct is ignored. Moreover, the arrangement of structures into two poles or into bi-polar structures immediately requires specifying qualities for elements and in Gestalt terms the wholes are reduced into parts.

which is communicated "verbally" or "non-verbally" would have a meaning for the recipient different from the meaning which is originally intended by the initiator of the message. Therefore, one might argue that assessment of the subjective world (i.e., assessment of the individual's existential universe) cannot be made by means of one technique and be taken as a reliable assessment. According to this present work, the only reliable assessment is the holistic impact of the message upon its recipient. He or she must view it as a form of imported energy and act upon it genuinely. The subjective world of any individual is externalized in a form of energy, be it verbal or non-verbal, as these two forms of energy are interactively related. The externalization of internal energy is an "object" to the individual who imports it and thus it is reconstructed in a new form that is subjective. In other words, no one can truthfully claim that he assesses the internal world of others in any form of objectivity. What actually occurs in human communication is an intersubjective process of evaluation mediated by an intrasubjective process which is regulated synergistically.

If one accepts the definition of environment in the existential sense, then other human beings in man's environment are part of his conceptualization; they as such are no more than another expression of his existential universe. The difference between these entities and other entities in the sensory field is a difference of isomorphic inclusiveness between the subject and object. In other words, as man interacts with man he conceptualizes that the "object" of interaction is also a subject. Thus it is another form of interaction which is best described as subject-subject interaction or intersubjective relationship, in which one's mirroring of himself or herself is more inclusive.

Eden, et al. (1979) deal with issues of intersubjectivity.[30] They propose a model of evaluation for the behavior of groups in organizations or members of a group working on one project. This model is concerned with taking into account the intersubjectivity which occurs in policy analysis and evaluation. The underlying assumptions for this model are basically phenomenological in that man is viewed as an open system. The experiences of any member in the group are considered a confrontation with phenomena rather than as "facts" or "laws." Accordingly, all knowledge in one sense is subjective or personal. The researchers describe the communication between two members of a group or among all members of a group as intersubjective, meaning that individual subjects communicate with other individual subjects. By using the term "intersubjective" Eden, et al. attempt to focus on one aspect of experience within teams, and to search for what it means to be a member of a team. This is rarely done in traditional organizational evaluation (i.e., in quantitative evaluation). Eden, et al. (1979:400) say:

> We see a dialectic between the individuality of reality and reality as a'social construction' in which meanings are 'socially' sustained, and experienced as social facts; and it is this dialectic experience which gives rise to the complicated notion of intersubjectivity which we have attempted to carry into our practice of working with teams. . . .Thus the modeling activity is specifically designed to capture the qualitative, idiosyncratic beliefs and values held by different team members about a situation.

Eden, et al.'s model suggests that evaluation of teamwork should be based on understanding a team's perception of a project. There should be an attempt to find the common attitudes that members share and the differences in their views, since both relate to successful completion of the

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[30] C. Eden, S. Jones, D. Sims and T. Smith. Intersubjective Issues and Issues of Intersubjectivity. In R. Ericson (ed.), Ibid.:398-405 .

project. Evaluation as such becomes an integral part of the project rather than a form of imposed criteria for measuring efficiency of the team in relation to an anticipated goal. This model treats man as an open system, a system that is involved in a continuous process of change. In this kind of evaluation, members of the team function as one system, each one exchanging his positional value with other members. The member of such a system explores himself as he is exploring other members. The process of evaluation becomes a form of evolution; however, this evolution is not unidirectional or individualistic. The coherent term for describing evolution within the frame of intersubjectivity is transformation in co-evolution.

Gray and Esser (1979:953) point out that there is a need to learn how to co-evolve with the artifactual environment that man has built. They say,

> With the advent of a neocortical brain and an enlarged limbic-neocortical connectedness, biological evolution has endowed man with a sudden expansion in evolutionary potential, spoken of by Boulding as a brain now capable of shifting the sense of evolution from a genetic to an artificial base. As Boulding suggested . . . naming man himself as an evolving, evolutionary general system, comparable to Boulding's description of the universe as an evolving, evolutionary general system,[31] the problem that we as a species and as individual

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[31] Boulding's description of the universe covers a hierarchy of systems starting with: (1) the level of frameworks which compose the anatomy of the universe. (2) The clockwork level which is the simple dynamic system with predetermined necessary motions; this includes the solar system, the atom and the molecule. (3) The thermostat or control system. (4) The cellular level; this is an open system characterized by self-maintenance and self-reproduction. This is the basis of living systems. (5) The plant level; this level is the genetic societal level which does not have highly specialized sense organs and information receptors. (6) The animal level, characterized by mobility, teleological behavior and self-awareness. (7) The human system, characterized by a self-reflex quality (i.e., man knows that he knows), also the symbolic ability, i.e., language and a complicated sense of time and relationship. (8) The social organization level, characterized by social roles in which individuals participate in group work and develop communication systems which include art, music, poetry, style of life, etc. (9) The transcendental system which includes the ultimate, absolute and the unknowable, and the spiritual system which transcends man's materialistic world. K. Boulding (1956, in Buckley, Op. cit.:6-8).

> members of that species now face with such difficulty is that of learning how to co-evolve in some kind of ecological harmony with the largely artifactual environment that we have built.

Moreover, Gray and Esser (1979), in this regard, emphasize the following points: (1) People have to realize that their brains and the capacity of their brains do not differ significantly from the capacity of those who are labeled as geniuses. This means that people are born with a capacity to evolve which is generally the same for all people. (2) The man-environment relationship must be understood in terms of the integrative function of the brain and this understanding must include reference to fellow humans and to the natural environment. (3) The psychiatric model that is coherent with the concept of co-evolution has to be synergic in accounting for the universalization of a system forming capacity which appears to be a distinguishing characteristic of present times. Gray and Esser (1979:956) observe that,

> We have reluctantly come to grips with environmental pollution because it threatens our survival, if only in terms of comfort. The reluctance stems from man's present inability to function truly synergistically. This reluctance is social pollution, and we must find ways of combating it, if we are to survive at all. Environmental pollution will not kill us; if our social dysfunctions do turn out to lead to catastrophic poisoning of the world, we will kill each other first.[32]

The search for a synergistic approach seems to be attracting more

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[32] W. Gray and A. Esser. Emotional/Cognitive/Structuralism and System Theory Improving Man/Environment Relations. In Ericson (ed.), Op. cit.: 952-958. William Gray, M.D., special consultant in psychiatry, Mission of the Immaculate Virgin, Staten Island, New York, visiting professor psychiatry, University of Zagreb, Yugoslavia. Aristide Esser, M.D., chief of psychiatric services, working at the same mission (Immaculate Virgin); president, Association for the Study of Man-Environment Relations, New York. It seems that Gray and Esser are involved in a project for breaking dichotomies between man and environment on the basis of a new vision in which affect and intellect are treated as one whole, by utilizing the findings on the nature of the nervous system which acts motorically.

professionals who are working for improving man's conditions. However, progress in this direction has not yet reached a point of anti-environment for the social scientific community. Those who have become involved in such attempts tend to focus on the biological component of human nature and in many ways this is colored by the epistemological vision of the empirical paradigm. While this is an acceptable approach, especially since scientific development is transformational, more efforts are needed to transcend the reductionistic approach into a holistic one.

Further examples of the attempts of social scientists to develop a holistic approach for the man-environment relationship, are seen in the following proposals which could be utilized in a synergistic sense:

Mantz, in "Towards a Unified Frame of Reference for Improving Quality and Stability in Social Systems" (1979), suggests that (1) improving quality and stability in social systems is more a matter of restoring "equilibrium" in balanced and harmonious relationships between man and the environment than of the introduction of still more sophisticated techniques. This is proposed to be coherent with Lao Tzu's Tao Te King teachings, "Man follows the law of earth, earth follows the law of heaven, and heaven follows the law of Tao. Tao follows the law of its intrinsic nature" (Mantz, 1979:211).

Mantz explains the intrinsic nature of system-behavior in terms of the natural tendency to maintain and restore equilibrium. In this work, equilibrium is described in terms of maintenance of homeostasis, a property of an open system which breeds on negantropy. (2) Improving human conditions could be achieved by adopting a scientific approach of treating the various sub-systems of the universe as systems within systems. Mantz proposes that this approach applies the concept of key pattern

(i.e., a pattern that replicates itself after the same synergistic principle - which is an elementary pattern of a Tao). Mantz (1979:212) emphasizes that,

> Strictly speaking, there is no conceptual difference between a general pattern of a process and that of development. With development we try to find criteria for more beneficial behavior; we have seen that each process contains characteristic functions which can be designed for improved performance.

(3) A holistic approach has to view that the basic objective of any living system is its desire to survive and that every sub-system within the system contributes something to that survival. (4) The holistic view accounts for the exchange of control between the person and the environment. "However, maintaining the balance, harmony and equilibrium seem still beyond human control. Mankind has to fall back on only creating the favourable conditions for nature to solve the problems by its intrinsic powers" (Mantz, 1979:215).

In general, one can see the value of Mantz's proposal in its emphasis on the unity of all things in a Tao. However, the "key pattern" which he proposes might be misleading as a management theory, whether on the individual level or on the organizational level. One has to realize that although the principle of synergy is the same, the pattern of system-organization is a unitus multiplex, in the sense that there is always diversity within unity as well as unity within diversity. With this understanding, the management organization does not have to routinize the pattern of organizational behavior in order to achieve "efficiency."[33]

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[33] Mantz says, "Introducing efficiency is nothing else than a first attempt to make products more acceptable to potential users. Efficiency in production results in reduced costs. Efficiency implies to contribute to the production of desired results. No process can be properly designed for making two products at the same time. Using the same tools and the same processes for different purposes will always reduce efficiency. So organizational development will show a trend toward homogenization (i.e., one process for one product)" M. Mantz, Toward a Unified Frame of Reference for Improving Quality in Social Systems, In Ericson (ed.), Op. cit.: 213.

In fact, the "key pattern" concept, as it is proposed by Mantz, should not be taken to mean a method of ordering things in a strict pattern; the idea of strict ordering is incoherent with the intrinsic nature of the self-regulator as it has been described in this work.

Doef (1979) deals with pattern and context in psychotherapy. He focuses on a classification of patterns of neurosis and psychosis on the basis of Angyal's and Sullivan's work.[34] He argues that the clinical phenomenon can clearly be classified with respect to two dimensions of self-organization, namely, (1) the inner directed dimension, and (2) the outer directed dimension. However, these two dimensions are viewed as present in every case, and are interactively related to each other. The objective of this classification is to get a clear picture of possible problems which occur in the course of one's treatment of his world and the context in which activities for solving such problems could be

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[34]Sullivan is a neo-Freudian who has proposed a theory of interpersonal relationships. Sullivan assumes that interaction of our physical world with the social world is the principle of life. Sullivan (1953:280) says, "Complete isolation is synonymous with death . . . We are continuously interacting with and in the world, we are always interacting . . . always undergoing experience. We are our experience." Sullivan views man's pursuit of security, or a state of well-being, as the major goal of life. Man's attempt to satisfy this need is essential because man gains admittance to a culture through the process of acculturation or socialization. Significant others in human life are the ones who represent society and their attitudes are themselves socially conditioned. However, first a child experiences empathy (i.e., to feel some of the effect of culture by attitudes of significant people - mother, nurse, or other surrogates) and only later does he understand them by social conditioning. Sullivan emphasizes that once a child becomes involved in the process of acculturation, he is molded in the form of expression of what is wrong and what is right, and what is good and bad, and this form modifies the child's impulses. Thus the child is conditioned through culturally approved behavior. The child's anxiety, according to Sullivan, is always related to interpersonal relationships, thus the state of homeostasis or steady state of adaptation is achieved when the security need is satisfied (i.e., when the child receives social approval for his actions). H. S. Sullivan. The Interpersonal Theory of Psychiatry. New York: Norton, 1953:3-310.

framed. Doef points out that the cognitive viewpoint of psychotherapy does not see the significance of the cognitive process as more than a set of intervening variables which follows the same laws of observable behavior. This kind of treatment in Doef's view is not sufficient. A better treatment, he proposes, would be to view behavior in terms of interpersonal relationships, in respect to the two dimensions of self-regulation. The obsessive-compulsive pattern and the hysteric one are on a continuum. The obsessive-compulsive pattern is characterized by outer-directed or homonomy organizational strategies. Individuals in this pattern are insecure, uncertain about their achievements, hostile in their behavior, confused in deciding whether the world is good or bad, mostly doubtful of themselves and others, and suffer from guilt after acting in a hostile manner. The hysteric pattern, on the other hand, is typical of inner-directed persons and is characterized by self-pity, self-centeredness in world view and a sense of worthlessness and emptiness. These two types of patterns could be experienced by people who are not committed at all or are over-committed. It could be inferred from this description that individuals who have normal or healthy self-organization are the ones whose interpersonal relationships show an integrated pattern of inner-outer directedness. They know how to discriminate between things within their own control and things outside their own control, and thus accept themselves and have a sense of self-worth.[35]

It is argued here that in both types of directedness the self-regulator is the "perceptual" dynamics which are inherent in the human system. In fact, Doef's model is a subject-object model which is better

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[35]P. Doef. Pattern and Context in Psychotherapy. In Ericson (ed.), Op. cit.:891-897.

expressed in subject-subject relationships or in the intersubjectivity that was discussed previously. In keeping with a synergistic view of man, patterns of neurotic behavior should not be interpreted through the diagnostic model of psychotherapy which classifies clients into categories. According to this work, any pattern of behavior can be transformed into another form provided that the individual is accepted as he is and is helped to explore his various sub-systems in order to find a way of reconstructing his perception to his world in a holistic manner.[36]

Shiflet (1979:917) argues for a clear awareness of the interpersonal effects on an individual's motives along with a conscious attempt by society to instill motives which enhance the individual's harmonious interaction with the social system. Shiflet proposes the utilization of an approach which might involve seeking out and developing new or rare "motive types" which might serve both individual and social needs. Shiflet thinks that such motives or goals could be accomplished by using a

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[36]An example of holistic treatment for compulsive behavior can be seen in a recent case in which this researcher helped a 20-year-old female student to deal with her excessive compulsive neurosis, manifested in repeated hand-washing and/or showering throughout the day. The key message in the counseling relationship was a perception of such behavior as a personal style of life. The client explored other features in her style of life such as prayer habits, eating, studying, making friends, relating to her family, etc., and examined all these relationships and her view of life in general in the context of being a woman of Islamic faith brought up in a Middle East culture. The woman started to see that her emphasis on cleanliness was a response to a sense of disgust towards her menstrual period. After two weeks of counseling the student said, "I see nothing wrong in cleanliness. What was wrong is my fear that people who see me 'washing' will think I am a weird person. It seems like the more I want to prove to them that I am O.K., the more I insist on repeatedly washing. Now that I feel it is a personal style, I don't feel like staying in the shower area for a long time. I am O.K. Cleaning or washing is like any other style - I don't overeat, I don't oversleep, I don't overstudy - so I don't overwash. I see no contradiction between not washing the same way I used to and being a good clean Moslem . . . what I do does not bother me any more." Then she said, "You don't seem to see the difference in me." I said, "You are the same person with a new style of cleanliness. What matters is what you see more convenient for you." The client said, "True, but since I am aware of this, I feel much better; I am happier."

program guided by natural philosophy along the lines suggested by Bertalanffy (i.e., a systemic program which views man as an open system with the property of maintaining a steady state by self-regulation). Shiflet defines motive as a learned orientation toward a particular goal. According to this definition, he assumes that researchers or programmers could develop a system of motives in the form of orientation toward the goal of a harmonious relationship between the individual's needs and societal needs. In order to do so, he proposes more research should be done on ego-oriented vs. other-oriented motivation. This area of research could broaden the system of motivation which aims at developing harmonious interpersonal relationships. The system should include intrinsic motivation as well as extrinsic ones.

Though this researcher agrees with the definition of motive as being an orientation toward a goal, neither this orientation nor the goal should be identified by one group of people and imposed on others. Moreover, the classifications of motives in terms of intrinsic and extrinsic is dualistic and has no value in terms of synergism. A synergistic view by definition is a natural view which assumes that the human system is self-regulating and that external conditions are nothing more than energy selected by the individual in his own existential way. Shiflet's proposal seems to suffer from a dichotomous view of man and environment, although its objective is to unite the two "entities." However, if a theorist argues for establishing a special program in order to achieve an anticipated goal he will eventually transform his view of man and universe into a closed system which is externally regulated. It is against the nature of man and universe to assume that equifinality can be reached by means of sequential arrangements of conditions. The contradiction lies in the

fact that open systems have equifinality that is different from the initial state of affairs. Moreover, setting up specific goals of any nature creates an orientation of bounded rationality. Rationality, strictly taken, is both misleading and reductionistic, especially since it constrains the individual from acting upon his conditions genuinely and intuitively.

The trend among systems theorists of adopting a cybernetic view in their proposals for improving human conditions seems to overshadow their basic orientation towards being interdisciplinary, holistic and viewing reality as an ontological process of transformation. In this regard, Pollowy and Toliver (1979:221) argue that, "Contemporary communication technology has a major role in the development of industrialized societies, cultural norms. It also influences all other social groups that are within the range of its external network. Accordingly, communication in and among social systems can be studied as a process of implicit societal control directly linked to concepts of cybernetic control."[37]

Pollowy and Toliver attempted to (1) identify and describe the genesis of cybernetic control of human social systems at all levels, (2) investigate the implications of "information control" for cybernetic control of human social systems, and (3) investigate the implications of communication technology for cybernetic control in and among human social systems. In investigating all these areas, Pollowy and Toliver (1979:225) came to the conclusion that, "A cybernetic concept deals with the control of communication intrasystemically and with the control of communication intersystemically. Since communication is basic to all human and multi-human inter-

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[37]Anna-Marie Pollowy and William Toliver, Sr, Communication and Cybernetic Control in and Among Social Systems. In Ericson (ed.), Ibid.: 221-228.

actions, the control of communication (including the control of the information communicated) effectively controls all other forms of interaction." According to this view, social systems self-regulate in the same way that individuals and cultures self-regulate. Culture, according to Pollowy and Toliver, has a content and a process. The content includes ideas, actions and a material element which is the physical and the geographical environment in which society lives. Content is communicated by means of interpretations people learn from their interactions with one another. The main idea is to analyze culture, society and individuals as systems within systems which act according to the principle of feedback. The feedback principle was discussed earlier and was seen to be incoherent with the property of man as an open system (see pp. 404-405 of this chapter). The problem with cybernetic theory is that it assumes an analogy between man and machine, especially in the concept of feedback. In spite of this, cybernetic theory has value in its description of the information process as a process of choice. The choice, however, does not follow a "yes" or "no" decision in terms of bits and pieces as the cybernetic mathematical model suggests.[38] Choice in this work is viewed as an output of the multiplex interaction among the various sub-systems of the individual's system as a whole. Choice as such is an output of the synergistic act of self-regulation, while according to the cybernetic approach, self-regulation is achieved by means of feedback.

Shibutani (1968) presents the cybernetic approach to motivation as it was originally formulated by G. Mead.[39] Behavior, according to this

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[38] See the mathematical model of communication on p. 213 of this work.

[39] T. Shibutani, A Cybernetic Approach to Motivation, In Buckley (ed.), Op. Cit.:330-336,

approach, is an act which is constructed in a succession of self-correcting adjustments to changing life conditions. In other words, behavior is a series of movements in space-time which is manifested in transformations of a self-modifying learning set. Shibutani points out that Mead defines motivation in terms of its transformation into a complete act which aims at maintaining the steady state of the individual's organism. This act is composed of four processes: (a) impulse, (b) perception, (c) manipulation, and (d) consummation. It is emphasized that these four processes are integral parts of the act as one unit. The impulse is defined as a state of disturbance which is felt by the individual when some conditions disturb his or her steady state. The impulse sets the organism to act upon these conditions. Acting upon the conditions requires perception. However, perception of the environment or of the conditions upon which the individual has to act is directed by impulse.

Shibutani (1968:332) points out that, according to George Herbert Mead's cybernetic approach to motivation, the perceptual process is selective, and selection is directed by the impulse and reconstructed by the principle of feedback. This last principle decides the manipulation of the environment by a succession of self-corrections until consummation is achieved. Consummation is defined as the stage in which the individual steady state is restored. However, the feedback mechanism, according to Mead, is decided by the meaning which the actor anticipates that others (i.e., society) would ascribe to his act(s). In other words, when the individual acts, it is to achieve a goal. This goal is the elimination of tension which has caused the disturbance of the steady state. But the goal itself does not maintain the steady state unless the act carries a meaning which is accepted by society. In other words, society acts

indirectly as a mechanism of control It is indirect in the sense that the meanings which the individual attaches to his perception of the environment and/or of his own act(s) is originally molded by society and is later internalized by him.

The problem with such a view, from this researcher's perspective, lies in viewing the transformation of the social act as a series of successive self-corrections. Viewing the social act as a sequence of self-correction approximations overlooks the role of insight and the possibility of acting upon the situation intuitively. It does not seem that the cybernetic approach is different from tension-reduction approaches to motivation. In fact, the cybernetic approach describes behavior modification in a similar way as Skinner, except for terming what Skinner calls reinforcement, feedback. The difference is semantic. This is especially the case when "Mead is best known, of course, for his insistence that meanings are subject to social control, that anticipated reactions of other people set limitations upon what can be done with an object" (Shibutani, 1968:332). Besides, succession of self-corrections suggests an experimental view for understanding individual behavior. This view assumes that the individual copes with the problem of an unstable state by building hypotheses and testing them in the form of trial and error until the original disturbance has been eliminated and the steady state restored. Moreover, Mead's view of a dialogue between the "I" and "me" components of the personality assumes a split between the actor and the act. The "me" is the self-image and the "I" is the response which it evokes. The self-image, according to Mead, is constructed by a succession of self-corrections in light of people's reactions to the individual's act, and the "I" is the individual in action (who also

anticipates the reactions of others and evaluates them in light of their relation to his self-image). According to this view, nothing is left as inherent in the individual. The individual is reduced to a closed "gas" tube whose behavior is regulated by the first and second laws of thermodynamics. The closed logic of the cybernetic approach to motivation is clear in their description of the conduct of individuals. Shibutani (1968:334) points out that Mead's analysis of the "I" and "me" relationship leads to the conclusion that, "An individual's line of conduct is constructed as he responds to a succession of organic states, perceptual objects, images, reactions of others, and to his own responses."

It seems that under the cybernetic approach, the environment, especially the social environment, is seen as the major factor which decides individual behavior. This conclusion about the cybernetic approach is reached on the basis of the previous discussion. It was seen that self-image, emotions, thinking, attitudes and all other cognitive processes are viewed by the cybernetic approach as an outcome of the individual's interaction with the environment and that the environment is regarded as a controlling mechanism by means of feedback. However, it is argued here that the self-regulating "mechanism" has a synergistic function, thus social reaction can be regarded as "imported energy"[40] upon which the individual acts. Through this action, its meaning can be transformed into an idiocynetric meaning which may differ from the initial meaning which it was given by society. Only in this latter sense can one see the

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[40]"Imported energy" is used in this work to refer to the property of an open system. However, though the implication of the word importation implies in its traditional sense that there is an external world, in this work the external world is viewed as an externalization of the individual's internal energy in the form of a sensory world. Thus "importing" refers to the individual's exploration of his externalized energy which is essentially a priori in man's nature.

role of social impact upon the individual. The main difference between the synergistic view which is adopted in this work and the cybernetic view is that the former assumes that the "external" environment is a priori in man's nature, meaning is in the mind of the individual, and all that the external world does is to facilitate the individual's exploration of his system by mirroring himself in externalizing his energy in a form of a sensory world which is essentially a sub-system of the individual's whole system.

Some psychologists argue that individuals differ in their world view in terms of internal-external orientation, and that such orientations decide the type of behavioral control. Along this line, Rotter (1966) introduces a scale of internal vs. external control to measure personality dynamics in social interaction.[41] According to Rotter, people who are internally motivated view themselves as responsible for their behavior and assume that their achievements are the result of their ability to control their environment. In contrast, those who are externally motivated tend to view their achievements or failures as the result of external conditions which are outside their control. The degree of control the individual judges himself to have over the environment is indicative of which side of the internal-external continuum his views or psychosocial dynamics lie and in effect, whether he can be classified as internally or externally oriented. According to Rotter, those who believe that their behavior is externally controlled are more fanatical, rigid and dogmatic, while those who are described as internally controlled know how to differentiate between conditions within their own control and conditions outside their

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[41] J. B. Rotter. Generalized Expectancies for Internal Versus External Control of Reinforcement. Psychological Monographs: General and Applied, 1966, 80(1, Whole No. 609), 1-28.

control. However, individuals are not completely internally or externally controlled; the difference is a matter of degree. Only in extreme cases can one find individuals who perceive themselves as fully responsible for their failures and refuse to see the significance of external conditions. Similarly, extremely externally controlled people interpret their achievements or failures as a matter of "luck" and external factors. Thus, it is presumed that the well-integrated person is one who can recognize the value of both internal and external conditions in any act. It would appear that Rotter's work is similar to what Doef calls "inner-directedness vs. outer directedness," a trend of thought that assumes a role for social interaction in the process of self-regulation. It is not clear, though, whether Rotter would commit himself to a synergistic view in seeing that in both cases the individual is the self-regulator since he is the one who determines his view of the world, or if Rotter's scale implies the existence of internal and external regulators in the cognitive interactionist sense as is implied in Doef's work. In any event, Gurin, et al. (1969) apply Rotter's scale in measuring the motivational dynamics of blacks in the latter sense. Gurin, et al. (1969:33) observe:

> We suspect that this (internal-external orientation) is a crucial one, that it matters motivationally for groups disadvantaged by social conditions whether the external orientation refers to chance or to those more systematic, concentrating forces. Although literature to date indicates that people who believe in external control are less effectively motivated and perform less well in achievement situations, these same effects may not follow for low income persons, particularly the 'Negro,' who believe that economic or discriminatory factors are more important than individual skill and personal qualities in experiencing why they succeed or fail.[42]

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[42] P. Gurin, G. Gurin, R. Lao and M. Beattie. Internal and External Control in the Motivational Dynamics of Negro Youth. Journal of Social Issues, 1969, XXV, 29-53.

This extract suggests that Gurin, et al. apply Rotter's scale on the basis that there is a dichotomy between the internal and external conditions of the individual. This may not have been intended by Rotter in his original scale. This might be taken as an instance where a theory is applied within a different conceptual view of man and universe than that under which it was originally formulated.

Binstock (1979) argues for the necessity of accounting for the subjective world of the individual and proposes that social scientists should develop information banks on how individuals view their "objective" world in terms of their intuitive and emotional experience. This proposal assumes that an information bank on subjective reality would transform subjective into objective reality which would then enable scientists to develop ways of dealing with the problems of social change. Binstock (1979:846) argues that, "Gathering information about people's feelings, fear, motives, hopes and expectations by using the 'disciplined subjective'[43] approach is as valuable as the information-gathering process of x-ray, diagnostic biopsy, and cardiac monitoring." Binstock's major concern is to urge social scientists to find techniques that could provide

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[43]The "disciplined subjective" approach was originally used by Margaret Mead. Binstock expands Mead's definition of this approach to include the study of cases of individual units, representatives of larger groups, and the use of projective techniques specifically designed for sample populations. His study aims at categorizing responses, needs and strategies which human beings have developed to gain what they want. Binstock (1979:847) argues, "As much as he is a rationalist, man is intuitive." However, Binstock argues that people in the West are affected by the rational paradigm of science and business that most of them try to inhibit their feelings. One tries to be "right," "rational," make sense and even appear more smart than he is. "For the sake of comfort and control, the importance of the subjective and un-rational has been minimized, its existence often denied, and its activity a source of shame. Consequently, the logic of feeling, the logic of metaphor is little understood" (Ibid.:848). J. S. Binstock. Transforming Subjective Reality into Objective Reality. In Ericson (ed.), Op. cit.,:845-849.

data on the subjective components of human adaptational responses to technological changes within the perspective of rapid change.

It is argued here that an information bank on subjective reality might be helpful for understanding human nature provided that it is taken as a form of energy limited by the time-space domain of a certain point of transformation of a certain group of people, rather than as a statement of universal or generalizable values for transforming subjective reality into objective reality. In other words, information on the relationship between human experiences and their world has to be taken as a new source of energy for self-exploration. It is believed that others' experiences are forms of one's existential experience in the sense that these others have the same nature but differ in their points of transformation for exploring their structure-functions. This understanding is based on the fact that, "In an open system the final state (equifinality) may be reached from different initial conditions and in different ways" (Shibutani, 1968:332).

It was argued in chapter 2 of this work that reports of research findings which include a discussion of the subjective element of the researcher's experience are a valid form of input for the audience which also transforms the findings in its own subjective way. This ontological view of research enriches the individual's ability to expand his or her negantropy in a continuous manner, which is coherent with the human nature of constant change. According to this view, research findings and/or subjective-information banks share a similarity in value with novels, poetry, art or any other human creation. Different contributions of the human mind are different forms of man's externalization of energy and the value of any of these contributions is not inherent in its immanent

characteristics but rather in its positional value as a sub-system within the existential system of the individual at a given point of transformation in a synergistic sense.

What applies to the individual on the micro level applies to the universe on the macro level, since both man and universe are one unit of the same in structure-function. The structure-function of universe is within man, and what is seen as structure-function of universe in the sensory field is nothing more than an externalization of man's universe on the macro level. This isomorphic relationship is analogous to having two pictures of the same entity, one being small in size and the other being as large as the whole universe. Thus any point on the micro level corresponds to a point on the macro level and at each point of the micro type there is a multiplex of invisible points that become visible at the macro level in the sensory sense. In this analogy, the original copy is the human being and its reproductive copy is the universe. The individual's experience of his own world (i.e., universe) corresponds to his experience of what is traditionally called the objective world. Thus when man landed on the moon in "actual" reality (i.e., in motoric action) it was, in fact, a reflection of his existential transformation of having landed on the moon in his own internal universe. The relation of man to the moon is a priori in man's existential universe, but it becomes synergistically visible when the motoric sub-system unites with the perceptual sub-system of man's universe and they transform into a leading sub-system in relation to the system as a whole. All other sub-systems at this point are transformed into a system which is capable of reaching the moon in terms of emotion, thought and physical movement, and which has the ability to create technological equipment which is calculatively coherent

with the moving system as a whole. In fact, one can even argue at this point that those who have actually landed on the moon represent a sub-system of mankind's transformation. The moon landing is a point of transformation for all mankind's experience in the human universe which has reached a point of transformation and has been represented synergistically in these astronauts as a sub-system of mankind. There is nothing inherent in the men who have landed on the moon which makes them any different from the other men who have never left their home towns. The man who is sitting in his home town has the same potential as the man who has reached the moon; the difference is that the one who reached the moon has reached a drastically advanced point of transformation in exploring his universe. To reach this point, however, is an equifinality constantly being open to explore one's potential by externalizing one's energy, of importing what one has externalized and of constantly self-regulating one's flow of energy in a way which has sharpened the synergistic unity of one's existential universe. Moreover, it should be emphasized that those who physically landed on the moon did so by assimilating the energy of all those other scientists who participated in the project. According to this logic, it would not be surprising if man one day reaches the sun although not necessarily in the same way he has reached the moon (i.e., by expanding his negantropy through the use of more equipment or technological facilities), since the sun has a different positional value in man's universe at this point of man's transformation. But the equifinality is that man can reach any point in this universe, if he explores this point in his own system synergistically as he evolves in understanding his nature by means of mirroring out this nature in his sensory field and acting upon it.

If man can reach the moon and unite his human system with a solar sub-system, is it not possible that man can reach into another human being and unite synergistically with that individual's existential universe, a universe which is essentially isomorphic to his own? Is it not also possible to develop a vision of building a supranational paradigm for a global nation of various sub-systems in which each has a positional value in a time-space domain in relation to the whole global system which is engaged in a process of dynamic change? From the perspective of systemic analysis, this is not only possible but inevitable as an equifinality of mankind's transformation on the basis of the synergistic principle. Taylor (1974:6), in reference to such a global vision,[44] observes:

> What is involved is a fundamental conceptual shift . . . a multi-relational transformation for a nation-state paradigm to a global construct. . . .The notion-space paradigm - tended to view space as a 'void,' an empty receptacle to contain pieces of 'property' so that space was largely a matter of 'place' and 'location,' and what lay beyond the property lines with no-man's land or, alternatively, open to inferent way of perceiving space is to regard it as a system in which field forces are omnipresent and omnioperative, acting upon all material phenomena and maintaining a dynamic 'equilibrating' field. It is in the context of a plenum or field that we need to approach the ordering of our planetary and extra-terrestrial spaces. . . .A systems approach, because it is global, also requires us to stop segregating the problems and their solutions into national and international compartments. Any such piecemeal attempt will fail, because while each nation must take remedial action, all of the major systemic variables transcend national boundaries. In short, nothing less than a global strategy will suffice to implement a new and revolutionary paradigm.

Taylor (1974:7) continues by proposing a vehicle for achieving such equifinality of a global nation. He says,

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[44] A. Taylor. Toward a Supranational Paradigm. Fields Within Fields. 12, 1974:3-8.

> We are to plan for a deliberate shift from random growth towards more steady-state in the material realm so as to optimize the quality of life for the planet's inhabitants. But 'quality of life' is something different from our present preoccupation with quantity. It means attaching a new, non-monetary value to man's worth. It means a new educational system and curriculum, in which the young are no longer primarily trained for an industrial work-force but are encouraged and assisted to explore their own potential, their uniqueness as individuals. . . . A new model of societal organization can create different modes of individual and creative action . . . A society . . . with a value system and life-style founded on the principle of interdependence among all its members, and between its members and all other orders of nature.

Taylor's global model of international relations is inevitable in light of the understanding of man as an open system. According to this view, nations must be seen as sub-systems within the global system. The self-regulator of all nations in a global whole is not the United Nations in the way that it has operated since 1945. The United Nations in its structure-function is analogous to an external regulator of a gas tube in accordance with the first and second laws of thermodynamics. This law is not coherent with the nature of open systems whose regulator is internal and inherently synergistic. Since everything in this universe is perceptual, one can argue that the U.N. almost throughout its existence, has attempted to distribute the positional values of its composites according to rigid criteria which categorize nations on a leading-following continuum of positional values. Continuity of this classification is ensured through the veto concept. The ability to veto is assigned to some nations who thus are able to view themselves as able to alter decisions, regardless of the dynamics of change within the whole body of decision-makers. In a system of natural structure-functions, no sub-system is fixated at the same positional value all the time under all conditions, as the U.N. structure suggests. The systemic analysis which is based on the energy

model, suggests that any sub-system, no matter how small its quantitative sensory attributes, has in fact all the properties of any other sub-system in its potential universe. Thus its function has to be viewed in terms of its positional value which is different in a different time-space domain.

Classifying nations in any form of hierarchy on the assumption that this classification is valid for all purposes all the time is analogous to classifying intellectual or rational power of the individual as superior to irrational-emotional power all the time. Nature suggests that at times being emotional, spontaneous is much more significant for the individual's survival than being logical and analytical. In fact, there is no individual who is either/or rational-emotional all the time. And even, an individual whose rationality is in a leading positional value on the overt level experiences emotionality on the covert level as an equipotentiality of what he does overtly. What is happening in the individual's system is a spontaneous selection for which a sub-system has to take a leading positional value. This selection in itself is holistic and thus any sub-system which is selected has within it all other sub-systems' structure-functions and values. A person who organizes his life in a rigid pattern is restraining his energy flow and consequently is increasing his entropy. This is believed to be the case on the basis of the third law of thermodynamics, which asserts that nature functions in a random orderliness and that complete orderliness is impossible. The same is true for the United Nations if its structure-functions follow a rigid and orderly pattern of interaction. The United Nations as such increases its entropy over time. However, since the United Nations is a system of energy and energy is never lost or destroyed, it is inevitable

that the United Nations will be transformed into a new structure-function in accordance with the internal self-regulating principle of synergistic nature. This new system will follow the paradigm of the global supra-national model in which nations stand as interacting members, ready to exchange their positional values and give the lead to a certain nation, spontaneously, as the time-space domain suggests. In this kind of system interaction, all nations would become free of the constraints which are now imposed by some U.N. members in terms of rewards or punishments. A system of this nature might sound idealistic and impossible to achieve in view of the conflicts among nations. However, when man reaches the point of breaking through dichotomies within his own universe, his mirroring of himself in a nation and consequently in a global nation will become feasible. Unfortunately, an objective of such a nature cannot be planned for, since planning restricts the flow of energy in a natural way. However, once such a vision becomes available to man, it becomes a new input on which each individual nation can act in its own way and thus the equifinality could be reached, although in different ways, and from different directions. Conflicts among nations are analogous to conflicts within an individual system; they are a source of energy that permits the individual to continue to be in motion. However, the motion is self-regulated inasmuch as the individual is open to deal with these conflicts genuinely by being committed to stay in touch with what is happening within his system so that his core is still within his own "hands" (i.e., intuitively sensed).

Platt (1973:1-2) argues that the future is in our hands. He points out that transformation of mankind through three billion years, according to the latest radioactive dating, suggests that,

> Evolution up to at least our level of nuclear power

> and space technology might be almost inevitable on many planets similar to ours. But no one could answer the question, whether civilizations solve their almost certain problems of planetary management, and conflict and cooperation, before they destroy themselves.

Platt concluded,

> Though there are long thoughts, but they suggest that the future is in our hands. Our decisions and actions through this period of transformation in responding to crisis and building new 'institutions' are already determining what kind of society, if any, we and our children will have in the new world ahead. . . . We need to design patterns that will begin to give us the global security and abundance that the 'great' new technologies have made possible, while encouraging the diversity of our full human potential in different groups and cultures.

Although this researcher basically agrees with Platt that the future is within our hands, the conclusion is reached on different grounds. The technology which Platt saw as great, and as "responding to crisis and building institutions" (such as the U.N. which Platt saw as a significant point of transformation; Ibid.:1), is in this researcher's view essentially a destructive achievement which, however, has the potential to be transformed dialectically into a constructive achievement. In fact, the outcome of technological advancement and the problems which "nuclear power and space technology" have brought to man could cause one to become pessimistic if one were to see equifinality in terms of present conditions in any linear sense. However, the dialectic of universe and the harmony of the opposites and the logic of the Tao (see pp. [illegible] in this work) make it possible to believe that the transformation of mankind is inevitable towards unity within diversity and that the destructive aspects of technology have within them the potential for constructive aspects. In fact, when one looks at some of the problems of change experienced in the "technological" world, one might conclude that technology is not the answer to man's needs.

Binstock (1979) points out some of these problems: (1) the "pill" and family planning which creates the concept of recreational sex and has led to a decline in fertility rates in a number of Western countries; (2) the problem of multi-national corporations and big government that is created as the result of computer invention; (3) the generation gap which has resulted from television (children are a new generation, influenced by electronic technology); and (4) the ideological problem which results from the growth of the drug industry (marijuana is estimated to be a $28 billion dollar illegal industry in the U.S.).

However, these effects are not the only outcome of technology nor, in fact, have they been solely caused by technology. In the view put forth here, technology is a form of energy that man creates as an expansion of his negantropy and becomes a new form of energy that man imports and acts upon among with other things that man has created in his sensory world. People at different transformational points perceive and act upon technology differently. Thus while technology triggers awareness of sub-systems of certain cultural values in some individuals or groups of individuals, it may trigger other sub-systems of an opposite nature in other people, depending on how each group perceives technology.

Thus it is not surprising to see in the technological countries, people who transcend the materialistic impact of technology into a style of life that is characterized by a search for simplicity, and an orientation that is characterized by a search for a holistic pattern of viewing their existential world. Lutz (1979) refers to the latter response to technology as a "shift" in perception, a shift which includes both the scientific paradigm and technology. In reference to this shift, Lutz makes several observations:

(1) America is an affluent consumer society. "The average American uses six times more than the world average and up to 20 times more than 'poor' world inhabitants." This gap in energy consumption is one of many gaps between "advanced" and "developing" nations.

(2) This trend towards greater consumption is counteracted by a trend towards dissatisfaction with the meaningfulness of material wealth. More people begin to question whether it makes sense to consume all the things industry produces. It is observed that there is a tendency to spend money on "software" instead of "hardware." Thus there is a shift from thing-orientation to experience-orientation, including consumption, sensation and pleasure.

(3) "The fastest growing consumer market is people who don't want to buy much." This trend, which is labeled "voluntary simplicity" by the Stanford Research Institute (SRI), is increasing rapidly. According to SRI findings, Americans who do not want to have were estimated to number more than five million in 1976 (Ibid.:204). According to Lutz, these people have holistic health and are labeled the "me-generation." They tend to originate from middle to high income families, be well-educated and be generally dissatisfied with the social circles of their socio-economic class. Lutz interprets this as an indication of a shift to inner growth which results from the material saturation that these people have experienced. From this researcher's viewpoint, it is evidence of the Tao movement of energy, whereby the most experienced self has the equipotentiality of its opposite.

(4) There is a growing resistance against the motto of the technological age - namely, the know-how attitude. People are realizing more and more that "the way that can be described is not the way." This means

that people are searching for multiple ways for solving their problems instead of looking for blue-print "technological" or "scientific" solutions. This shift from trusting instruction into a search within oneself for genuine and intuitive solutions is a shift in people's perception of the scientific paradigm. Lutz (1979:205) points out, in technological societies,

> The basic idea is that external systems solve our inner problems. This 'technical fix' approach succeeded especially in the last 200 years, when the knowledge about specific relations in the reality became increasingly popular. The machines and technical devices mirror clearly this narrow understanding of real world relations. Technological systems always tend to be one-dimensional, applicable only to one very specific task. They are, so to speak, the revision of specialized scientific inquiry which provide the knowledge for technology . . . not surprising, therefore, the fact that the ultimate vision of this kind of problem-solving approach resulted in an inhuman (human/ego) techno-environment, or today's automated attempt of making work for humans without considering how people will feel in a world of these omnipotent technological systems. . . . To overcome the pathological technology we need an alternative concept about 'how we deal'[45] with reality.

Lutz proposes that, "The development of techniques to get access to the 'inner world' and the hidden wisdom of ourselves is, therefore, most important. However, the consciousness-explorations have to be followed by elaborated systems-communications, that means the 'new image' must be translated into the terms of the 'old system' as long as no generally accepted Gestalt switch takes place" (Lutz, 1979:208).

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[45] Ironically enough, Lutz criticizes the technological approach with its "how to do it" attitude but what he proposes is basically a search for a concept which covers the question of "how to deal with it." From the perspective of this researcher, the question of "how to do it" should always be left to the individual who must find his own way of externalizing and importing energy. Any "technique" suggested by a scientist should never be taken as more than another alternative for perceiving a situation. Solutions to problems are as numerous as the potential for transformation of energy into new forms. The selection of a solution is left to the individual to decide for his own purpose, according to the status of his own transformation. No one is in a better position to evaluate this than the individual himself.

Lutz's observations are valid for supporting the argument that technology could create conditions for attitudes of an opposite nature to those of the general trend. However, his proposal for developing a "technique" of gaining access to the "inner world" and especially for adopting the terminology of the technological scientific paradigm is in full contradiction to what "inner world" exploration means to the "me-generation." It is argued in this present work that genuineness does not follow a "technique" since the very act of formulating a technique on "how to be genuine" creates an artificiality in the individual and his ability to relate to his experience synergistically. It is tempting for a scholar to develop techniques for applying his theories, especially scholars who have been trained to evaluate a product or project on the basis of "whether it works." However, a synergistic view which assumes that the energy of the universe is within man, and that the individual possesses a self-regulator for maintaining his or her steady state, considers any proposed technique as merely another alternative available to him or her to import and act upon in his or her own way. A scientist who contributes a proposal is reflecting a mode of man's transformation which might be reached by the layman from a different direction and at a different time, because both the layman and the scientist have the same nature and love of "humanness" in their structure-functions. But to induce one person's model on another person and to assume that this is "the" model is to say, essentially, that all other people are at the same level of transformation. This is a misconception that is clearly embedded in the "efficiency"[46] model which is

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[46]The efficiency model is any model or technique of a "how to do it" nature which identifies objectives and steps of action in the direction of pre-set objectives. The model assumes that such steps are to be arranged spatially and temporally in a sequential manner that follows the linear logic of efficient causality (see chapter 2 on the limitations of this closed logic). For further understanding, see C. W. Churchman, The Client and Model, In Stogdill (Ed.), The Process of Model Building in the Behavioral Sciences, Columbus, Ohio: Ohio State University Press, 1972:

advocated by the cybernetic approach to man's behavior. The efficiency model assumes the development of entry and terminal behavioral objectives and thus a technique is forged to bridge the gap between these two forms of objectives. The efficiency model therefore assumes the responsibility of identifying a "hierarchy of learning"[47] that approximates the individual's behavior from the terminal objectives. It is a step-by-step approach which is regulated by external criteria. The external criteria are also categorized in a hierarchical manner and each step is supposed to function as a feedback mechanism for self-correction. Thus, the internal world of the individual according to this model is an internalization of the external input which is supposed to be arranged sequentially for this purpose (i.e., reaching the terminal objectives). Comparing this model with the properties of man as an open system, it is apparent why this researcher argues against Lutz's proposal of a technique for developing the individual's ability to gain access to his or her inner world.

To this point it has been argued that a synergistic view of man and universe considers man as a flow of energy in a continuous process of transformation. Man's transformation follows the synergistic principle which unites all the sub-systems from which the human system is structurally and functionally formed. It was argued that the human system is an open system which is characterized by several properties that are broadly descriptive of all living systems. Non-living systems, in contrast, are described as closed systems in a relativistic sense. The difference among systems is a difference of energetic form in terms of

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[47] R. Gagne. The Reasons for Specific Objectives. In R. Gagne, "Analysis of Instructional Objectives for the Design of Instruction." In R. Glaser (Ed.), Teaching Machines and Programmed Learning. Washington, D.C., 1965:23-27. And R. Gagne. Identifying Objectives - Task Description. In R. Glaser (Ed.), Ibid.:31-34.

structure-function. In fact, every system, living or non-living, is defined as a form of energy which is distributed in a systemic multiplex relationship among its various structure-functions. The properties of an open system describe the behavior of the system in that it, (1) imports energy, (2) expands its negantropy in a manner paradoxical to the second law of thermodynamics, since it has the property of selecting energy in a random manner, (3) transforms the imported energy synergistically, (4) it is an internal organizer that is constantly transforming its structure-function from one sub-system to another; the sub-system which functions as a regulator at any time-space point of transformation is such because of its leading positional value in the system as a whole at that point, (5) is capable of self-regulation which explains why open systems have the property of maintaining a steady state of dynamic homeostasis, which is the equifinality of an open system. This property describes purposefulness and is usually reached from different initial points and through different courses of action.

The man-environment relationship is described in terms of the unitas multiplex principle. According to the arguments that have been presented, the environment is defined as an integral system of the individual's existential universe which is externalized by the individual in a form of sensory field and is acted upon in the process of importing energy. The process of importing energy is described to be dynamic and transformational. Within the frame of the synergistic argument, the individual is described as acting upon the sensory field (which is originally an externalized part of his existential energy) in a subject-object or subject-subject relationship. In both cases the interpersonal relationship is a form of exploration of one's own existential universe. This is assumed

to be the case because it was argued that anything that exists in the sensory field is a priori in man's nature. Therefore, what the individual does in a process of exploration is a process of mirroring oneself with a special focus on a sub-system of his whole system which at that point takes a leading positional value. This process of self-exploration is viewed as a necessary process for expanding one's negantropy and consequently for strengthening the synergistic principle or self-regulation which maintains the wholeness of the individual's system. For this reason it was argued that breaking the dichotomies among the sub-systems of oneself is isomorphic to breaking dichotomies in the inter-subjective relationships on both the micro level (i.e., between one individual and another and/or among individuals), and on the macro level (i.e., between one nation and another as well as among all nations in the global international system).

The argument on defining the individual as a universe, or the universe as being within the individual's system, led to the formulation of the principle of synergy within the individual and to transcribing this principle into the principle of mirroring oneself in an interpersonal relationship with the sensory environment. The term "mirroring oneself" is employed to refer to equating oneself with others as one relates to them. The difference that the individual senses between himself and others is essentially a difference in the point of transformation which he has reached in the time-space domain. The point of difference is either an equifinality or an equipotentiality of the individual's self-exploration. Being an open system, such a difference is to be taken as an imported energy to be synergistically transformed in the two or more individuals involved in communication at that point. Genuineness is the facilitative

condition for such a purpose.

In short, the synergistic view has dealt with breaking the dichotomy between man and environment. However, the question remains: How could this synergistic view solve the mind-body problem - which has been identified as a persistent problem in the empirical paradigm of the social sciences?[48] The following unit attempts to deal with this problem.

UNIT III: A Synergistic View of Mind-Body: The Unity of Man's Existential Universe in the Life Principle

The existential pain this researcher feels at this point of conceptualizing man's nature seems to be a message which says mind-body is a dichotomy in conceptualization rather than in reality. If there is a living system, there must be mind. The labels, mind-body, do in fact refer to one entity which is constantly living, behaving, and regulating its energy and is purposefully motivated to maintain its steady state of dynamic homeostasis. This is the way one observes one's existence and experiences one's life. If one assumes that all things in the universe are united in one entity, then one is describing a state of "absolute" reality. The Absolute reality, however, is by definition undefinable in descriptive terms which can be concretely felt or comprehended. When one tries to ask, "Where is the beginning and where is the end of this life?", one imposes a regular order on life which might be incoherent with ultimate or Absolute reality. No one knows when life "starts" and when it "ends," but still the urge to put life within a logical frame is a typical tendency of man's conceptualization. This is true because man constantly searches for order, although there is a possibility that the

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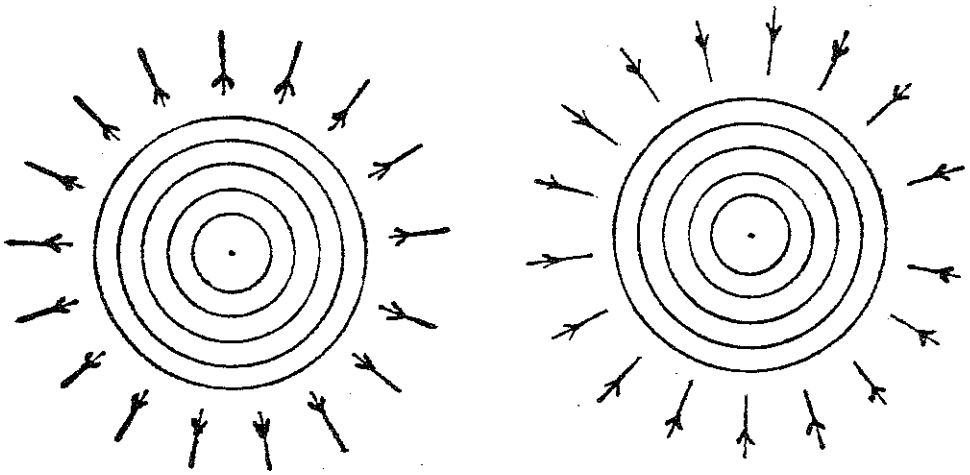
[48] See chapter 3 in this work for the discussion of the mind-body problem in psychological theories.

beginning and the end are nothing more than one entity in alternate states of Absolute contraction and expansion. Taimni (1974:28-29) refers to this phenomena (i.e., alternate expansion and contraction) in speaking about the Ultimate Reality in terms of cosmic rhythm. He says,

> The Ultimate Reality is conceived as an oscillation of consciousness in which it alternately expands to an unbounded sphere of radius and then contracts to an ideal point, thus sweeping through all the intermediate stages represented by concentric spheres of different radii [shown in figure 13]. This alternate contraction to a point and expansion to infinity brings out on the one hand the dynamic nature of Reality and on the other shows how the ideal point and unbounded infinite space both serve alternately as vestures of that Reality. Those who are familiar with modern scientific ideas will see in this alternate assumption of two extreme and opposite states an analogy with the state of resonance which is assumed in a natural phenomenon when it shows the characteristics of two opposites simultaneously. The thing showing such opposite characteristics is considered to assume the two extreme states corresponding to these characteristics alternately and with extreme rapidity. Under these circumstances the thing is neither one nor the other but a dynamic equilibrium between the two.

Figure 13
Alternate Expansion and Contraction
(After Taimni, 1974:28)



The significance of Taimmni's description of Ultimate Reality in relation to mind-body and of its synergistic nature is seen in the conceptualization of the ideal point and the unbounded space. These two conditions of absolute contraction and absolute expansion are analogous to the principle of life. Life in its initial stage is an ideal point that is expanded over time to an unbounded space that emerges between these two extreme opposites in the individual who is in constant search for a steady state of dynamic homeostasis. Man, in other words, is an entity within which all the universe is concentrated in its ideal point - "the trigger of life" - and this ideal point has the equifinality of transformation through cyclic forms to infinity. The fact that there is a "moment of conception" and "a moment of death" does not mean bounded "beginnings" and bounded "ends" for man's existence, but it does mean there is one cycle in the infinite cyclic forms of life in the cosmic sense. If this analogy applies to the life principle in the dynamic sense, then it could be safely assumed that the ideal point of life has both mind and body in a structure-function entity which is indivisible. This entity at its "ideal" point represents creation and its unbounded space represents the creator. Thus, if the ideal point is the contraction form for the unbounded space and unbounded space is the ultimate expansion of the ideal point, then the creator and creation are one entity which is represented in the "created." The created then is any cyclic expansion from the ideal point. Thus the individual or the living system could be assumed to be the embodiment of creator-creation, that is, body and mind. As the creator is indivisible from its creation, so is the mind indivisible from the body. Thus if contraction-expansion alternates from the ideal point to unbounded space, the human system should behave in the same way. The individual's

life starts with the zygote (a fertilized ovum), a "point" which is the optimal expansion of the ideal contracted point of life principle. The body-mind develops from this point and expands in cell differentiation and cell integration in a multiplex manner which reaches a point of transformation in an adult organism. This organism acts upon its environment with the entire multi-cellular system in which the unity of mind-body is manifested in structure-function in every cell and at every stage of cell-division.

McLaren (1972:4) points out that, "Differentiation is the central unsolved mystery of development, that from a single fertilized egg develop all the tissues of the adult organism, including such diverse types as bone and brain and spermatozoa and pigment-forming cells."[49]

The unsolved mystery of differentiation referred to by McLaren is the key concept for appreciating the possibility that mental life starts at the moment of conception, since the system of regulation for cell division and differentiation from which the adult organism evolves cannot occur without an inherent organizer which synthesizes structure-functions in a coherent pattern. The organizer must by definition be a structure-function which carries genetic information. No other structure-function can unite the mental images of all previous generations transformationally except a biochemical compound that contains the genetic information.

In fact, one can argue that when fertilization occurs, a new life

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[49] A. McLaren. The Embryo. In C. Austin and R. Short (Eds.), Reproduction in Mammals: 2 Embryonic and Fetal Development. London: Cambridge University Press, 1972:1-42. This article deals with specialized information in embryology, however, it helps the layperson to see that the process of development is a transformation process, highly complex in nature, but following principles which suggest that there exists a neat information system in the cellular system. One might suspect further that mental life indeed does start at the moment of conception.

begins in the sense that there occurs the transformation of genetic information from parents to offspring. Austin (1972:133) sees the significance of fertilization in a similar way:

> The primary role of fertilization lies in its genetic function - the bringing together or re-combination of hereditary factors from two different individuals, and their re-assortment in the genome of a new individual. Fertilization thus not only provides the mechanism for bi-parental inheritance but also prevents the progressive establishment of sub-groups, based on mutations, and so makes for integration of race.[50]

Embryologists, in fact, are now better able to understand genetic functions since the discovery of the DNA structure-function in 1953. Lehninger (1975:856-7) points out that,

> In 1953 J. D. Watson and F. H. Crick postulated the double-helical structure for DNA, which not only accounted for the molar equivalence of the bases and the characteristic x-ray diffraction pattern of DNA, but also suggested a simple mechanism by which genetic information can be precisely transferred from parent to daughter cells. . . . The Watson-Crick hypothesis termed the central dogma of molecular genetics, which states that genetic information flows from DNA to RNA to protein. Although this statement has had to be modified more recently into the form
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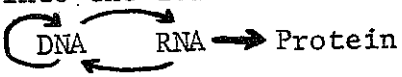
> 
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> the central dogma defined three major processes in the preservation and transmission of genetic information. The first is replication, the copying of DNA to form identical daughter molecules. The second is transcription, the process by which the genetic message in DNA is transcribed into the form of messenger RNA, to be carried to the ribosomes. The third is translation, the process by which the genetic message is decoded on the ribosomes, where RNA is used as a template in

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[50] C. R. Austin. Fertilization. In C. Austin and R. Short (Eds.), Reproduction in Mammals: (1) Germ Cells and Fertilization. London: Cambridge University Press, 1972:103-133.

directing the specific amino acid sequence during protein biosynthesis.[51]

The significance of DNA lies in the fact that it contains the chemical messages of heredity that tell every living cell what it can do and what its progeny can become.[52] One can see that DNA functions as an information source and controller (or monitor) for cell functions. However, this function is not performed in a static sense. In fact, it has the property of an open system since the positional values of the base pairs from which the DNA is composed vary from one condition to another and consequently this positional value (or order) of the base pairs controls the manufacture of proteins in each cell in the body. The three major processes in the preservation and transmission of genetic information, which Lehninger (1975) describes, suggest a system of information that has the following features:

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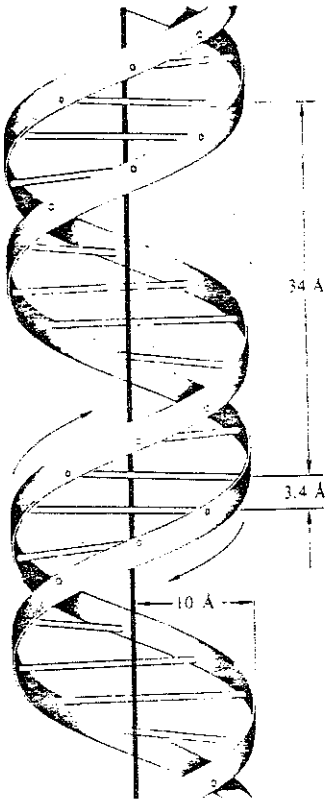
[51]A. Lehninger. Biochemistry: Molecular Basis of Cell Structure. New York: Worth Publishers, Inc., 1975. DNA refers to deoxyribonucleic acid while RNA refers to ribonucleic acid. The structure of DNA is a double helix (or double stranded), while the RNA is single stranded. The DNA molecule is composed of two base pairs, namely, adenine-thymine (AT) and guanine-cytosine (GC). Each turn of the double helix consists of a base pair, either AT or GC, and the two sides of the double helix alternate sugar and phosphate. This sugar and phosphate has the structural function of connecting the bases in each strand. The sequence of the base pairs functions through messenger RNA during the process of protein biosynthesis. The amino acid sequence which is done during the biosynthesis decides the type of protein then synthesized. The structure of DNA is shown in figure 14 above. The amino acid sequence is determined by the codons from which mRNA is composed. Each codon is composed of three bases that are complementary to the anti-codon in the tRNA (transfer RNA). The tRNA and mRNA jointly function in the process of protein biosynthesis. However, their function would not be possible if they had not been received by the ribosomes. A ribosome is a structure composed of two units, usually separate, but ready to be united upon the arrival of mRNA.

[52]This statement appears in The New York Times, April 18, 1980:C1. In an article entitled "Studies Detail DNA's Link to Cancer," Harold Schneck writes, "DNA contains the chemical messages of heredity that tell every living cell what it can do and what its progeny can become. Active forms of cancer-causing substances actually bind to the DNA and distort it, a subversion that evidently can lead to permanent and dead changes in the most basic regulation of life." This researcher wonders if the DNA contains certain genetic information in regard to conditions that cause death (i.e., the degeneration of the living system's structure-function).

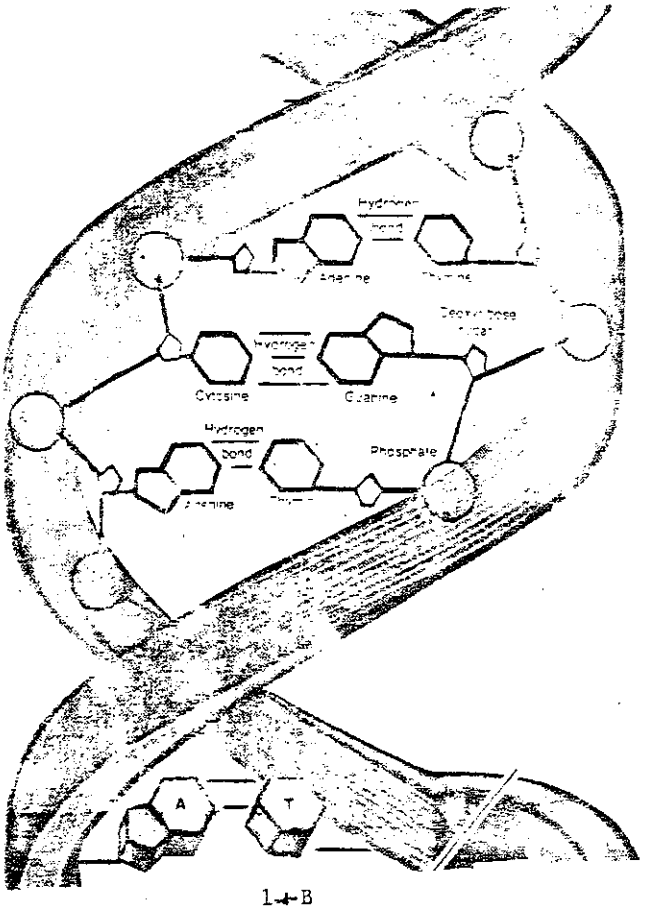
Figure 14

A Schematic Representation of the
Double-Helical DNA Molecule



14-A

The two ribbons symbolize the two deoxyribose phosphate diester chains, and the horizontal rods the pairs of hydrogen-bonded bases that hold the chains together. The vertical line marks the fiber axis of the molecule.
(After G. Stent and R. Calendar. Molecular Genetics: An Introductory Narrative (2nd ed.). San Francisco: W. H. Freeman and Co., 1978:206.



14-B

One rung of DNA structure
(After The New York Times, April 8, 1980:C1)

(1) The DNA is an information source. This source has a dynamic structure-function. It contains the genetic information which is necessary for the functioning of the whole cellular system of the living organism. However, information is selected periodically in a very accurate manner and is transcribed in a message which fulfills a specific need at a specific time. Selection of the message is made according to multiplex criteria which are part of the DNA content of the genetic information.

(2) DNA has a transmitter of information in a form of mRNA.

(3) The transmitter carries a genetic information message in forms of codons each of which is composed of three bases complementary to the anti-codon in the tRNA.

(4) The receiver for mRNA and tRNA is the ribosome which enables the mRNA to maintain its joint function with tRNA during the protein biosynthesis (i.e., the translation of the genetic information into protein).

(5) The signals in the DNA information system are complex, with three interactive dimensions: (a) the arrival of mRNA is a signal to the ribosome to get to function as one unit (i.e., the two sub-units of its structure are now joined by mRNA); (b) the reception of the ribosome to mRNA is a signal to tRNA to join the structure-function of mRNA and ribosome; (c) the reception of mRNA to the tRNA is a signal for the ribosome to bind amino acids in the specific sequence that has been decided by the mRNA.

(6) Once the sequence of amino acids is worked out and binded the genetic information message is said to have reached its destination. The destination is the cytoplasm where the protein biosynthesis is made to meet the needs of the cell. However, in certain cases when elements enter from the cytoplasm to the nucleus, the DNA terminates and/or

increases the mRNA which have participated in the metabolism of these elements.[53] Thus, DNA in some cases may function according to the "feedback" (i.e., what is happening in the cell system as a whole). In other words, the DNA functions in light of new input which in fact is an output of the DNA information function.

(7) The channel of communication for the genetic information is the living cell with its living structures of protoplasm and cytoplasm. However, the source of noise[54] for the message is minimal because the DNA is in full control of cell manufacture, since it has all the genetic information about the nature of the cell structure and its function.[55]

The most interesting thing about the DNA is that while it is an integral part of the cell, it also contains the whole information of structure-function of the supra-cellular system. This property is analogous to the part-whole relation of man-universe in the synergistic view which has been discussed earlier.

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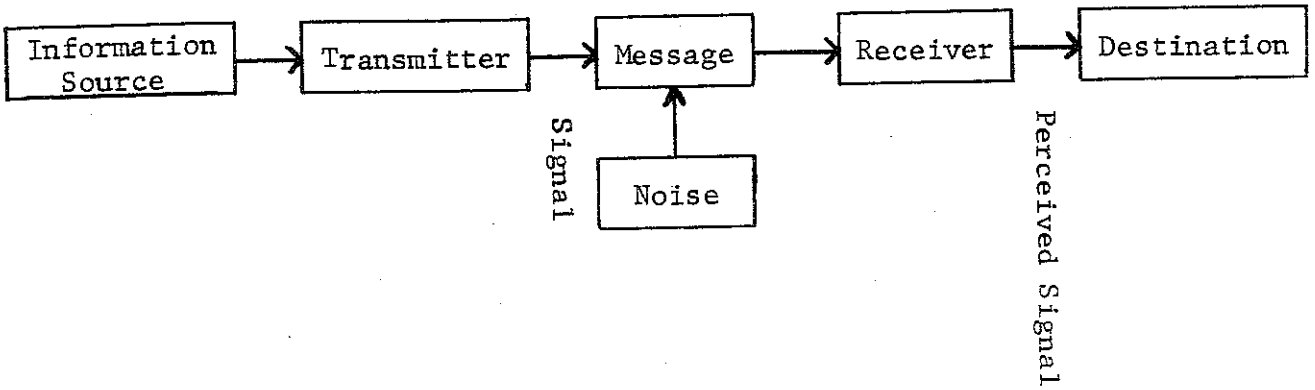
[53]The elements are either/or: (1) protein products, (2) elements to be acted upon by protein (substrate).

[54]Noise is used here in a special sense. It means any conditions in the living cell which are detrimental to the function of biosynthesis.

[55]The biochemical information given by Lehninger is transcribed here into a system of information after C. Shanon and W. Weaver in The Mathematical Theory of Communication, Urbana, Ill.: Urbana University of Illinois Press, 1949:70-81.

Communication Model (After Shanon and Weaver, 1949:359)



The aforementioned description of the genetic information system as a communication process in the cellular system of the individual appears to be linear. However, it is argued here that this system is not linear for the following reasons:

(1) The DNA as a source of information has the capacity to reproduce itself, a capacity that is dynamic and cannot be reduced to any form of linear logic of causality. No other mechanical information system could be reproduced in a similar way to the DNA replication. It is not yet known how this capacity is created in the DNA. A possible reason for this phenomenon is that DNA as a chemical compound is a system which is dynamic in its composite structures, so that the motion of the particles from which the four bases are composed occurs randomly as far as the order-disorder of the base pairs' motion is concerned. Since the base pairs could exchange their positional value randomly, their function could also be changed randomly. In a random movement of any molecular structure or of any system the reproduction of the system is a possibility. But the mystery remains that DNA reproduction in a new cell does not replace the DNA in the initial cell. It is rather a full daughter DNA molecule that is no different in structure or function from the parent molecule. However, the daughter cell would have a different function according to its positional value in relation to other cells in relation to the whole. This process seems to be a process of copying. If this is the case, it is logical to accept the analogy that the created is a copy of the creator. But since the DNA is present in every genome of every chromosome and the location of the gene is said to decide its genetic function, one can see no contradiction in assuming that the created who is in a different positional value from the creator maintains different functions.

However, whatever these functions are they should be in their holistic sense representative of the function of the creator.

(2) The process of regulation on the micro level, as it is described in protein biosynthesis, is evidence of a multiplex logic since the protein biosynthesis is a product of an amino acid sequence that has a different system pattern during the synthesis of different types of proteins. The sequence of amino acid is controlled by a synergistic principle of communication which is represented in the three major processes of replication, transcribing and translating as they are interactively related. These processes are interactively related in a pattern of systemic relationship rather than in one of relata relationship. In biochemical synthesis, a certain protein functions in some cases as a regulator and at other times is regulated. Another example of reverse regulation is the phenomenon of reverse transcription. The "central dogma" described above states that DNA structure-function is transcribed into mRNA, but there are conditions in which the RNA is transcribed into a DNA (Lehninger, 1975:860).

(3) The process of communication of genetic information is a synergistic process because regardless of at which stage the cell division is in its transformation, the cellular system functions as a whole system and constantly progresses towards further development without losing its holistic pattern of interaction (i.e., every sub-system shares in the process of development according to its positional value at that point of transformation).

(4) It is also seen that the DNA as a synergistic regulator of genetic information processing is a source of energy (i.e., genetic material) and an output of energy (i.e., in its form of replication). This is

evidence for what was described in the previous unit of this chapter as the life principle in living systems. Moreover, the whole function of DNA ⇄ RNA → protein, according to the central dogma hypothesis which was verified, suggests that regulation, though it is initially ascribed to DNA, is in the process of development expanded to include a multiplex exchange of roles in the regulator-regulated by means of synthesization of various enzymes or proteins in the cellular system. In other words, the information processing of genetic material is contracted at the point of fertilization in the DNA of the nucleus of the fertilized cell and is expanded dynamically through cell division and cell differentiation to include the entire adult organism.

It could be concluded that since DNA is a material (body) which performs the function of processing information, and mental process is nothing more than such information processing, the mind and body should be synergistically united at the moment of conception. However, since the DNA is a bearer of genetic information, and this genetic material is transmitted from parents to offspring, then, in fact, DNA transmits the transformational point which the parents have themselves reached. Therein lies the genetic transformation of mankind. If such is indeed the case, one can safely assume that the mind-body in the human system is synergistically transformed and within the process of this transformation, it evolves a set of human archetypic experiences. The archetype in this sense is not only structural but also functional. This is evidence for the assumption that the state of being has within it the state of becoming and that man's evolution over time is a process of alteration from contraction to expansion. The individual contract into a sperm or an ovum both united in a fertilized egg from which the individual expands

into a new adult.

The archetype concept in personality theory is emphasized in Jung's analytical theory. It is significant at this point to discuss some of the concepts that Jung developed and their relevance to the conceptualization of personality as an open system. Much of the material given here is taken from Hall and Lindzey's (1970) lengthy discussion of Jung's theory of personality. The main points in Jung's theory which are relevant to this work are as follows:

(1) Time concept - according to Jung, "Both past as actuality and future as potentiality guide one's present behavior" (Hall and Lindzey, 1970:80). This concept of time is one of continuity in which causality of behavior is viewed as the interaction between push-pull forces. In the terminology of the synergistic model, causality is a multiplex of efficient and purposeful dimensions. This view accounts for both efficient and teleological causes and it is unlike Freud's view of time which suggests that past elements are the most important and that thus "there is only the endless repetition of instinctual themes until death intervenes" (Ibid.:80).

(2) Jung views man as a product which contains an ancestral history. Thus he says, "The foundations of personality are archic, primitive, innate, unconscious, and probably universal" (Ibid.:81). This researcher accepts the view of man as a product of ancestral history, but only in the transformational sense. However, personality, though it is archic, is never primitive and unconscious. The fact that it is archic does not necessarily mean that past generations of mankind have been inferior to the present one. It means only that previous generations were at a different point of transformation and as such various sub-systems were in

different patterns of positional values. Therefore, what modern day man does or is capable of doing is a different form of self-expression rather than necessarily a better one. Moreover, earlier men, like present men, were conscious of what they were doing. As long as man continues to expand his negantropy selectively, in the manner of an open system, he is conscious of what he is doing. In fact, it is assumed in this work that awareness is essential for expansion of negantropy which is in turn necessary for a synergistic act in dealing with any form of energy which constrains or destabilizes the steady state of the dynamic system's homeostasis. Ancestors were living open systems who had a style of life, culture or forms of religions which were coherent with the transformation of the universe at that point. Thus, it cannot be argued that men of past generations were unconscious systems, and/or that men of today are conscious. Jung's conceptualization of evolution in that sense might lead to the misconception of hierarchical evolution of various races at any time in man's history. This conception is incoherent with the synergistic view of man and universe.

(3) Jung conceptualizes personality as "a resultant of inner forces acting upon, and being acted upon by, outer forces" (Ibid.:81). This is a subject-object viewpoint that considers the regulator as an outcome of person-environment interaction in a continuous exchange of energy flow.

(4) As a basis for formulating his theory of personality, Jung examined mythology, religion, ancient symbols and rituals, the customs and beliefs of "primitive" peoples, as well as dreams, visions, symptoms of neurotics, hallucinations and delusions of psychotics.

Jung's theory is based on a system of concepts which point out that the individual's psyche is composed of a number of differentiated but

interacting systems. While his model follows the systemic analysis practice of viewing systems within systems, its main deviation from this work is the conceptualization of the collective sub-system in the personality structure as an unconscious system. In this work, the collective experiences or archetypal experiences are equipotential forms of energy which are transcribed to new forms or new patterns that cause the individual to be unique. The new pattern of transformation of the archetypal experiences is analogous in its function to that of the ribosomes in the process of metabolism. In other words, the archetypes are catalysts for uniting the sensory and perceptual fields in a meaningful way that fits coherently with the needs of the individual at every point of his or her transformation. Accordingly, there is no need for describing such a process in terms of unconscious or conscious experiences. Any experience the individual goes through is an existential experience.

Jung identifies four differentiated systems in personality: the ego, the personal conscious, the collective unconscious or archetypes, and the attitudes of introversion-extroverison. These systems are viewed as interactively related; the ego is defined as a conscious mind manifested in perception, memories, thoughts, and feelings. The ego, as such, is the center of consciousness; it represents the individual's identity and continuity. The personal unconscious is that represented part of the ego but it is accessible to consciousness. There is a two-way relationship between the personal unconscious and the conscious ego. However, when a group of feelings, perceptions, memories and ideas constellate in the personal unconscious they form psychological complexes. The collective unconscious consists of archetypes. These archetypes are collective experiences that are present in man's mind and are available to be used

in conceptualizing his universe. Hall and Lindzey (1970:85) point out that Jung's answer to the question of how an archetype originates is as follows:

> It is a permanent deposit in the mind of an experience that has been constantly repeated for many generations. For instance, countless generations of men have seen the sun make its daily excursion from one horizon to the other. The repetition of this impressive experience became fixed in the collective unconscious as an archetype of Sun-God, the powerful, dominating, light-giving, heavenly body that man deified and worshipped. Certain conceptions and images of a supreme deity are offshoots of the sun archetype.

Jung explains all common thoughts or concepts shared by human beings in the same way as is described in the above extract. However, it is argued here that common experiences are neither unconscious nor "fixed" forms of thoughts across and through generations. Rather, it is believed that any form of conceptualization is an exploration of man's universe within his own existential system. The sharing or common conceptualization comes through the mirroring of one's own experience through inter-subjective, intra-interpersonal relationships with others. Such sharing is further a manifestation of a common point of transformation which is reached collectively by various people in the same time-space domain. What makes it an archetype is the fact that it is experienced similarly by previous generations and thus it is transmitted in the same positional value to several generations. This makes the archetype concept a common core of perception which is most probably inherited within the DNA information system as a form of genetic material that was described above as having the equipotentiality of mind-body in a synergistic sense.

Jung speculated about the nature of archetypes in terms of genetic evolution, but his concepts seem to have been mostly restricted to

psychological processes. Jung's conceptualization of evolution seems to have been heavily influenced by Darwin's theory of the origin of species. This is especially true in his idea of archetypes as experiences which have become "fixed" in man's mind through repetition, a view which is coherent with the principle of natural selection. There are also undertones of hierarchy in his reference to present mankind's experience as compared with "primitive" man's. Moreover, there is the touch of race-based explanations for differentiating common or collective experiences of man. All these dichotomies do not fit into a synergistic view of man as an open system. However, it is worthwhile to recognize that Jung did a great deal in pointing out the significance of collective experience. This, in fact, marks a transformation of Freud's theory from a closed to a rather open systems view. There is no doubt that Jung's contribution to the field of psychology has not been fairly evaluated by social scientists as compared with other theories which have less to offer to our understanding of human nature. For instance, Jung recognized the interactive relationship among the four cognitive processes in man's attitude, including thinking, feeling, sensing and intuiting. Hall and Lindzey (1970:89) point out that Jung conceptualizes the function of the four cognitive processes in this way:

> The following consideration will show, a certain completeness is attained by these four. Sensation establishes what is actually given, thinking enables us to recognize its meaning, feeling tells us its value, and finally intuition points to the possibilities of the whence and whether that lie within the immediate facts. In this way we can orientate ourselves with respect to the immediate world as completely as when we locate a place geographically by latitude and longitude.

The synthesis of the four cognitive structures of one's attitude, which are described in the above quotation, make up the actualized self.

The self, according to Jung, is an open system that includes in its structure-functions the public (the ego), the archetype (historical self), and the personal or private self. The unity of the self is achieved by the synthesis of the four cognitive structure-functions of the attitude. Jung also expressed the harmony of opposites in his conceptualization of the extroversion-introversion dimensions of individuals' attitudes. In this regard, Jung stated that, "One system may compensate for weakness of another system, or two or more may unite to form a synthesis" (Hall and Lindzey, 1970:90). The work of personality, according to Jung, is performed by psychic energy. The problem with Jung's conceptualization of psychic energy is that it relates exclusively to metabolic processes. Jung said, "Psychic energy originates in the same manner as all vital energy, namely, from metabolic processes of the body" (Hall and Lindzey, 1970:93). In fact, metabolic processes do not exist in all vital energy. For instance, DNA, which is a vital form of energy for human existence, does not depend in its base composition on metabolism. Lehninger (1975: 862) notes among other findings[56] on base equivalence of DNA, "The base composition of DNA in a given species does not change with age, nutritional state, or change in environment."

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[56]Research on the base composition of the DNA has shown the following: "(1) Base composition of DNA varies from one species to another; (2) DNA specimens isolated from different tissues of the same species have the same base composition; (3) the base composition of DNA in a given species does not change with age, nutritional state, or changes in environment; (4) in nearly all DNAs examined, the number of adenine residues is always equal to the number of thymine residues, that is, A = T, and the number of guanine residues is always equal to the number of cytosine residues (G = C) . . . (5) the DNAs extracted from closely related species have similar base composition, whereas those of widely different species are likely to have different base composition. The base composition of their DNA can in fact be used to classify organisms" (Lehninger, 1975: 862).

In light of these findings, this researcher tends to believe that psychical energy in its mental form does not necessarily need to originate from metabolic processes. Psychical energy is always present, even under conditions of food deprivation, although its form or direction becomes different under such conditions. However, energy is neither created nor destroyed during a given process, and thus it does not need to be originated by metabolic processes. However, energy may undergo transformation from one form to another. In fact, it would seem that metabolic processes are mostly motivated by psychical energy if one accepts the assumption that mind-body is one entity in the sense of the synergistic principle described above. It should be emphasized again here that man is a form of energy undergoing a constant process of transformation. The energy of universe is within man's existential universe; man externalizes energy in the sensory field and acts upon it by importing it in a new form that enriches his expansion to his negantropy.

It could be said that man's relation to his sensory world is similar to DNA relation to the multicellular system of the human organism. This analogy will be expanded in the following unit. Man replicates himself, transcribes his functions into the sensory world by means of the sensory system (analogous to mRNA), translates the message by perception (tRNA) and synthesizes the imported energy - air, food, social acts, cultural style, technology, etc. - into a meaningful sequence (analogous to the amino acid sequence during biosynthesis of protein). The sequence of imported energy changes from time to time according to codon-decodon message of the individual which is represented by sensory data-perception. However, the individual continues to control the environment which he had originally created in the same way that the DNA controls the manufacture

of the cellular system. Moreover, a synergistic view of man and universe includes a conceptualization of the transcendence of the individual's energy in alternate contraction-expansion that enables the psychic energy to unite with unbounded space (i.e., the divine entity). This state of unity cannot be a possible outcome of the process of metabolism. It is a meta-communication which is a form of energy for the expansion of mind-body unity. Metabolism is a form of energy-transformation, and like any transformation process it has an input which is transformed into an output, that in turn becomes a new form of energy input for another process.

A "synergistic" view of mind-body is suggested in Partisis and Stewart's work on motivation and purpose in natural intelligence (1979).[57] This theory discusses the roles of innate and "environmental" factors in the growth of natural intelligence. However, intelligence is defined in a manner which is particularly interesting for the purpose of this work. Partisis and Stewart (1979:336) apply the term intelligence to multi-cellular systems and maintained that intelligence exists at every level of the organism's cellular "evolution." At each level, intelligence is defined to mean adjustment - and its mechanisms are identified to include evolution in the Darwinian sense, learning in the trial-and-error sense, and growth in the cybernetic sense. Such views are not coherent with the open systems view. However, the recognition of intelligent behavior at the cell level is a considerable insight. Unfortunately, this flash of insight in Partisis and Stewart's work was significantly diminished by their use of linear logic to describe the structure-functions of natural intelligence. Nevertheless, it is still significant that they

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[57] N. Partisis and D. Stewart. An Interaction Theory of Motivation and Purpose in Natural Intelligent Systems. In Ericson (Ed.), Op. cit., 1979:866-874.

recognize intelligence as a system of interaction which starts at the cell level. In other words, their theory recognizes mind-body unity as a form of systemic interaction. The same is seen in their conceptualization for motivation. Partisis and Stewart (1979:867) point out that,

> A general system approach to motivation and purpose will need to apply equally to the micro-organisms within a socio-biological system (the sub-systems) and the macro-organism of socio-system. For example, the motivation of an amoeba, being a free-living organism, will be fundamentally the same as that of the semi-independent monocellular organisms in a colony, and also that of the mutually dependent individual cells within a multicellular organism such as man. The same basic motivation will apply to the whole organism - whether insect or man - and also to socio-systems as a whole - whether composed of insects or of men.

This researcher ascertains that a twin concept of transformation and self-regulation seems to satisfy the criteria of a general system theory of mind-body unity, man-universe, creator-created, and structure-function at all "levels" of living systems. However, this twin concept has to be applied in the synergistic sense that is described in the properties of an open system and excluding the rhetoric of systems analysis that is founded on the cybernetic theory and its mechanistic reduction of man's nature.[58]

It seems that a holistic understanding of man's nature must synthesize as many natural sciences as possible with a special focus on biopsychology. However, this general systems approach might not be helpful without special attention to the epistomological foundations of the various sources of information. There is a possibility of adopting a

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[58]Unfortunately, the analysis on the basis of which Partisis and Stewart (1979) reach their conclusion is based on cybernetic logic, a logic that is apparently the prevailing one in the GST of modern times. However, this trend is understandable in view of the fact that the cultural motif of the scientific community is technologically oriented, in the very precise sense of hardware technology. Nevertheless, the concept of feedback loop could be viewed as a transformation point for the S-R straight linear logic toward multiplex logic.

biological model within the frame of reference of the brain as the monitor of the human system, and this view might lead to the analogy of bureaucratic structure-functions for organizations.[59] This, of course, leads to a closed system model that would exclude the masses from the regulation of the system. With these precautions in mind, one is reminded to search for a synergy among sub-systems in terms of positional values that are constantly exchanging among themselves with the purpose of maintaining dynamic homeostasis. In view of this caution, a theory builder who adopts a bio-organismic model has to bear in mind that analogies can be dangerous and misleading if one does not account for the difference between the original model and its analogy. For instance, in transforming DNA's structure-function into Shanon and Weaver's mathematical system of communication, it is seen that the analogy is almost isomorphic in structure. However, it is important to note that DNA as a source of genetic information is completely different from any mechanistic source of information. The information stored in DNA is life information. It is genetic material resulting from a natural flow of energy, while the information stored in the machine is man-machine information. This means that the latter type of information is a closed system whose regulation depends on an external regulator. In other words, while a machine has to be

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[59] A case in point is Herbert Spencer's model of organization. "Spencer, a pioneer proponent of the bio-organismic viewpoint, saw society as an organism, similar to biological organisms in a number of essential ways. Both, he claimed, experience growth and, in the process, undergo differentiation in structure and function. . . . Both have special regulatory systems, nervous in the organism, governmental in society. . . . Sorokin . . . pointed up the practical inferences made by various theorists of this persuasion. Some used their bio-organismic premises as an argument in favour of monarchy, administrative centralization, absolutism, or socialism as a form of the greatest integration of social organization" In I. Hoose. Systems Analysis in Public Policy. Berkeley: University of California Press, 1972.

constantly fed from the external regulator (i.e., man), the living cell in having DNA does not have to be fed by an external regulator. The analogy becomes more distanced from the original model when one takes the machine as an original model and man as the analogous model. Moreover, if one is familiar with the structure-functions of DNA, one can safely infer that DNA is an accurate system of information, and that man is capable of self-regulation. However, it is dangerous to assume that the external regulator which is designed after DNA model could regulate man in the same way as DNA does. This is simply because DNA is a natural system and an integral part of the organism while the external regulator is not. The only possible inference that can be utilized for improvement of human conditions through knowledge of DNA function is to adopt an attitude of trusting man's inner resources to act upon the input in their own natural way. With this attitude, social agents become more open to the infinite number of possibilities that one could act upon energy input. Another point of value in an open system approach is the exploration of the interactive relationship between the social agent and the client. That is to say, the planner learns about himself and his plan during the process of interaction with the learner or client. Thus the planner's objective should be shaped and reconstructed transformationally throughout the inter-subjective relationship. Moreover, DNA function suggests a social system of cooperation rather than one of competition. An analogy of social systems to DNA functions is meaningful when the whole social system is treated as a cellular system involved in interdependent interaction relationships. In fact, according to a bio-organismic model, it is more coherent to speak of the nervous system as a sub-system of equipotentiality to be regulated and to be a

regulator in the same way as any other sub-system, rather than to treat it as a monitoring or regulator system under all conditions and for all purposes.[60] In that sense, the government is an integral part of society that exchanges its functions in light of its interaction with the social system as a whole. If one accepts the previous argument that mind and body is one unit from the moment of conception, then it follows that the political system most coherent with man's nature is one which is created on the assumption that"government is from the people, for the people." This concept is commonly held by the layman as well as by politicians, but unfortunately application of the concept in the synergistic sense does not seem to exist anywhere. This researcher would argue that the failure to apply this concept of a natural state - "from the people, for the people" - is due to the adoption of artificial rules of static hierarchy in social organization. Political systems tend to be organized

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[60]A case in point is Hebb's neurological theory of learning, a theory that assumes physiological basis for higher behavior (i.e., cognitive behavior). It assumes that the central nervous system activities, particularly the physiological behavior of the brain activities in relation to sensory system, are the basis for cognitive activities. This theory views C.N.S. as a leading system in regulating the cognitive processes. It maintains that the problems of thinking, of set and of attention could be explained in terms of the physiological conception of "cell-assembly." The hypothesis is that a mediating process consists of activity in a group of neurons, arranged as a set of closed pathways . . . which will be referred to as a cell-assembly, or of a series of such activities, which will be referred to as a phase sequence (pp. 178-179). The theory describes the relation between the sensory data and the perceptual constructs, where the sensory data is selected by the sense organs and these in turn activate the cortical cell assembly in the association area that gives meaning for the sensory data (i.e., perception). However, Hebb (1964:177) noted that, "Thought and volition, . . . are the occurrence of processes which, themselves independent of the immediate sensory input, collaborate with that input to determine which of the various possible responses will be made, and when." In D. A. Hebb. Diffuse Conduction: The Basis of Higher Behavior. In R. Harper, C. Anderson, C. Christensen and S. Hunka (Eds.), The Cognitive Processes: Readings. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964:176-183.

along the lines of "ideal type" of bureaucratic models.[61]

On the micro level a synergistic view of mind-body suggests that the most coherent system of communication is a process of exploration of one's nature through a genuine flow of energy as one communicates with others and exchanges views in relation to certain objects of communication in one's sensory field.

The thrust of the whole argument is to develop a concept of man as a dynamic system of communication among the various sub-systems within his structure-functions that are synergistically united in one whole. Having established the argument that man is a flow of energy that starts in the form of a fertilized living cell, and that this cell expands its existence into a multi-cellular system by replication, transcription and translation of genetic material, it is apparent that the living system is developed after a natural principle of self-regulation. This core principle of human development should apply to all forms of life, one of which is psychological development. However, at no point should one conceptualize psychological development as a process separate from body functions. This is clearly evidenced by the behavior of the DNA as the basic unit of information in living organisms, particularly in man's

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[61]A theory of organization which advocates the ideal type of bureaucracy originates with Max Weber. Hall (1977) points out that in this "ideal type" of bureaucratic organization (i.e., Max Weber's model), (1) rules are set, (2) tasks are identified, (3) positions are arranged in a hierarchical manner, (4) decision-making is based on established criteria that are attached to positions, (5) members' participation in organization is contractual, (6) members fit their positional value in terms of specified criteria so that they could be replaced by others at any time as long as others have the same positional value or fit the same criteria, (7) selection for membership is based on the person's competence as evaluated by a specific scale of job skills and abilities required for the given position, and (8) interpersonal relationships are impersonal. In R. Hall. Organizations: Structure and Process (2nd ed.). New Jersey: Prentice Hall, Inc., 1977:49.

system (in some living systems biochemists have observed that RNA behaves like DNA in the absence of DNA).

This researcher tends to believe that a model of psychological theory for man's behavior follows a pattern of energy transformation as it is manifested in DNA behavior in the multi-cellular system. Thus, the proposed model of man as an open system describes the psychological process in light of the following propositions:

(1) Man is an open system that is constantly transforming its constituent composites from one form of energy structure-functions to another. The flow of energy, however, is internally regulated in a synergistic manner which is manifested in the dynamic steady state of homeostasis.

(2) Man's environment is an existential universe which constitutes all forms in the universe within man's psycho-physical structure-functions. Thus, the traditional definition of environment is viewed in this work as an externalization of one's energy by the sensory system in the form of a sensory field. The process of importing energy which is a characteristic of an open system, is a dynamic one in which the individual expands his or her negantropy. Expanding one's negantropy strengthens the self-regulator or the synergistic principle which unites the various sub-systems of the individual in one whole system and enables him to maintain the dynamic steady state of homeostasis.

(3) Man's physiological and psychological functions are coherently united in a dynamic living system of a bio-mental nature starting at the moment of conception. The basic unit of the human system is the cell in the nucleus of which the DNA molecule contains the genetic information that tells every living cell what it can do and what its progeny can become. The DNA structure-

function manifests a life principle in the form of an information system that is capable of replication, transcription and translation from a single fertilized cell into a multi-cellular system which has all the properties of an open system. The DNA structure-functions provide evidence of mind-body unity from the moment of conception.

(4) Man's system is a living system that manifests the dynamic nature of its creator with which it has been united since the moment of creation. The creator-created entity alternates its existence from contraction to expansion in a similar way as the radius alternates its form from the ideal point (contraction) to the unbounded space (ultimate Reality). Thus the life principle is described as being analogous to radial behavior in which the ideal point of radiation source expands through concentric spherical circles into the unbounded space. Therefore, it is assumed that life is a form of energy that is transformable into an infinite number of behavioral patterns in the same way that the radius expands to unbounded space.

These four major propositions underlie the model of man as an open system which will be presented in the following unit. The model of man as an open system is developed within the synergistic perspective of man as an ontological reality within which the energy of the universe is constantly transforming from one form to another.

UNIT IV: The Synergistic Model of Man

This model is developed by utilizing the conceptualization of DNA structure-functions, the dynamic nature of man's search for harmony of opposites, and the radial nature of mental life. Thus DNA structure-functions will be used in describing the psychological processes which are

constantly developed into more complex multi-dimensional structure-functions and are regulated by a cognizer which is analogous to the DNA. The Tao structure-functions will be taken as a basis for describing and explaining the dynamic nature of the transformation process at any point in the time-space domain. The relationship between the DNA and the Tao analogies forms the particle-wave structure-function of the whole process of transformation. Thus, in the final analysis, the model is conceptualized in the evolution of a concentric point of life that expands in concentric circles to represent the evolution of man's system in relation to the universe system which is interactively united in a life sphere of exchange of energy flow. The model, therefore, is presented in three diagrams which should be viewed as one whole. The smallest structure of this model is the "point" represented by the Tao (figure 14), and a cognitive-nucleic-existential experience is represented by the double-helical structure (figure 15). This structure expands into the multicellular existential system as shown in figure 16, and its spiral motion as shown in figure 17, which represents the exchange of the energy flow between the creator and the created. In short, the model attempts to present man's nature as a flow of energy or as a living system in constant motion. It is hoped that this unit will serve as a cognitive map for the various arguments that have been presented in this work. However, the conceptual constructs that are to be inferred from the following diagrams are presumed to be coherent with man's nature as an open system within the theoretical perspective of the synergistic view that was developed in this work. Moreover, a caution must be made that analogies may be misleading if there is not full awareness of the difference between the original model and the analogous one. With these points in mind, this researcher forwards the following analogical assumptions:

(1) The cognizer is a transformation of DNA into a form of psychic energy which contains the psychological information which would be replicated, transcribed and translated in the multicellular existential experiences of the individual's psychological system during his life-span. Each existential experience is assumed to be a tao in its dialectical motion. (2) Every existential point of transformation is analogous to the cell and in its nucleus there exists a cognizer which is analogous to the DNA structure-function. The living cell is composed of the nucleus and the cytoplasm, while the existential point of transformation includes the individual's experiences of his totality in a pattern in which a sub-system is taking a leading positional value. The nucleus is the cognizer and the externalization of oneself in the sensory data corresponds to the amino acids in the cell's cytoplasm. (3) The importation of energy in the process of expanding one's energy (i.e., the tao is dynamic at this point) is analogous to the protein biosynthesis during which the amino acids are arranged in special sequence. Similarly, the sensory data is arranged in a special way according to the message of the cognizer so that they will be translated into a meaning that is coherent with the existential point of transformation. (4) The translation of the sensory world into a perceptual world is mediated by the archetypes, in similar ways that the ribosomes mediate the joint function of mRNA and tRNA during protein biosynthesis. (5) The core of the human system is constantly transforming into more complex patterns of life that are synergistically directed towards self-transcendence in which the individual experiences his unity with the various forms of universe through the coherent exchange of energy-flow with the divine self (ultimate reality).

Thus, according to this model, the psychological processes are forms

of energy manifested in various structure-functions which are regulated by a cognizer. However, in a model that assumes the responsibility of breaking the dichotomies between the physical and metaphysical components of man's nature, the cognizer is seen as not separate in its structure-functions from the DNA. According to this work, the cognizer has all the properties of an open system. Thus any molecular unit of the individual's behavior follows the same principles of transformation that underlie the behavior of the system as a whole.

Behavior in this model is defined as an existential experience which involves the individual's whole system in which a selected form of energy (a sub-system) takes a leading positional value in the two-dimensional domain of time and space. The properties of an open system apply to any sub-systems of human behavior whether this behavior is overt and/or covert. Covert behavior is whatever existential experience the individual goes through which is not observed by others, while overt behavior is what is done by the individual which could be observed by others. However, any overt behavior has its unity with covert behavior which is often manifested in body language (i.e., nonverbal behavior). Nevertheless, overt and covert behaviors are existentially experienced as one unit. In fact the overt system of behavior is synergistically united with a covert system in which the whole living system coherently maintains its dynamic steady state of homeostasis. No behavior, no matter how minute quantitatively or qualitatively its magnitude is, could occur without the concurrence of the whole organism in producing it. Behavior is a unit of action for a systemic motion of physical and psychological attributes. However, the physical and psychological attributes are synergistically united by an internal organizer which is identified as

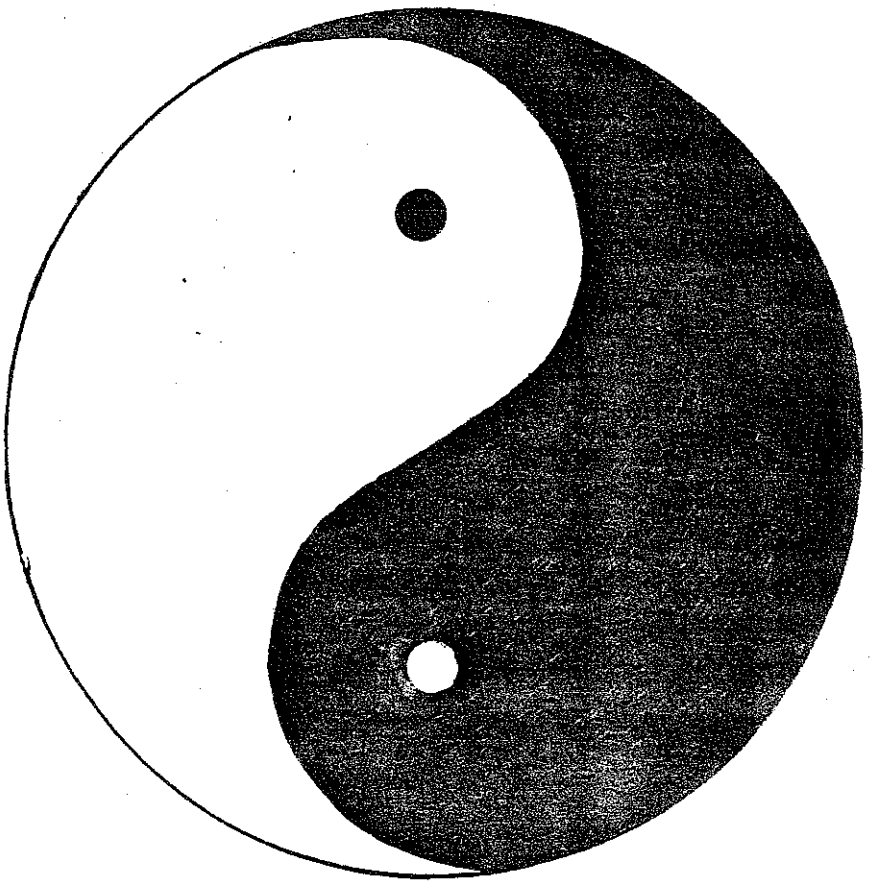
a cognizer.

Behavior is described in this model as a lawful and purposeful process of energy transformation. It is lawful in the sense that it follows natural laws, and purposeful in the sense that it aims at maintaining a dynamic steady state of homeostasis. The natural laws are the dialectic principles that underlie the process of transformation. These dialectic principles are, (1) the search for harmony among opposites to randomize the order-disorder in the structure-functions of the whole system, (2) the synergistic principle of maintaining unity within diversity, and (3) the ontological principle of constructing discontinuities into patterns of continuity in the constant process of change. In short, these three dynamic principles are three forms of one law which is the law of transformation. It is a law that is dialectic, synergistic and ontological. These three principles describe and explain the ontological nature of man as an open system.

The principle of order-disorder is manifested in the individual's existential experience of the ontological search for harmony among the opposites. Each pair of opposites is analogous to the Tao's behavior in its Yang/Yin structure-functions. Figure 14 shows this movement and illustrates the dialectic nature of the individual's experiences and his or her ambivalent needs.

The movement of Yang-Yin applies to the transformational pattern of the individual's needs which are of an opposite nature. Psychological pairs of opposites include: clarity-ambiguity, conformity-uniqueness, tension-reduction - tension-production, discipline-freedom, construction-destruction, predictibility-uncertainty, familiarity-unfamiliarity, etc. These pairs of opposites form psychological constructs of a dialectic

Figure 15
The Tao: Yang-Yin Movement[62]



[62]After Capra (1975:107). In introducing this diagram Capra points out that, "The diagram of a tao is a symmetric arrangement of the dark yin and bright yang, but the symmetry suggests, very forcefully, a continuous cyclic movement. The yang returns cyclically to its beginning, the yin attains its maximum and gives place to the yang." The two dots in the diagram symbolize the idea that each time one of the two forces reaches its extreme, it already contains in itself the seed of its opposite.

nature where each member of the pair is an equipotentiality for the other. Thus, when one psychological need is in a leading positional value, its opposite moves dynamically to recycle the motion inorder to reach this positional value. For instance, clarity returns cyclically to its beginning and likewise, ambiguity attains its maximum and gives way to clarity. Each time one of the two forces reaches its extreme, it contains in itself already the seed of its opposite. Clarity in this analogy corresponds to the yang and ambiguity corresponds to the yin and thus the structure-function of clarity-ambiguity is analogous to the structure-function of the Tao (see figure 15).

This principle of order-disorder as it is manifested in the dynamic of clarity-ambiguity is valuable to counselors in developing counseling relationships with their clients. A counselor who is aware of the ambiguity dimension in the counseling relationship is capable of utilizing it as a dynamic factor in facilitating his understanding of the client. However, the counselor must be aware that the dynamics of clarity-ambiguity follow the same principle, whether he is personally experiencing them or his client is doing so. In a counseling communication, the counselor and the client form one system and their interaction corresponds to the dynamic structure-function of the yang-yin in a tao. When the counselor gives an ambiguous response he arouses the need for clarity in his client, and when the client gives an ambiguous response the counselor seeks clarity in a similar way. However, the "traditional model in counseling"[63] assumes that the counselor has to structure the degree of

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[63]Traditionally, it is assumed that the responsibility for directing the counseling relationship is in the hands of the counselor. The directive models along this line include behavioral therapy, Gestalt therapy, rational-emotive therapy and psychoanalytic therapy. The non-directive techniques assume that the counselor has the role of mirroring his client's affect and intellect in a way that helps the client to reconstruct his existential universe and find solutions for his problems by coming in touch with his feelings. Rogers' model of counseling is an

ambiguity in the counseling relationship along three lines, namely: "(a) the topic he considers appropriate for the client to discuss; (b) the closeness and other characteristics of the relationship expected; and (c) the counselor's values in terms of the goals he sets up toward which he and the client should work as well as his values in general."[64] Hanson, et al. (1975:239) argue that, "The counselor may structure the relationship with different degrees among these areas, that is, one or two may be clearly defined while the others are left vague."

Hansen, et al. point out two functions of ambiguity in counseling relationships: (a) the projective function in which the client projects his internal responses and conflicting feelings. This enables the counselor to understand more fully and deeply the core of the client's action. (b) The function of providing a background for the client's irrational feelings and thus creating awareness. However, Hansen, et al. also argue that ambiguity in the counseling situation should be controlled for the following reasons. First, it raises anxiety in both the client and the counselor. The client who experiences too much anxiety may not be able to become involved in therapeutic action. The counselor is subject to anxiety especially if he lacks experience. Second, some clients, such as schizophrenic cases, are unable to deal with ambiguity since they are mostly out of touch with reality. Third, the counselor may use ambiguity for his own benefit rather than to serve the needs of the client. For instance, a counselor may use ambiguity to protect himself from having to reveal his own limitations to the client.

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[64] E. Bordin. Psychological Counseling. New York: Appleton-Century-Crofts, 1968. This is the source of the quotation which appears in Hansen, et al. (Op. cit.:239).

In view of the synergistic perspective of man as an open system, counselors need not worry about revealing their limitations nor need they communicate their responses with manipulative purposes. In a genuine counseling relationship, it is assumed that the dynamics of clarity-ambiguity appear naturally in a flow of communication through which both the counselor and the client get further insight into the problem under focus. It is proposed here that counselors have greater success in developing insight in their client and themselves if they function on the assumption that clarity-ambiguity forms a pair of opposites that naturally transform from one to another. Counselors do not need to control ambiguity by means of artificial measures, rather they allow themselves to reach into the transformational point of their client in one direction or another in a form of mirroring their client's response to the best of their "understanding."[65] Finally, it is worthwhile to point out at this point that if clarity stands for order and ambiguity stands for disorder, the natural flow of communication in interpersonal relationships - be it counseling or otherwise - is to maintain random orderliness. Moreover, one has to bear in mind that the regulation of the degree of orderliness has to be left ot the individual to decide. This should be the case, because human beings, as open systems, have their own self-regulator.

Self-regulation is intrinsic to human nature, therefore, any counselor who assumes the role of being a regulator or a manipulator of his client's responses in shaping his behavior is far from congruent with

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[65]Understanding is used here in its existential sense. It refers to the ability to relate to the given response by experiencing it holistically (i.e., on the affect and intellect dimensions of the conveyed message). The counselor understands the given response inasmuch as he can live its impact by realizing how it feels and what it would mean to him if he were in the position of his client.

human nature.

The pairs of opposites in the psychological system are synergistically united with the physiological processes in which the various structure-functions of the human system experience relaxation-constraint or alternate its energy flow from expansion to contraction. Thus it is assumed that clarity-ambiguity is coupled with(relaxation-constraint or tension-reduction - tension-production) forms of physiological states.[66] In other words, when the individual attains clarity he experiences physiological relaxation, while when he faces ambiguity he experiences physiological constraints. Thus, the verbal response that is clear to its transmitter is expressed with relaxed body movements and the observer can sense a coherent pattern between what he hears and what he sees in the system of the communicator. However, the discrepancy between the verbal and the nonverbal response is a sign of unresolved conflict between the "affect and intellect"[67] of the communicator. With this kind of understanding, one can see how the human system operates synergistically. There is no dichotomy between affect and intellect, physical and psychological processes, covert and overt behavior, and verbal and nonverbal communication.

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[66] Tension-reduction is viewed in this work as an equipotentiality for tension-production. Thus when the individual satisfies one need, he or she experiences the tension of searching for another need-satisfaction. The individual's psychological system is assumed to be in constant motion and therefore at no point can one experience a state of complete equilibrium.

[67] Affect-intellect is viewed in this work as a psychological construct, where affect represents a stirred-up state of the psychological system (i.e., feelings, in the traditional sense) while intellect represents the structuring of the psychological state in a conceptual construct expressed in ideas, concepts, logical sequence or meaning. Thus a psychological construct in this work is at every point an affect-intellect structure-function. Affect-intellect forms a bond which varies qualitatively and quantitatively in terms of how much of each component is included in the "molecule" structure.

The second principle of transformation is the synergistic principle which functions to maintain unity within diversity. This principle is experienced at every moment of the individual's life. It is manifested in the fact that any individual has a variety of needs, social roles and feelings. However, at no point does one lose the characteristic of being a whole individual. The time the individual experiences the sense of losing coordination among his multi-dimensional needs, social roles or feelings, he is then identified as a split personality who is in need of psychological help. However, the reconstruction of the individual's self-regulator requires a deep understanding of his various sub-systems and allowing conditions which are isomorphic to these sub-systems to appear in a coherent pattern of a holistic nature in which one of these sub-systems takes a leading positional value. This kind of treatment is based on the assumption that the forms of external environment are a priori within one's nature. Thus, in putting the individual in conditions that reflect coordination in the sensory field, they might trigger an isomorphic pattern in the psychological construct of the individual and thus enable him or her to reconstruct his or her diffused system.[68] The problem would

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[68]Albert Bandura (1977:12) describes this type of treatment in terms of vicarious learning. He says, "Virtually all learning phenomena resulting from direct experience occur on a vicarious basis by observing other people's behavior and its consequences for them. The capacity to learn by observation enables people to acquire large, integrated patterns of behavior without having to form them gradually by tedious trial and error." A. Bandura. Social Learning Theory. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1977. However, according to this work, vicarious learning as it is described by Bandura is a necessary but not sufficient condition for enabling the individual to reconstruct his system. It is proposed in this work that any training, learning or condition in the "external" world (i.e., the sensory field) has to be considered as a form of energy which is imported and regulated by the individual. Thus it is necessary to expose the client, described above, to various patterns of behavior among which he can explore his own nature and make a choice that is coherent with his transformational readiness at that point.

be resolved with utilization of the concepts of inter-subjective relationships as they have been described in this work (see p. 431). The principle of synergy was described at some length in the discussion of the properties of an open system in the second unit of this chapter. This principle is defined as a self-regulator which has a unitas multiplex dynamic nature in its function. The synergistic principle unites the various sub-systems of a given system into one whole, by arranging the various sub-systems in a pattern of positional values, among which one sub-system takes a leading positional value at any given time-space domain.

The sub-system which takes a leading positional value in the psychological system is called in this work, the cognizer. This psychological unit is viewed as a molecule and its structure and functions are analogous to the DNA. The position of the cognizer in relation to the psychological system is analogous to the position of the DNA in relation to the multicellular system of the individual's organisms. Thus, if the DNA is defined as a genetic molecule that contains all the genetic information needed for the DNA to tell every cell what to do and what its progeny will become, the cognizer contains the experiential information of the individual mediated by the archetype which tells every psychological construct what to do and what its behavioral product will be as the individual's nature unfolds. In fact, it is proposed here that the cognizer is the metaphysical component of the DNA. In other words, it could be assumed that the cognizer is a form the DNA takes during transformation from the biochemical structure-functions into the psychological structure-functions. However, both DNA and the cognizer are forms of energy; the former is in a form of matter (i.e., physical and physiological) and the latter is in a form of psychic energy (i.e., mental and psychological). Nevertheless,

the two are united in one source of life energy. However, this researcher believes that the nature of life energy, in regard to how it begins or who created it, remains a mystery to science.

The cognizer starts its function at the moment of conception in the form of a genetic information system which is contained in the DNA. At that point the cognizer is nothing more than a biochemical compound which takes a leading positional value in the preservation of genetic information in the multi-cellular system of the organism. However, this researcher assumes that the cognizer starts to function as an existential psychological structure and develops a psychological system which has "psychical energy" when the organism has developed a "mature" sensory system. The maturation of the sensory system is manifested in the ability of the organism to "externalize" its energy in a sensory field and its ability to act upon this field. Liggins (1972:95) presents evidence that this process starts at the fetal stage:

> In mammals with long gestation lengths the sensory organs of the fetus are highly developed and capable of response to the usual stimuli. Although the intra-uterine environment is by no means the sensory void pictured by physiologists of old, neither is the scope or intensity of stimuli likely to play an important part in brain development. The intensity of sound, for instance, within the human uterus is approximately 50 decibels (comparable to sound intensity in a quiet office and the intensity of light (unless the mother happens to be sunbathing in a bikini) is similar to that of a darkened lecture room. Thermal stimuli are almost completely absent, the intra-uterine temperature being maintained within very narrow limits at about 0.5°C. above that of the mother. . . . The fetus can readily be shown to be responsive to unaccustomed levels of these stimuli. A loud noise close to the uterus, a flash of high intensity of light, the touch of a needle tip on the skin, a rapid change in the position of the mother, or the injection of a cold fluid into the amniotic sac, all may evoke a quick and vigorous reaction in the form of fetal movement. At the present time there is little evidence that would support those psychologists who would have us believe that maternal behavior can have effects on the brain development that plays a significant part in moulding the personality of the child and adult.[69]

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[69] G. C. Liggins, The Fetus and Birth. In C. R. Austin and R. V. Short (Eds.), Reproduction in Mammals 2 Embryonic and Fetal Development (Op. cit.:72-109).

The above abstract suggests the existence of a cognizer as an existential psychological experience before birth. However, as the physical and physiological structure-functions develop in complexity, a corresponding development in the complexity of the psychological system occurs coherently. The former is manifested in motoric movement and the latter in the perceptual constructs (i.e., the mental images and meanings of the sensory world). Therefore, it is postulated here that the first psychological bond is the perceptual-motoric bond. However, since the individual's perception of the sensory world is transformed into concepts or meaningful definitions of what is perceived, an intellectual element must also exist in the cognizer's molecule. The existential experience suggests that no meaning for a given sensory data exists in isolation from a stirred-up state in the physiological function. Thus the intellectual element must have an equipotential component in its structure, and this is the emotional or feeling component which is given the term "affect." According to this argument, the cognizer would have a structure of two existential pairs, namely, the perceptual-motoric (P-M) bond and the affect-intellect (A-I) bond. The positional value of these pairs in relation to the archetype decides the uniqueness or conformity attributes of the type of psychological process(es) the individual undergoes at any point of his transformation.

The archetype functions as a catalyst for the cognizer's function in a way similar to how the ribosomes function in the protein biosynthesis that is manufactured according to the processes which the DNA undergoes. The DNA undergoes three processes - replication, transcription and translation - in every living cell; likewise, the cognizer undergoes similar processes. The DNA participates in these processes as an integral part of the living cell and takes a position in the nucleus of the cell,

In the same way, the cognizer is assumed to function as an integral part of the existential experience. The cognizer is in the core structure of the existential experience. The core structure-function of the existential experience is assumed to be the cognitive nucleic existential experience (i.e., CNE). The CNE is transcribed to a sensory nucleic existential experience (i.e., SNE) in the process of externalizing one's existence in the form of sensory data. It has been argued that the energy of the universe is within the individual's existential being. Moreover, it was argued that the individual externalizes his existence in a form of sensory data through the process of exploration. However, these sensory data have to be imported selectively during the process of expanding one's negantropy. The synthesis of sensory data into a coherent pattern with the individual's transformation is analogous to the process of protein biosynthesis. Thus the existential synthesis is analogous to the protein biosynthesis. Consequently, the synthesis of sensory data into psychological constructs that are coherent with the need of the existential point of transformation is similar to protein biosynthesis which is the result of the sequence of amino acids. The amino acid sequence is decided by mRNA according to the genetic message which is transcribed in RNA. Similarly, the sensory data are arranged in the sensory field according to the SNE or the sensory nucleic existential experience as a messenger for the CNE (i.e., cognitive nucleic existential experience). However, the biosynthesis is not completed unless the message is translated into a joint amino acid sequence. This process, as was described above, has to be the joint function of mRNA and tRNA upon their arrival at the ribosome. Similarly, the SNE which decides the sequence of sensory data according to the CNE's message, decides the sensory image of the imported energy (i.e., the sequence of

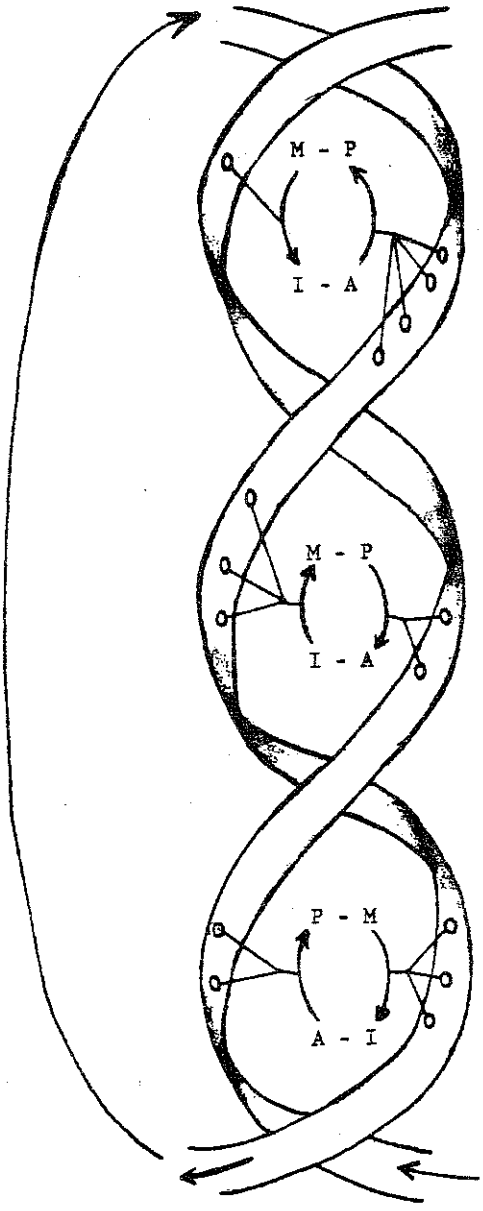
sensory data). But its synthesis into a percept is achieved through the joint function of sensation and perception as they are both mediated by the archetype (i.e., the analogous element to the ribosome).

The cognitive nucleic existential experience is transcribed into SNE. Replication of CNE occurs when the sensory field is translated into new existential experience (i.e., daughter CNE). At this point the individual's negantropy is expanded. The translation of the cognizer's message into a new existential experience is a transformation of the individual's experience which enriches his or her existential exploration of his system. This enrichment is similar to the enrichment of the cytoplasm in the various cells with new proteins. However, the existential "cell" is differentiated into a multi-cellular system that is described in terms of a "tao" movement. Nevertheless, it is assumed that every existential point of transformation has to have a cognizer in its nucleus to maintain its dynamic steady state of homeostasis. As one carries the analogy between DNA and CNE (the cognizer) one has to bear in mind that the CNE is an integral part of the whole existential experience. Thus, though it functions as a regulator for the individual's existential experience during the transcription of CNE into SNE, it is regulated by the new existential experiences during the process of the expansion of one's negantropy.

The CNE carries the existential information system in its structure. The cognizer is an existential "molecule" of the perceptual-motoric (P-M) bond that is connected to the intellectual-affective (I-A) bond by the archetypic structure. The archetypes and the senses alternate the holding of the CNE bonds on the turns of the double helix. This structure is presented in figure 15 which is made analogous to the DNA double-helical structure. The archetypic structure is described to contain mankind's

FIGURE 16

A Simplified Structure of the Cognizer (CNE)
(After DNA Double-Helical Structure)



P - M: Perceptual-motoric bond

O: Sensing could be any or all of the five familiar senses

A - I: The affect-intellect formulates the perceptual-motoric bond into a mental image that is expressed covertly or overtly

Archetype: Could be any form of experience, thought, image or idea of what certain sensory data mean in its generic sense at a certain time-space domain

experiences which gives the generic meaning for the structure-function of any existential element, be it perceptual, motoric, intellectual or affective. However, this generic meaning has an equipotentiality to be transformed into a private meaning or a special meaning to the individual according to its positional value in the whole structure-function of the existential experience. The positional value of the archetype during the process of psychosynthesis (i.e., the process of translating the imported energy into structure-functions that are coherent with the individual's existential needs) is a recipient of the joint structure-functions of the SNE in its mSNE and tSNE. In other words, the archetype acts as a template for the joint function of sensation (sSNE) and perception (pSNE). The sensation process is defined here as a process of externalization of one's existential world into sensory forms, while perception is the translation of the sensory sequence (which is decided by sensation) into organized percepts. The perceptual experience of the sensory field is isomorphic to the sensory experience but it is different in its existential structure-function which is assumed to be mediated by the archetypic experiences. Archetypic structure-functions very often act as regulating "engines" for the psychosynthesis of the existential experience.

It is believed that a researcher with knowledge of protein biosynthesis, Gestalt psychology and the systemic analysis approach could develop the analogy of the cognizer to the DNA structure-function into a neat model which could identify as many biochemical structure-functions as one could identify existential psychological processes. However, with this researcher's present level of knowledge, especially in biochemistry, any further analysis might be misleading rather than helpful for the understanding of the cognizer's nature.

In short, the above analogy aims at pointing out that the process of externalizing one's existential universe is pushed by an internal organizer of the existential experience, and pulled by the individual's needs to expand his negantropy. The push-pull forces as they have been described follow a multiplex pattern which is unitas in its nature. The synergistic force for such unitas multiplex is the exploration of the individual to his existential universe as he transforms his energy from one form into another. Moreover, the process of transformation is mediated by the archetypic experience which is assumed to be sub-systems initially contained in the DNA.

The cognizer exists in each nucleus of the existential experience as the result of replication. The existential experience of universe, however, is a multi "cellular" system which develops from the most concrete to the most abstract psychological processes. The concrete processes relate to the functions of the psychical energy in the case of physiological needs and the abstract ones relate to the conceptualization of one's actions in forms of ideas, principles, ideology, scientific discovery, etc. However, in no process can one experience a physical component without its metaphysical component. The relation of these two components is analogous to the yin/yang relationship where one component has a leading positional value (yang) and the other has the seeds or the equipotentiality of replacing or recycling the movement to its opposite. The archetype in its function as a "ribosome" during the process of psychosynthesis keeps the balance of concreteness-abstraction (i.e. physical-metaphysical) in accordance with the positional value of any psychological process from the individual's system as a whole.

It is assumed that a child's experience of his existential system is

basically the same as the adult's system except that the adult has explored his psychical energy or existential universe more than the child. It is perhaps for this reason that a child responds intuitively to his parents' behavioral patterns and relates to them coherently. Likewise, the parents' intuitive understanding of their children could be taken as evidence that the "child's" psychological system is still part of the parents' psychological system in a contraction form for their expanded psychological system. This alteration between contraction-expansion follows the same principle in both children and adults. However, the transformational point of adults' awareness of such alteration is different from that of children. Nevertheless, adults are unaware of their intuitive shift to childhood in the same way that children are unaware of their intuitive shift to adulthood. Intuition in such communication is analogous to light-wave behavior, since it travels in the time-space domain of the individual without any medium. The thirty years of difference, for instance, in the "time-space" between child and parent is not materialized in any form of concrete experience available to either one at that point of intuitive exchange of understanding. This kind of communication is another form of the synergistic function of man as an open system.

In understanding the cognizer's analogy after the DNA it must be noted that the senses change their positional value in relation to the cognizer as they carry a message singularly or collectively to externalize and/or impart energy from the sensory field. The sensory data are undifferentiated matter unless sSNE or the sensory system (like mRNA) identifies its structure-functions in coordination with the perceptual structure (pSNE). Once the sensory data are arranged in a sequence according to

the cognizer's instruction, a psychological process of a certain type is synthesized in the individual's existential experience in the same way that protein is synthesized in the cytoplasm of the cell when the amino acid sequence is arranged by the messenger RNA. But mRNA cannot do this if the ribosomes do not receive it and give the signal to tRNA to unite its function at that point with mRNA. Likewise, it was argued that the sensory data would not have been synthesized into perceptual messages if they were not mediated by the archetype construct. Once the sensory data are synthesized, it is given a meaning that carries a special feeling at that point and thus the (A-I) bond is established and with this the cognizer structure is replicated into a new psychological process. The replication of the cognizer in the new psychological process is similar to the replication of the DNA in a new cell. The three processes of replication, transcription, and translation continue to occur over the life span of the individual until he has expanded and "explored"[70] his potential psychical energy to the "utmost." This last phrase, "to the utmost," discribes and explains why individuals differ in spite of the fact that they are originally similar. It is because individuals explore different sub-systems of their universe at different time-space domains of their existential universe. Thus the positional values of each individual's sub-systems within his whole system differs from the pattern of positional values in other individuals.

The spiral shape of the double-helical structure of psychical energy

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[70]Exploration is a process of discovering differences and similarities in the structure-functions of various entities which exist in the existential universe of the individual. Exploration therefore is a process of information-processing; it is descriptive and analytical and prepares the organism to synthesize the experience in terms of part-whole relationships. The synthesis process is the explanatory or understanding process that underlies the change.

is of considerable value to this model, since it coherently describes the existential experience of one's life in an open-close, close-open manner. If the individual tries to picture his "mental" or psychological process, he can probably not recall an experience which featured a complete closure or an "absolute" openness. For instance, knowledge that has been learned is never completely forgotten, but also is never completely learned.[71] This is why one is constantly motivated or pushed to approach certain goals that simultaneously pull one towards them. However, the push-pull forces are united in one ontological process which is termed here, the life process.

The double-helical structure at the micro level is a concentric spheric circle of a tao structure-function, and the expansion of each tao into multi-taos (i.e., multi-psychological units of opposites) is spiral in its ontological development.[72] However, the expansion could take place

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[71] What has been learned could be transformed into a new form of learning, but in essence it is not lost. This could be explained in terms of physiological theory which assumes that memory is explained in terms of physiological trace, or that what is learned leaves an effect upon the neurological system. "The trace is a theoretical conception where concrete exemplar may be any one or less permanent modifications of material substance which, in some more or less direct sense, represent an object or occasion, and which play so large a part in our everyday existence." (R. Oldfield. Memory Mechanisms and the Theory of Schemata. In R. Harper, et al., Op. cit., 1955:357). However, this present model explains the phenomenon that "nothing once learned is never forgotten" in terms of equipotentiality. It means that anything that has been once explored is recycled to assume a new potential value in a new pattern. This makes previous experiences available for transformation in light of new patterns, be they physiological and/or psychological.

[72] The expansion of the tao into multi-taos in the manner described above means, here, that the tao includes various units of different entities and that such units which are in one position and function as parts, are capable of being transformed into wholes during the process of self-exploration. This is best described by Batson (1979:133), "All characterological adjectives are to be reduced or expanded to derive their definitions from patterns of interchange." G. Batson. Mind and Nature: A Necessary Unity. New York and Toronto: Clarke, Irwin and Company, Limited, 1979,

in any direction to include as many dimensions as there are points from which the concentric spheric circle of the tao is formed. Figure 16 shows that any tao could be expanded in any direction from any point of its concentric spheric circle. The small taos 1, 2, 3, 4 and 5 form one system in which each sub-system is the equipotentiality of the other. These five sub-systems could form a system that represents a complex psychological process.

This diagram shows that a stream of existential experience is analogous to a stream of particle-waves where the middle structure of a tao is a wave and its antecedent or precedent tao contains the particle with which it exchanges its form into its opposite. However, the new form of opposites replicates the structure but not in function, since it changes its positional value in relation to the whole system. This is why transformation of opposites is not a form of oscillation, it is rather a process of reconstructuion of patterns of relationships. The momentum for the particle movement, whether in space or in time, is not predictable, especially when the particle gets closer to the center.[73] Thus as the individual reaches the point of synthesis to maintain the harmony among the opposites, the motion becomes swift in a phi-movement of an on-off nature (clarity-ambiguity, for example), and a quantum jump in the form of insight will occur.

Insight is defined here as a "sudden"[74] regulation of the order-

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[73] See chapter 2 (pp. 39-47) in this work for a discussion of the concept of particle-wave and the Heisenberg indeterminacy principle.

[74] The suddenness is the sharp sense of becoming aware of what is going on. But in actual stream of existential experience, the process is not sudden. It is in fact a natural flow of exploration that reaches its equifinality when a pattern of positional values for the psychological sub-systems is obtained, where the intuitive sub-system takes a leading positional value in its structure-functions.

FIGURE 17

The Expansion of the Tao Movement

disorder motion of the psychological sub-systems which are involved in a particular psychological process. It is assumed that insight is inevitable in the process of exploration of the various sub-systems of the existential experience which the individual undertakes at any given point of transformation. Insight as such cannot be imposed upon the individual. It is internally regulated and has to come through "direct" and "indirect" experiences of the individual.[75] If one accepts the tao logic, it is expected that one will arrive at a solution for any given problem as long as one is open to explore one's nature in one's system as a whole. Insight is the synthesis of diversity within unity. The cognizer in this psychological process manifests its structure-functions by synthesizing the sensory world in the form of perceptual particles which relates to a wave of motoric acts transcribed in thought and feeling and mediated by the archetype which at that point is at its highest motion. At this point of insight the individual's uniqueness of perceiving the sensory world becomes sharply united with the core archetype of mankind's experiences of this world. This type of insight is the highest synergistic expression of one's exploration for mankind's experiences and their coherent unity with his own transformation. It is clear from this description that insight does not follow the associationistic principles in any form of linear logic.

In other words, insight is an equifinality of exploring one's existential universe in a coherent pattern. It is similar to the movement of the sun in the solar system where the sun coherently reaches its positional value of rising in a similar way that setting occurs. The value of this view for aiding in the understanding of the nature of self-insight lies in its emphasis on trusting one's inner resources when the world appears

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[75] See the meaning of direct and indirect experience in this work on pp. 420-421.

confusing. The individual who trusts his inner resources is likely to reach the most coherent solution for his problems and thus flows genuinely with his energy. However, this is not to suggest that the individual should stand still and wait for a miracle of insight. On the contrary, it is suggested that the individual should dynamically relate to his existential universe by exploring infinite alternatives and figuring out actions that are most coherent with his transformation at a given point.

Insight, therefore, is a synergy of the various sub-systems of the individual's system as a whole. Since it is argued that synergy is sharpened by expanding one's negantropy, thus insight will more probably be experienced by individuals who are active in relating to their universe. Thus, in an educational situation, it is expected that interaction among members of the class in seeking a solution to a given problem from various angles will trigger an insightful solution. This is because it is assumed that every form of interaction generates a new input that is available for the learner to import and thus to expand his or her negantropy. However, the educational situation or the learning field has to be unfolded in a natural way rather than as a result of introducing a variety of activities in artificial ways. According to this model, the assumption that an increase in audio-visual aids facilitates learning is erroneous. It is assumed here that the coherent sensory world that the student needs to act upon is that field that suits his transformational pattern at every point. A teacher can act as a source of supplying his students with their reflection as they mirror their needs in the process of interacting with him. Moreover, a variety of educational aids could be made available in an adjacent room for the exploration of students and teacher as they flow with their energy. The class is a system of interaction among its various

members including the teacher. In a synergistic method of teaching, the teacher exchanges his positional value with the students as the situation requires. Accordingly, any student could take a leading positional value at some point while he or she makes a contribution to the whole group. It must also be recognized here that the various talents of no single student are equivalent in their positional values. Any student is a potential leading part of the class system. This orientation should be felt by the student by exploring the educational situation and should be voiced coherently and clearly when the need for saying it is felt genuinely by any member of the class.

Learning, thus, is defined in this work as a process of self-exploration through which the individual externalizes his energy through his sensory system, and imports energy that is manifested in the sensory world by acting upon it. The process of acting upon the sensory world is regulated internally by the cognizer whose structure includes a psychological "molecule" which features a perceptual $\Longleftrightarrow$ motoric bond that is united with the affect $\Longleftrightarrow$ intellect bond by the mediation of the archetype structure-function of mankind's experience. Consequently, the learning process is a process of transformation which follows the same principles of the individual's transformation as an open system: (1) the dialectic principle of order-disorder, (2) the synergistic principle of maintenance of diversity within unity, and (3) the ontological principle of change. However, since it is maintained that the physical and metaphysical worlds of the individual are synergistically united at every point of the individual's transformation, therefore, transformation sets the limit for learning. In other words, learning of new concepts or new ways of exploring one's sensory world in relation to the existential universe is both a

consequence and an antecedent of the transformational point which the individual has reached.[76]

Motivation as a psychological process is an underlying force for learning. It is defined here as a state of tension that pushes or arouses the individual's system to act. But since this process is a form of internal energy in search of the dynamic homeostasis of the individual's system, it must also have then the pull force which the individual perceives in his sensory world as a goal for importation in order to expand his negantropy. Motivation, therefore, is reconstructued by the cognizer in the same way any psychological process is constructed or transformed. This explains why motivation affects and is affected by the individual's perception of his sensory and/or existential universe. Something that is motivational for an individual at one point is not necessarily so at another point. What makes something motivational is the coherence pattern of transformation within which it is selected to be congruent with the need which has a leading positional value at that point. Motivation on one dimension is tension-producing and on another dimension is tension-reducing. In this sense it is a tao. Thus, the two forces of

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[76]Traditionally it is argued that "maturation sets the limit for learning." This principle is based on evidence that individuals of different age levels have different levels of learning. The child cannot learn to swim unless his muscular system has reached a maturation level that enables him to do so. Individuals walk before they can run, and run before they race. These observations are also true with the synergistic perspective. However, the interpretation of these observations is different. The term maturation does not adequately describe the individual's conditions which set the limits for learning. Maturation is a descriptive term for physical growth, while in the synergistic view, physical growth is not separate from metaphysical growth. The expansion of one's system from one point of transformation to another is a process of exploration of the various sub-systems as the individual's cognizer evolves interactively with the evolution of the physical structures. Thus the term "transformation" instead of "maturation" seems to be more coherent with the dynamic nature of the living system.

push-pull act synergistically to maintain the state of dynamic homeostasis, which is manifested in performance at the overt level, and an equipotentiality for further learning (i.e., latent learning), which is experienced at the covert level. Consequently, the individual is constantly motivated to learn or constantly experiences the need to further explore his existential universe. In this sense need, drive, motivation, perception and movements are not separate psychophysical constructs; they all function as one system which is constantly in motion.

Need is a descriptive term for the existential experience of lacking a certain energy-input. It could take a physical form (i.e., food, air, temperature, light, water, etc.), and/or a metaphysical form (i.e., the urge to feel one's existence by inter-subjective relationship with others). However, whether a need is physical or metaphysical it has to have these two components in one whole. One component takes the position of yang, and the other the position of yin. The motion of yin-yang is a motion of a particle-wave nature. The metaphysical component is in the position of the yin and the physical component is in the position of the yang. The physical component takes a form of a wave of which the metaphysical component will be a particle, or vice versa. Thus, the individual experiences a Gestalt switch in relating his physical-metaphysical needs. This experience is analogous to a Gestalt-switch that the observer has when he describes the behavior of particle-wave. However, just as the momentum of the particle is unpredictable, so is the tao's sense of the yin component (i.e., metaphysical component of the need). Nevertheless, the existence of the particle is probable at any point within the wave space, and so is the metaphysical component. For example, the individual needs food, fresh air, warmth, liquids, etc.; but at the same time he needs to have agreeable

surroundings, beautiful views, people to interact with, meanings to live up to, beliefs to enrich his existential life with, etc. None of these needs is separate from the other or is set in a rigid hierarchy that makes one need predominant over the others all the time. Some of these needs are fulfilled without the individual's "rational awareness,"[77] such as the need for air or humidity, but the classification of such needs in a hierarchy does not serve in understanding their nature aside from satisfying the individual's need for clarity. Maybe for this reason psychologists tend to classify needs into primary and secondary ones. The primary needs are defined as essential for life (i.e., without satisfying them, the individual dies), and secondary needs are defined as the psychological and social needs as well as the transcendence needs which enable the individual to relate to his universe. However, it is necessary to keep in mind that this classification is arbitrary, especially that there are times when communication takes a leading positional value for the individual's survival. The history of mankind shows that there are individuals who chose by free will to go on a hunger strike to communicate their protest against "oppression," or their desire for freedom. Deprivation from communication with others or from freedom to work has proved to be a motivational condition for the relinquishment of materialistic rewards and the conditions under which primary needs are satisfied. In other words, what is commonly thought of as a secondary need (i.e., communication or work, for instance) becomes a primary need. This is suggested by

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[77]Rational awareness is a cognitive process that is manifested in finding causes or relationships in a logical sequence that makes sense to the individual in understanding what he or she is experiencing. Awareness is a form of the intellect "element" in the cognizer. However, this element does not take the form of rationality in the case of biological needs described above. It is rather a h bitual fitting of a particular experience within the general pattern of transformation.

the findings of studies of motivation under forced isolation conditions.[78] In view of this, it is argued here that classifying needs or motivations in terms of primary or secondary is not helpful for understanding human motivation. Motivation of any kind has to be treated as an existential experience of push-pull forces, and it involves the entire system of the individual in which a sub-system takes a leading positional value at a certain point in the time-space domain. This is the synergistic view of the individual's aroused condition whether it is expressed in physiological activation (drive), perceptual interpretation (need or motivation), and/or existential meaning (purposefulness or intention).[79]

The individual's development is viewed according to this model as a dynamic process of expanding one's energy from concrete forms of

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[78] Hebb (Op. cit., 1964:23) cited an experiment which was done to test the realities of motivation in well-fed, physically comfortable adult human beings. These subjects were paid handsomely (i.e., $20 a day plus room and board) to do nothing, see nothing, hear or touch very little, for 24 hours a day. Primary needs were met very well. The subjects suffered no pain and were fed on request. The subjects were reported to be well motivated for four to eight hours and then became increasingly unhappy. They developed a need for stimulation of almost any kind. The subjects looked forward to being tested but paradoxically tended to find the tests fatiguing when they were given. On the whole, all subjects found the experimental conditions difficult to tolerate and one subject, in spite of not being in a special state of primary drive arousal in the experiment and in real need of money outside it, gave up the secondary reward of $20 a day to take a job as a laborer at seven or eight dollars a day. The subjects in general showed little interest in the experiment. Their ability to think in a coherent pattern was disturbed and they tended to lose the ability to concentrate on any given issue after the first few hours of isolation. Moreover, they were unable to concentrate for 24 hours after their release from isolation.

[79] A need is a form of energy which functions as a copying enzyme in the process of psychosynthesis. This means that the structure of the cognizer is unwinded as a need emerges and each element is copied according to the "need." The cognitive structure is winded again when the need is satisfied.

materialistic physical-physiological structure-functions through abstract forms of a psychological-social-metaphysical nature. However, any of these forms, whether physical or matter-energy structure-functions, maintains its ontological development concurrently with the psycho-social and metaphysical transformation of the life energy. In other words, as the individual develops physically, he is also developing intellectually, emotionally, socially and spiritually with none of these forms or "sides" of developments being separate from the other sides. The rate of development for each side is here described as a difference in its positional value within the whole pattern of the individual's development process at a certain point. However, the coherent pattern of development for the various sides manifests itself in a single acting system of the whole being in a state of becoming. The "self," which is the unifying psychological construct for the various aspects of the individual's system, develops from the physiological self in its contraction point of being a fertilized cell, into a physical self constructed from the multicellular system which is differentiated into organisms of holistic structure-functions. Then the physical self evolves around the archetypic-self, which is located at the very core of the individual's cognizer through which the perceptual-motoric self evolves. Once evolution starts (and that is as early as the physiological self is created) it continues to expand its negantropy until the individual experiences the transcending self at the level of unbounded space.

Self-transcendence is manifested in the individual's ability to mirror himself in relating to others through the inter-subjective relationship. It starts as early as the child's response of smiling to a smiling face. Although it might be argued that smiling is reflexive and involves

no learning. But it does, in fact, manifest a form of evolution in the existential sense. There could be nothing more precise in manifesting the mirroring principle intuitively than such a human act that represents genuine communication in its archetypic sense. Whether the child is aware of his self-transcendence cannot be decided on the basis of rational norms. In other words, one cannot argue that the child is not aware of his existential experience, as early as birth. Awareness in its meaning of being capable of "understanding" what one experiences and so being ready to communicate this experience on the verbal level is not necessarily what awareness should mean existentially. The fact that a baby cannot tell us what he experiences or that with time it "forgets" its infantile experiences does not ncecssarily mean that he was never aware of his experiences in his special way, a way which is coherent with his level of transformation. As long as one accepts the notion that the self expands its energy of relating to the universe from a contraction point in the form of radius energy, it is possible to argue that self-transcendence could be experienced by the individual at any transformational point or "stage" of his development.[80]

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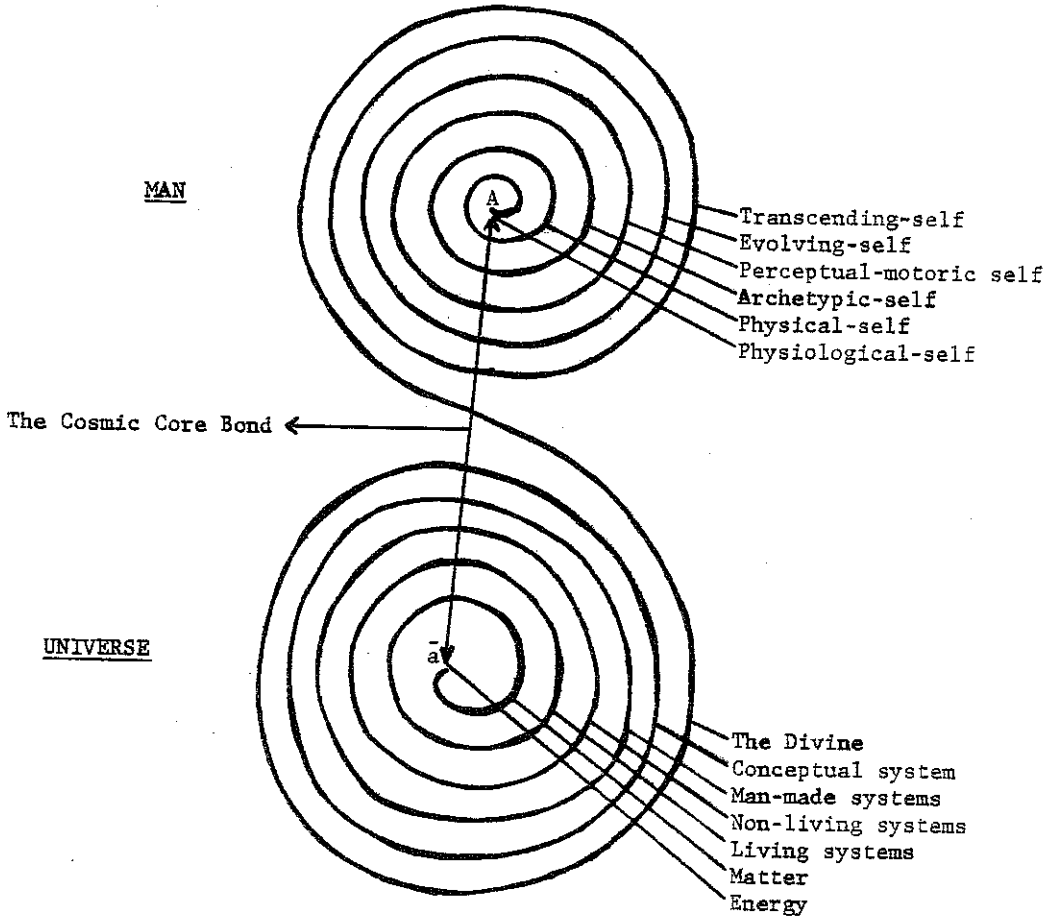
[80] However, stage-specific theorists do not agree with the above conceptualization. Piaget, for instance, maintains that all children are egocentric; they consider their viewpoint as the only concrete one. The child is not aware that other persons also have their viewpoints. Hall, E. A Conversation with Jean Piaget and Barbel Inhelder. Psychology Today, May 1970, 3, 25-32. Elsewhere, it was pointed out that, "Piaget starts from the biological concept of 'adaptation.' He sees adaptation as an interplay of the complementary processes, which he calls 'assimilation' and 'accommodation.' Assimilation occurs when an organism uses something in its environment for some activity which is already part of its repertoire. . . . Accommodation, on the other hand, means the addition of new activities to the organism's repertoire or the modification of old activities in response to the impact of the environmental effect." D. E. Berlyne. Recent Developments in Piaget's Work. (In Harper, et al. (Eds.), Op. cit.:311-323). This researcher argues that if the principles of assimilation-accommodation are viewed within the synergistic perspective, one can see how the interplay process could be taken as evidence of the existence of awareness at any stage.

Figure 17 shows the spiral evolution of one's self and its exchange interplay with the various facets of the universe. Any point in any circle in the figure constitutes the existential equipotentiality of all other circles, either in forms of contraction or expansion. The "A" system of the individual's self is expanded dynamically in relating to the "$\bar{a}$" system of the universe that constitutes all forms of creation including those within the divine (i.e., the creator). The line that connects the central point in "A" and "$\bar{a}$" systems is a "radiant" energy that represents the cosmic core bond, around which and through which all possible explorations of the existential cosmos of the individual is made possible. It is maintained in this work that the energy of the universe is within one's existential system. Thus the process of expanding one's negantropy transforms its energy in a continuous process of exploration of its various sub-systems. This process includes self-transcendence at the holistic "level," where one unites synergistically with the divine self on a conceptual level just as one unites with this self at the physiological level at the moment of conception. The divine system is the unbounded space of the expanded energy from which all systems of the universe have evolved and are united in man's system inasmuch as they are united in the creator. Every sub-system in the individual's totality corresponds with a sensory world system which mirrors what the individual externalizes from his repertoire at every point of his exploration of his universe. But every sub-system is to be considered at each point as a system taking a leading positional value and having all other sub-systems within it a coherent unity in spite of diversity. The cosmic bond (shown in figure 17) is analogous to the light wave which does not require a medium for its travel. Thus the cosmic bond in a mental life could travel

FIGURE 18

The Cosmic Bond of Man and Universe



to reach any point of the forms of the existential being. In such travel it carries the message of unity among the various sub-systems of which man-universe is composed. Figure 17 is supposed to represent the spiral nature of the individual's existential evolution through exploration. It also shows how the unity within diversity could be expressed in contraction-expansion of one's existential experience for the various forms of energy of his universe. Every system in the universe has its corresponding system in man's system. The various systems of the universe are explored by man by mirroring oneself during the process of externalizing one's energy in a form of sensory field. However, the process of importing this field and its psychosynthesis is described to be regulated by the cognizer's structure-functions that was described in the aforementioned discussion.

Figure 17 is drawn on the basis that this universe is essentially a flow of enery which is "never"[81] created and never destroyed. However, since there is no matter without energy and no energy without matter, the description of life energy (dynamic energy manifested in different forms

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[81] Though the statement is taken from the first law of thermodynamics (i.e., the law of conservation of energy), the word "never" suggests an adverb of time for creation which is inconsistent with the concept of creator-created. However, the argument holds true when one accepts the assumption that God created energy, and that time-space is relativistic and conceptual. No one knows when life started or when the cosmos emerged. The tendency to ask about "when" (i.e., time) and "where" (i.e., space) is only a human tendency of searching for conceptual order to understand nature rationally (i.e., in terms of a cause-effect relationship). Perhaps Albert Einstein hit the core principle of life when he said, as Capra (1975:162-163) points out, "The central recognition of the theory of relativity is that geometry . . . is a construct of the intellect. Only when this discovery is accepted can the mind feel free to tamper with the time-honored notions of space and time, to survey the range of possibilities available for defining them, and to select that formulation which agrees with observation." This suggests that time and space are concepts rather than concrete entities, and these concepts describe relationships among entities as meaning different things at different points of transformation,

of activities) continues to be a mystery unless one tries to conceptualize a form of energy which one can call "mental" energy that is constantly present in the individual's universe.

Taimni (1969:413) in his attempt to describe the unity of man, mind and universe, points out that the mental world emerges through the medium of light waves since light waves are the only kind of waves that travel without a medium of matter. He concludes his discussion on the nature of light waves and mental world by saying (Ibid.:415):

> Behind the apparently physical world and underlying it is a mental world containing all the principles, archetypes, models of motion, images, etc., all mathematically related and so coordinated into a harmonious whole. It is not that there is a physical world and underlying it there is the mental world, but there is only the mental world and this apparently physical world is merely an appearance on the mental world.

Taimni's views might appear to be coherent with the existential experience one undertakes as one tries to exchange one's energy with and within the universe; however, if his work is looked at outside the context of the present researcher's previous discussion on the synergy of physics and metaphysics it will dichotomize the existential reality or reduce it to a spiritual one. This researcher tends to accept the notion that transformation of the individual's experience of his universe is analogous to light waves but the structure-functions of the individual's being are forms of matter-energy. The individual's existence is essentially manifested in the development of the multicellular system whose cells' protein manufactures are regulated by the DNA (genetic information).

Every existential experience has a core which is termed cognizer, and this core is viewed as analogous to DNA. However, the whole system of the existential experiences of one's universe is analogous to radiation, in the sense that the individual expands and contracts his existential

universe in a similar way to how the radiant can expand into a concentric spheric circle to the unbounded space as it is seen in figures 13 and 17 and has been argued throughout this chapter. To further illustrate this analogy, it is necessary to discuss some scientific observations on the nature of light wave. Capra (1975:152-154) observes that:

> (1) Light is emitted and absorbed in the form of 'quanta' or 'photones,' but when these particles of light travel through space they appear as vibrating electric and magnetic fields which show all characteristic behavior of waves.
>
> (2) Electrons are normally considered to be particles; and yet when a beam of these particles is sent through a small slit it is diffracted just like a beam of light - in other words, electrons too behave like waves.
>
> (3) The dual aspect of matter and radiation led to the formulation of the quantum theory. The picture of a wave is fundamentally different from the particle picture which implies a sharp location. It has taken physicists a long time to accept the fact that matter manifests itself in ways which seem to be mutually exclusive, that particles are also waves, waves also particles. . . . In quantum theory physicists do not speak about a particle's trajectory (i.e., move along with wave) when they speak about particle as also a wave. What is meant is that the wave pattern as a whole is a manifestation of the particle. This is why particles' momentum is described in terms of probability (or indeterminacy principle).
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> (4) The particle is not present at a definite place, nor is it absent. What changes is the probability pattern, and thus the tendencies of the particle to exist in certain places.

In the words of Robert Oppenheimer, Capra (Ibid.:154) says:

> If we ask, for instance, whether the position of the electron remains the same, we must say 'no'; if we ask whether the electron's position changes with time, we must say 'no'; if we ask whether the electron is at rest, we must say 'no'; if we ask whether it is in motion, we must say 'no'.

These facts about the nature of particle-waves could be intuitively understood to suggest that light is in a process of transformation, in which any system of waves is in motion without losing the probability of its existence in the same region of the probable existence of its

particles. The light travel through space is similar to the travel of the existential experience of sensory data during psychosynthesis and its existence as an equipotentiality for the replication of the existential cognizer (CNE) in the existential system. The sensory data are present in the sensory field inasmuch as the individual relates to them through importing energy. However, their presence in the cognizer are a priori. The sensory data which are not selected at certain times are existing in man's mental life in the "a priori" sense. Nevertheless, the possible act of externalizing their existence and re-internaliziag them through psychosynthesis is in the realm of probability. Thus, a sensory datum is analogous to the particle in its travel in the existential universe along the space of the existential experience which is analogous to the wave.

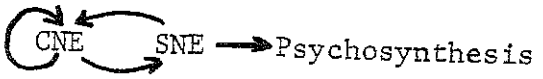
Consider, for instance, the individual's perception of an image of a certain creature. The creature is present and not present in the cognizer's field and/or the sensory field. It is present in the probable sense somewhere in the sensory world, but neither its space nor its time of existence can be predicted or identified with any certainty by the individual who experiences the image of that creature in reminiscence. All that the individual can say at this point is, "I have the image of such a creature so it must exist somewhere." In a similar way the wave is a particle and a particle is a wave; the image is the sensory datum as a mental image and a mental image is a sensory datum. The relation is energetic, radial and transformational. This is how one can deal with the existential world in terms of quantum theory through which the dichotomies of mind-body, matter-energy, physics-metaphysics and internal-external environments are broken through, and variety is maintained in synergistic unity. This unity transcends the opposites of existence and

non-existence.

In short, it was argued that one interacts with one's environment by externalizing one's energy into a form of sensory data and importing such data during the process of psychosynthesis through which one's negantropy is expanded. The analogy of the individual's psychosynthesis for his existential universe to the protein biosynthesis in the living nucleic cell provides the following inferences:

(1) The man-environment relationship is an organismic cognitive process which involves the whole structure-function of the individual. This is based on the argument that any existential psychical energy includes the two pairs of psychophysical elements: perceptual-motoric (PM), and intellect-affect (IA). However, it was pointed out that these two pairs are mediated by the archetypes which represent the collective experiences of mankind on the physical and metaphysical levels.

(2) The CNE in relation to SNE and the way their structures function during the process of psychosynthesis could be presented in a multiplex formula as follows:



This formula is analogous to the "central dogma" (p. 468) which is represented in 

protein biosynthesis. It implies the following principles:[82]

(A) Man's cognitive structure-functions are a priori in his nature.

(B) Man explores his universe by externalizing his energy in

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[82] As one reads the principles of psychosynthesis it is worthwhile to remember the Gestalt principles of perceptual organization (pp. 158-165). However, these principles have to be viewed within the perspectives of this researcher's arguments which were presented during the discussion of the Gestalt school.

forms of sensory data which are arranged in a sequence that is most coherent with the externalized message which he holds in his senses.

(C) The arrangement of sensory data is determined by the multiplex interaction of perceptual-motoric, affect-intellect conditions of one's system at the point of transformation that one has reached in a certain time-space domain.

(D) The translation of the selected sequence of the sensory data is made by the joint function of sensation (sSNE) and perception (pSNE) as these two sub-systems interact through their systemic relationship to the archetype (i.e., the generic meaning of the sensory-perceptual field) which the individual holds at this point.

(E) No experience which the individual existentially undergoes is ever forgotten. This is because each experience has psychical energy which is like any other form of energy, never destroyed.

(F) Replication of CNE energy as it is described after the DNA model, transforms its function from one form to another depending upon the positional value of the existential "cell" from the multi-existential system as a whole. Thus, any previous experience has a new meaning as it aims to be used in a new time-space domain which is always different from the first time when it was experienced. This point is based on the assumptions that time-space domain is dynamic, relativistic and transformational.

(G) The process of psychosynthesis is a transformational process analogous to the process of protein biosynthesis. But since both processes form one system they always exist in a complementary relationship. The complementary relationship of the protein biosynthesis and the existential psychosynthesis manifests the unity of

mind-body from the moment of conception.

Moreover, it was argued that the existential experience at any point has a dialectical nature in its search for the harmony of the opposites analogous to the cyclical motion of yin-yang in the tao. This motion describes the principle of unity within diversity and the randomization of order-disorder in the individual's energy. However, the expansion of one's negantropy is an equifinality of one's exploration of his existential universe as described above. The shift in focus from the physical to the metaphysical component of any existential experience is analogous to the particle-wave relationship. This analogy helps in explaining the following phenomena:

(1) The continuity-discontinuity of psychological development. As the individual continues to develop, he experiences quantum-jumps in forms of change in his behavior. Nevertheless, the change is the "particle" of the "wave" of development which is part of it and it is the whole of totality, in the same way the particle is 'part" and whole in its momentum in the wave.

(2) The unpredictability of the change in behavior. Though behavioral change is unpredictable, its occurrence is inevitable.

(3) The closer the individual is to his goals, physically and/or psychologically, the more tension he experiences. This tension is experienced in a similar way to the peculiarities of particle-wave behavior, when the particle moves closer to the center of the wave motion. This is described in chapter 2 as being the reason for the indeterminacy principle which describes the particle-wave in a Gestalt-switch.

In conclusion, the analogies of DNA transcription, translation and replication, and the motion of the tao in relation to the particle-wave

movement, have been useful in the developing of a synergistic view of man's nature in the ontological process of unfolding his potentialities.

Findings and Conclusions:

It is somewhat inaccurate to describe the product of this study in terms of findings inasmuch as it is incoherent to consider a proposed view of man and universe as a conclusion. The title as such is chosen for lack of adequate terminology to describe the outcome of investigation in terms of transformational process rather than in static discrete constructs. In essence this work was initiated to develop an alternative view of man and universe which is capable of breaking through the various kinds of dichotomies that persist in the empirical paradigm of psychology, especially the dichotomy of mind-body and its co-partner, the physical-metaphysical (objective-subjective) attributes of human behavior.

This researcher was motivated to undertake the investigation of this conceptual problem because of her belief that at the present time there exists an imbalance in studies of a quantitative nature. This objective reference neglects covert existential behavior or the behavior of man within the subjective reference.

Since the problem of investigation is basically a conceptual one, these conclusions are presented with full awareness that an alternative view of man and universe is nothing more than a new focus on the same reality that other theorists have attempted to describe and/or explain. Broadly speaking, the new alternative is considered as a new question that opens another door into scientific inquiry concerning man's nature.

The process of investigation, which was utilized here, took a form of particle-wave motion in formulating a continuous stream of problem-

solving and problem-creating. At any point of time where there was a question, its answer was a wave which had within it a new particle which is capable of giving birth to a new question. The process of investigation, therefore, was an ontological process of searching and researching. Therefore, the inferences that are reviewed in this epitome do not include all the inferences that were presented throughout this study. In fact, the epitome is nothing more than a contraction point of an expanded energy of investigation that is characterized by its potential to become a new form of energy and expand again in new directions for further investigation. It is assumed here that the reader of this work might have his or her own conclusions based on their own perspective and their own transformational point of relating to this kind of conceptualization. It is the thesis of this study to emphasize the point that all men create their own reality and that theory builders are no exception.

The problem of investigation is a conceptual problem of a multi-dimensional nature. It is a search for a synergistic view of man and universe with an objective of creating a psychosocial model of man as an open system. The strategy for developing this view consisted of three major parts:

I. Identifying a method of investigation by means of which the criteria of differentiating a closed systems view from an open systems view could be defined.

II. Establishing a rationale for developing an alternative model of man as an open system. The rationale was developed by examining the epistemological foundations and implementations of psychological theory in mental health practices.

III. Developing an alternative view of man and universe which is

capable of accounting for the subjective element and has the ability to resolve the problems that are found to persist in the empirical paradigm of psychological theory.

The major hypothesis which was investigated is that the psychological theories are based on a closed systems view of man and universe and that the alternative view that could overcome their limitations is the open systems view. The investigation of these hypotheses yielded the following findings:

I. The systemic analysis method is the most coherent method of investigation for studying a conceptual problem.

1. The review of the literature on the system approach and general systems suggests that there is no standard method which could be considered a systemic analysis method that is shared by the scientific community of general systems theory. The only thing that could be taken from general systems theory is an agreed upon principle of investigation which stipulates that any phenomenon be viewed as a system within systems and that any system is composed of sub-systems which stand in interactive relationships in forming the whole system.

2. The systemic analysis method has to fulfill the following requirements:

2.1. The discriminiation between the conceptual system of a given theory and its systems objects, in other words, evaluation of the external consistency between the theory and the phenomenon that it attempts to conceptualize.

2.2. The establishment of a link between the orientation of a theory builder in terms of his view of man and universe and his production of knowledge in relation to the holistic view of man and universe as it is

described by open-systems logic.

2.3. Examination of the relationships among the various systems of a given theory through each one's relationship to the theory as a whole system. This is the logical validation of the internal consistency of the given theory.

3. The following criteria differentiate the open systems view from the closed systems view:

3.1. The explanatory principle.

3.2. The descriptive principle.

3.3. The scientific method of discovery.

The closed systems view employs linear logic which assumes that the principle of contiguity - temporal and spatial - is an explanatory principle. This is an associationistic view which states that "a" leads to "b" provided that everything else is constant. Consequently, the concept of time and space in this perspective is described as static, absolute and replicable. The descriptive principle is based on objective reference which is described as sensory data that is arranged in a hierarchical manner, horizontally and/or vertically. Thus, the descriptive principle follows the relata logic which looks only at relations between one datum and its neighboring datum regardless of the relationship between either of these items and the whole system. The scientific method of discovery is an empirical method that reduces any phenomenon into a set of independent or dependent variables where the first are taken as the cause and the second as an effect. This cause-effect relationship that follows the regularity principle does not account for the subjective element in the process of observation but rather attempts to control it. It was found that the subjective element is inherent in any observation and it is

uncontrollable.

Scientists who follow the dictates of the closed systems view by using the empirical approach are unable to solve four basic problems:

A. The problem of personal "meaning" in defining the operational generic meaning.

B. The problem of isomorphism between the structure of language and the structure of direct experience.

C. The problem of logic in making universal generalizations when scientists deal with an open class of instances which relate to the problem of investigations.

D. The mathematical problem in reporting findings in terms of probability. This was found to be the case because probability assumes that replication of any event is possible while in fact any event cannot be replicated in any absolute sense since time and space are not stationary.

The open systems view is characterized by the use of unitas multiplex logic, a logic which assumes that causality is a natural force which has the efficient and teleological types of forces which are interactively related in a united force of push-pull nature. The descriptive principle is a systemic principle which describes any phenomenon as a system which has a pattern of structure-functions for its sub-systems in light of their positional value in relation to the system as a whole. The explanatory principle and descriptive principle are based on the assumption that any system which is constantly in motion within a time-space domain that is characterized as relativistic and unpredictable is a behaving system.

4. The epistemological foundations of the empirical paradigm are embedded in the Aristotelian program of scientific discovery, and it

follows the deterministic views of Newton's conceptualization of time and space which is static and rational. The open systems view in contrast, is drawn from Einstein's theory of relativity and the Heisenberg principle of uncertainty in describing the particle-wave phemonenon.

II. An examination of the epistemological foundations of the psychological theories and their practices are more strongly characterized by the closed systems view than the open systems view. This recognition is based on the following observations:

1. Their logic is linear logic.

2. Their explanatory and descriptive principles are associationistic rather than systemic.

3. Their methods of investigation are mostly empirical inductive methods of objective reference.

4. Their conceptualizations of time and space are basically Newtonian.

The schools of psychology which were chosen as subjects of this study were: (1) the empiricism or associationism, (2) psychophysics and quantitative psychology, (3) structuralism, (4) functionalism, (5) behaviorism and Gestalt, and (6) psychoanalysis. The theories of the founders of each school were examined, except in the case of psychoanalysis and behaviorism, where the focus was on the classical theories of these schools (i.e., Freud, Watson and Skinner). This was the case because the purpose was to examine the epistemological foundations of psychological theories. However, in chapter five, where a new model is also presented, reference is made to some theorists who transformed the original theories of psychology towards an open systems view.

The aforementioned findings were found to be less typical in the case

of the functionalism and Gestalt schools than in the case of other schools. This was found to be so because these two schools have accounted for the subjective element by considering the cognitive factors through which the objective world is mediated. The major problems that were found to be left unsolved by all of these schools are those of mind-body, internal-external environment, physics-metaphysics, and determinism-freedom. In essence, the major feature of psychological theories seems to be dichotomization of opposites or the dualistic conceptualization of the human system as the individual moves dynamically and synergistically in his own universe.

5. As to the process of theory building in the field of psychology, it was found that it includes the subjective elements in spite of the claim that psychology is a scientific field of objective reference. In this regard it was noted that:

5.1. The theory builder is affected by the cultural motif which constitutes the time-space domain within which he lives.

5.2. The theory builder is affected by the norms of the scientific community and his theory is articulated within the perspectives of the scientific paradigm of all fields at the time.

5.3. The theory builder reflects within his thinking his own personal situations, be it social, intellectual training, or private interests and attitudes.

In essence, the subjective element which was found to exist in natural sciences, as Kuhn (1962) pointed out, is similarly present in the psychological theory.

6. The process of theory building in the history of psychology is a transformational one.

6.1. No theory in the field of psychology adds or contributes a completely new concept that was not originally a part of a previous theory.

6.2. The novelty of any psychological theory lies in the shift in focus from one aspect of the psychological phenomenon to another. In fact, theory building is a process of reconstruction of the various subsystems of the already established theories by making a choice of a subsystem to hold a leading positional value in the new system.

6.3. The most important element that has persisted in psychological theories throughout history, always in the same positional value, is the associationistic view and the theory of regular causality.

6.4. The subject matter of psychological theory has constantly rotated around the sensation area no matter how the theorists approach the psychological phenomenon or what focus they choose as subject matter.

7. The implementation of psychological theories on mental health practices was found to suffer from the same problem of dichotomizing the existential experiences of the individual that originated in the psychological theories.

7.1. The dominant conceptualization of normality in mental health practices presumed a closed system view of man and universe. This is inferred from the finding that the diagnostic model of the objective reference follows the same logic of cause-effect relationship that is featured in psychological theory.

7.2. The implementation of the diagnostic model in counseling and psychotherapy resulted in several negative outcomes in relation to the goal of improving the client's psychological conditions:

7.2.1. The client was directed to adjust to the socio-

political system rather than develop the ability to make free choices on the basis of which he could improve the social and economic conditions which might have led to his psychological problems.

7.2.2. The second order effect of counseling and psychotherapy is manifested in producing a stigma in the client which limits his social and employment movements after his discharge.

7.2.3. The client develops an attitude of dependency on counseling and psychotherapy which is manifested in his tendency to search for help whenever he is faced with problems.

7.2.4. Mental health practitioners were found to sometimes utilize unethical practices. This was shown to be manifested in the cases of political criminals. It was found that in the name of mental health, crimes are committed. Moreover, counselors and psychotherapists tend to practice their racial biases in dealing with their clients. Along this line, it was found that mental health practices are class, race, and sex-linked. This was found to be the case in diagnosis, prognosis, hospitalization and type of treatment.

7.3. The alternative models to the diagnostic model were found to be less constrained by closed system logic. However, in the final analysis, the practices of mental health counselors reflect that they are more the agents of the social-political system than of their clients. In comparing the fidelity of the two alternative models (i.e., the remedial and the preventive models), it was found that:

7.3.1. The remedial model of the diagnostic model is not significantly different, neither in its practicum-outcome nor in its view of man.

7.3.2. The preventive models of community mental health

show more promise for improving human conditions provided that they are free from state funding. Moreover, the practitioners of these models have to transcend the reductionistic view in their understanding of the concept of mental health.

III. In light of the aforementioned findings, this researcher established the rationale for developing a synergistic view of man and universe in a serious attempt to solve the problems that are identified as existing in theoretical and practical levels in the field of psychology.

1. The alternative model is based on an open systems view, which assumes the unitas multiplex causality of behavior and the relativistic nature of time and space.

1.1. The synergistic view is based on several assumptions which were inferred from quantum theory, the indeterminacy principle, thermodynamics, systems analysis and the organismic theory of psychology. (These assumptions are described in detail in the introduction to chapter five.)

1.2. The core notion on the basis of which this alternative is developed, is that matter has energy and that energy is in a constant process of transformation from one form into another. Thus it is assumed that man's existence is analogous to the energy of matter and any form of his existential experience has to have physical-metaphysical attributes which are integral attributes of behavior at any point of the individual's transformation in a time-space domain.

1.3. Living systems are open systems which are characterized by inherent properties that differentiate them from closed systems. These properties include: (a) the importation of energy, (b) the expansion of negantropy, (c) the maintenance of a dynamic steady state of homeostasis,

(d) self-regulation, (e) selectivity of energy input on the basis of subjective criteria, (f) synergistic and dynamic processing of information, (g) purposefulness, (h) equifinality, and (i) the dynamic equipotentiality of maintaining the dialectic nature of homeostasis in search of harmony.

2. The inferences which are drawn from the discussion of the properties of an open system are the following:

2.1. The man-environment relationship is an existential system in which man and environment are existentially experienced as one system.

2.1.1. The environment is an externalization of one's energy in a form of sensory data upon which the individual acts during the process of expanding his energy. Thus the environment is a priori in one's nature. In Kantian terms, the environment exists as matter but its form is a priori in one's mind.

2.1.2. Man has the energy of the universe within him and thus he is capable of reaching to any point of this universe inasmuch as he explores the various sub-systems within his own system.

2.1.3. The process of exploring one's nature follows the principle of mirroring. This principle is defined to be the synergistic process in which the individual externalizes his system at a certain point of transformation within which a sub-system is taking a leading positional value in relating to the sensory world (i.e., the externalization of one's energy). This principle describes and explains interpersonal relationships at the micro and macro levels. Thus, relationships in any psycho-social communication are described as intersubjective, or subject-subject relationships.

2.2. Individual differences among and between people are described as differences in the pattern of transformation of each individual's

energy. Since every individual is essentially matter-energy and has the universe within his or her nature, thus individuals are in essence and existence equivalent in their equipotentialities.

2.3. Communication among people is strengthened or weakened (active or passive) inasmuch as their transformational patterns of externalizing their energy are similar or different.

2.4. Though the patterns of positional values within one's system and in relation to other supra or subordinate systems of one's externalization of one's energy are different, there is always unity within diversity.

2.5. The dynamic motion of the various sub-systems within the individual's system manifests a state of order within disorder and vice versa.

2.6. There is nothing static in this universe since there is no complete state of order at any point of any system's structure-functions. Systems are perceived static in a relativistic sense to the degree of orderliness in their motion, and in viewing their motion in relation to other systems.

3. The mind-body problem does not exist in the existential reality of the individual. Evidence was found to support the assumption that mind-body are interactively united at the moment of conception and thus throughout life.

3.1. The living cell has the properties of an open system.

3.2. The structure-functions of the molecular genes in the individual's cell as they are present in the DNA in the nucleus of any cell is ample evidence of the physical-metaphysical unity of one's system.

3.3. The central dogma in biochemistry which describes the

process of protein biosynthesis provides the most coherent analogy for describing the process of existential psychosynthesis.

3.4. The expansion of one's experience to the existential system from the ideal point to the unbounded space follows the analogy of the development of a multicellular system from a single cell in its formation process and the analogy of the radius behavior in its alternation of expansion-contraction. It was found that the molecular-genetic system of mankind alternates its structure-function from its presence in the nucleus of the fertilized cell at the moment of conception to the expansion in the multicellular system in the adult organism. This expansion is contracted again when the adult transmits his or her genetic characteristics through offspring at a new point of genetic transformation.

3.5. The replication, transcription, and translation of the DNA during the process of protein biosynthesis follows the dynamics of the transformational properties of the open system. These processes are made analogous to the individual's externalization of his existential system, the nucleus of which has the cognizer (CNE). The CNE is transcribed into the SNE and the SNE is translated into a new existential experience through the archetype experiences in relation to the pSNE and sSNE joint function during the existential psychosynthesis.

3.6. The expansion of the DNA double-helical structure in its functions is analogous to the CNE. However, since the existential experience is in search of the harmony of opposites, the tao movement was taken to further describe the expansion of one's negantropy.

3.7. The tao movement in its expanded shape of the yin-yang structure is not different from the double-helical structure of the DNA. However, the motion in both cases is a particle-wave one which helped to

describe and explain the unity within diversity, the harmony of the opposites, the synergistic relationships of the physical-metaphysical world and the nature of insight in problem-solving.

4. The inferences that are made on the basis of DNA, tao and the particle-wave analogies are as follows:

4.1. At any point of the individual's transformation he manifests the unity of mind-body and creator-created.

4.2. The behavior of the individual is a unitas multiplex of covert and overt attributes which are originally present in their forms a priori in the existential system of the individual.

4.3. Any form of behavior has at its core an existential cognizer, CNE, which constitutes a "chemical" compound of P-M (perceptual-motoric) and A-I (affect-intellect) existential elements.

4.4. The existential cognitive experience is externalized through sensation and internalized through the joint function of sensation and perception mediated by archetypal experiences.

4.5. Nothing once learned is ever forgotten, and anything that was once learned reappears in a new form through its positional value in relation to new experiences as they both relate to the individual's existential experiential system.

4.6. The cognizer regulates the energy which the individual has when a need produces tension and is regulated when that need is satisfied. But both types of regulation of tension-production and tension-reduction are constantly exchanging their presence by the synergistic mechanism which is called the self-regulator. This self-regulator is internal and could be any sub-system of the individual's universe which takes a leading positional value at a given time-space domain.

4.7. The cognitive-existential experience is a transformational form of the physical-physiological experience, and both are integral structure-functions of the human system.

5. The model of man as an open system suggests the following applications for research, teaching and counseling:

5.1. The method of scientific discovery which is the most coherent method for studying any behavioral or psycho-social phenomena is the qualitative method which accounts for the subjective element. This could be done by self-analysis which does not control the subjective element by imposing artificial conditions upon the subjects of investigation.

5.1.1. In the qualitative analytical method, analysis has to be made of the observer and the observed in relation to the occurring event. Each form of analysis has to be from the perspective of the subject and the observer as these parties relate to each other in one system.

5.1.2. Evaluation of any event has to be based on an intersubjective relationship between the observer and the subject(s).

5.2. Teaching, within the perspective of this work, has to encourage the exploration of one's nature by providing conditions which permit the constant exchange of energy flow among the members of the class. The teacher exchanges his or her positional value with students and students do the same among themselves.

5.3. Counselors are to maintain a systemic dynamic relationship in exchanging their positional value with their clients in a process of self-exploration through mirroring.

With these findings it can be concluded that a synergistic view of man and universe, a psycho-social model of man as an open system, is a model that has the ability to break through all forms of dichotomies which the empirical model of traditional psychology constructs. A basic value of this model is its underlying orientation towards equalitarianism in dealing with other people and openness in interpreting their differences.

This is seen as a basic value that will enable the individual to break dichotomies within his own existential system and to mirror his coherent unity in his interpersonal relationships with other human beings. Among the major questions that this model leaves for further investigation is: How is it possible for the individual to be his own counselor? This model suggests that this possibility is inevitable for anyone who trusts his inner resources and flows genuinely and coherently with his energy. In fact, the human being is seen here as the creator of his own reality. His negantropy will probably expand at its best when he explores his system through human dialogue. The motto of this work is:

Know thyself - and to thine own self be true.

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Appendix "A"

PART I: KUHNIAN PROPOSITIONS ON SCIENTIFIC PARADIGMS

This section is devoted to a discussion of inferred propositions from Kuhn (1970). These propositions could be taken as a comprehensive review of The Structure of Scientific Revolutions (Kuhn, 1970).

Proposition No. 1: Scientific development is essentially a process of transformation of concepts over time. Thus history of science should not be treated as static stage-development:

1.1 Scientific concepts formed during any period of history are not immune from the values and beliefs of the scientific community during that period; neither are they independent from the motif of the given culture from which they emerge. This is the arbitrary or subjective element of scientific evolution that historians tend to overlook.

1.2 Normal science involves commitment to certain shared beliefs. This commitment retains an element of the arbitrary and the very nature of normal research insures that novelty will not be suppressed for long.

1.3 When scientists are confronted with a number of incidents which are counter to their commitments, they continue to investigate the problem vigorously and intensively. If the inconsistencies continue then scientists shift their commitments and this shift is termed scientific revolution. However, scientific revolution does not happen from one day to the next (see Figure 1 in the Appendix).

Proposition No. 2: Normal science is the regular work of the majority of a scientific community which shares a scientific paradigm.

2.1 A scientific paradigm has two major characteristics: (a) it has a group of followers (scientists, practitioners, and researchers) who adhere to its rules, theories and practices; (b) it has an open-ended nature and can be recognized and re-examined by any group of scientists.

2.2 A scientific paradigm includes collected facts that are based on a theoretical conceptual frame and values and beliefs that form commitments for researchers who are guided or directed by the pattern of this frame.

2.3 A paradigm is constantly subjected to articulation and specification under new or more stringent conditions. Articulation of a paradigm is achieved by the work of normal scientists as they examine the relationships between nature and facts (see Figure 2).

Proposition No. 3: A paradigm is not a model or a pattern in the strict sense. However, a paradigm is a pattern (a model) but not every pattern is a paradigm.

3.1 A paradigm supplies normal science with general theories that need further articulation and should be examined by research.

3.1.1 Research focuses on four classes of cases that are related to paradigm promises: (a) the particularly revealing of the nature of things (e.g., wave length in physics, I.Q. tests in psychology); (b) the areas that constitute usual but smaller class of factual determination like research for articulating instruments to measure facts predicted by paradigm; (c) the collection of data related to factors that determine a given phenomenon; (d) cases that are related to the qualitative aspects of a given phenomenon.

3.2 Normal science as a vehicle of paradigm implementation and a tool of paradigm articulation deals with three problems: (a) determination of significant facts; (b) matching of facts with theory; and (c) the articulation of theory.

Proposition No. 4: Normal science is puzzle-solving.

4.1 A scientific puzzle should have a solution which carries the potential of articulating a theory or leading to the exploration of new territory with the hope of finding order and the drive of testing established knowledge.

4.2 A puzzle should have more than one solution and thus there should be rules in the repertoire of the scientist, since only a change in the rules of the game could provide an alternative solution.

4.3 A metaphor is made between puzzle-solving and normal science. Scientists have commitments - conceptual, theoretical, instrumental and methodological.

4.4 Rules derive from paradigms, but paradigms can guide research even in the absence of rules (p. 42).

Proposition No. 5: Paradigms are prior to rules, though paradigms determine normal science (see Figure 2).

5.1 Rules abstraction is the duty of the normal scientists, and the ability to abstract rules from findings creates the scientists' ability to do successful research.

5.2 Paradigms guide research by direct modeling as well as through abstracted research.

5.2.1 Rules become significant only when paradigms or models are felt to be insecure (see Figure 1).

5.2.2 The scientific community shares commitment to a certain paradigm, however, once the inconsistencies are felt by sub-specialities of a given field, an alternative for the paradigm starts to be sought by such a group. To such groups, the achieved change is a revolution.

Proposition No. 6: Anomaly is a prerequisite for the occurrence of scientific discovery.

6.1 Awareness of the discrepancy between collected facts and nature triggers two kinds of responses on the part of normal scientists: (a) a serious attempt to assimilate the anomalous findings within the framework of the established paradigm; and (b) a sense of distrust in the paradigm and a vigorous search for alternative paradigm. These two types of responses create reason that is evident in disagreement and arguments among normal scientists.

6.2 Disagreements among scientists lead to the emergence of a new commitment - a small revolution - which is characteristic of pre-paradigm period.

6.2.1 Discoveries from which new phenomena emerge are characterized by: (a) the previous awareness of anomaly; (b) the gradual and simultaneous emergence of both observational and conceptual recognition; and (c) the consequent change of paradigm categories and procedures often accompanied by resistence.

6.2.2 The pre-paradigm period is one of scientific crisis that produces professional insecurity. The core of such crisis is the technical breakdown of puzzle-solving activity (i.e., the persistent failure of the puzzles of normal science to come out as they should).

6.2.3 A typical characteristic of the pre-paradigm period is the scientist's shift from his commitment to a previous paradigm to doubting these commitments on the basis of new ones.

6.2.4 Crisis in science becomes evident when scientists feel the urgency of retooling (the recognition of using new measurements which usually happens when new theories are assimilated by a given field).[1]

Proposition No. 7: Scientists' response to crisis begins with a loss of faith in the paradigm but they do not renounce it unless an alternative candidate is available to take its place.[2]

7.1 The crisis period is a transitional time during which the rules are more firmly secured than the paradigm. However, the transition witnesses a process of reconstruction of the old concepts as subsystems that take new positional value within an emerging new whole.

7.2 The reconstruction of the old paradigm is a transformation process that demands of scientists a gestalt-switch to new commitments, retooling, readiness for falsification instead of verifying and openness to a new theory.

Proposition No. 8: Scientific revolution is analogous to political revolution. Both have: (a) a community that is promised a certain given; (b) authority as a source of promises; (c) discrepancy between givens and promises that is recognized by the masses; and (d) ideology, promises

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[1] Propositions 5 and 6 are inferred from chapters 5, 6 and 7 (Kuhn, 1970). See Figure 6 for the dynamics of scientific revolution to see the meaning of Propositions 5 and 6.

[2] See Figure 8 for the illustration of the dynamics of scientific community during the crisis period.

and plans offered by the revolutionaries as a means to persuade the community to follow them till victory (i.e., till a new paradigm is reconstructed).

Analogy: the promise to normal scientists of a capacity to solve puzzles with fewer anomalies and the promise to the masses to fulfill their needs and hopes.

8.1 A crisis period could be viewed as a transitional period from an old paradigm to a new one. However, this transition does not occur in a form of adding concepts; it is rather a process of reconstructing concepts within a new frame. The reconstruction of concepts as sub-systems within the whole system (paradigm) gives them new positional value that would lead to both quantitative and qualitative change in the system as a whole (see Figure 8 in the Appendix).

8.2 The response to cirisis could be presented in a diagram of S-O-R. The ingredients of stimulus (S) are mediated by underlying scientific dynamics and eventually evoke a response that has ingredients characterized by complexity and dynamism (see Figure 8).

8.2.1 Stimulus ingredients: "S"

a. awareness of anomalies

b. exploration

c. counterinstances

d. substituting a new paradigm for the old

8.2.2 Underlying dynamics ingredients: "O"

a. disagreements

b. conflicts

c. resolution

8.2.3 Response ingredients: "R"

a. losing faith in the paradigm

b. comparison of paradigms both with nature and with each other

c. preparation for falsification

d. new commitments

(a and b are characterized by tension, c is accompanied by retooling and d is followed by new conceptualization (new theory)).

It should be noted that ingredients of "S" are mediated by "O" ingredients to produce the ingredients of "R".

Proposition No. 9: The need to change the meaning of established and familiar concepts is central to the revolutionary impact of any new theory. Scientific revolution is manifested in change in accepted standards of: (a) evaluating the problem to be investigated; (b) the tools by which the problem is investigated; and (c) the problem-solving precedures.

"Like the issue of competing standards, the question of values can be answered only in terms of criteria that lie outside normal science altogether, and it is that recourse to external criteria that most obviously make paradigms debates revolutionary" (Kuhn, 1979:110). This idea emphasizes the subjective element of scientific revolution which is a major thesis in Kuhn's book.

Proposition No. 10: Progress in science is the outcome of a continuous process of transformation of scientific paradigms that change over time as a result of scientific revolutions.

10.1 Scientific transformation is a perceptual transformation process that is experienced by normal scientists when they accept the change in a scientific paradigm.

10.1.1 This perceptual transformation is caused by paradigm changes in: (a) instruments for viewing the world; (b) selection of the environment or the problem - universe; and (c) standards of interpretation for what had been perceived.

10.1.2 Scientists who undergo perceptual transformation must re-educate themselves by learning a new gestalt for perceiving some familiar situations.

10.1.3 Perceptual transformation includes what one looks at and what one's previous visual conceptual experience has taught one to perceive.

10.1.4 Adjustment to the new gestalt (in the case of scientists - what the world of investigation looks like in light of a new frame of reference) leads to routinization of the clues of perception (in the case of scientists, it is the rules of investigation), and this in turn normalizes perception (i.e., the adoption of a new paradigm).

10.2 The process of transformation of scientists' perception is like a paradigm-induced gestalt switch. When this has occurred, it is evident in the appearance of new interpretations and new perceptual apparatus for collecting the data from a given environment.

Proposition No. 11: The scientific revolution is invisible because its dynamics are not presented in scientific texts or in books about the history of science.

11.1 The scientific revolution is presented in textbooks as a new stage in that new concepts are added to old ones. Such a presentation is

neither true nor helpful to the understanding of scientific development.

11.2 Textbooks are misleading: they are pedagogic in their orientation. They aim at training science students to be normal scientists and thus they oppress innovation.

Proposition No. 12: Scientific revolution has endowment toward resolution (i.e., by establishing a new theory which could be assimilated into the already known concepts) and it guides researchers on the basis of a new paradigm.

12.1 Resolution comes through a joint effort of motivated researchers both to verify and falsify. Falsification and verification are both probabilistic approaches by nature. This joint approach has a central role in scientific progress (i.e., the selection of a better theory that accounts for facts). (See Figure 8.)

12.2 Change and resistence to change are features that accompany the resolution of a revolution.

12.2.1 Resistence to change is inevitable due to the fact that the scientific community retains commitments to old paradigms.

12.2.2 Resistence is assimilated and change is brought about because scientists are open to persuasion. This openness is the subjective and aesthetic underlying dynamic of paradigm change. Scientists have values that orient them toward change. "The man who continues to resist after his whole profession has been converted, has ipso-facto ceased to be a scientist" (Kuhn, 1970:159).

Proposition No. 13: Progress is the result of successful creative work. Thus progress could occur in both science and non-science fields. However,

the impact of progress is not felt during a period of revolution or crisis. It comes as the output of them.

13.1 New paradigms usually appear when, after a period of tedious effort to resolve a disagreement and a sudden sharp insight usually from a new young person in the field, it is felt that progress has been made. Thus progress is felt during the conduct of normal science.

13.2 Natural sciences as compared with social sciences are more rigid and less sensitive to progress. But natural sciences take progress as a commitment to achieve.

13.3 Revolutionary progress must be recognized as such by a special group which has power within a given scientific community. However, people who have such power tend to share common training which in effect chains them to their own biases.

13.3.1 Recognition of progress is a perceptual process thus it is self-fulfilling - "The scientific community is a supremely efficient instrument for maximizing the number and precision of the problem solved through paradigm change" (Kuhn, 1970:169).

13.3.2 Conditions of recognition for the new paradigm include:
(a) resolution of some outstanding and generally recognized problem that can be met in no other way; (b) a promise to preserve a relatively large part of the concrete problem-solving that has occurred through normal science (p. 169).

13.4 Progress in science has and should have no concrete anticipated goal. However, each stage of scientific development should contain a better exemplar to bring facts closer to "truth".

Appendix "B"

FIGURE 1

Scientific Development: Paradigm Transformation
(Nothing once learned is ever forgotten)

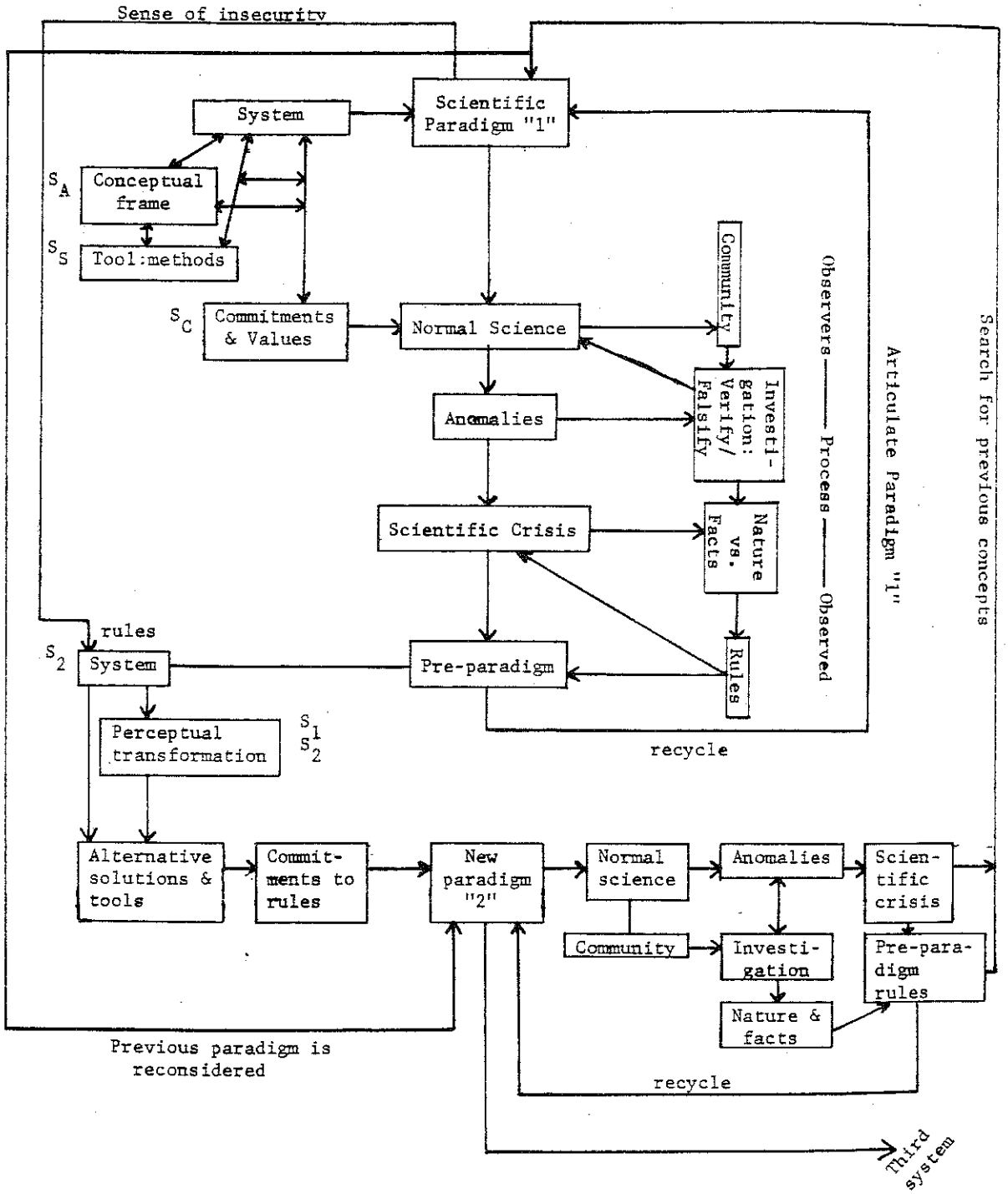
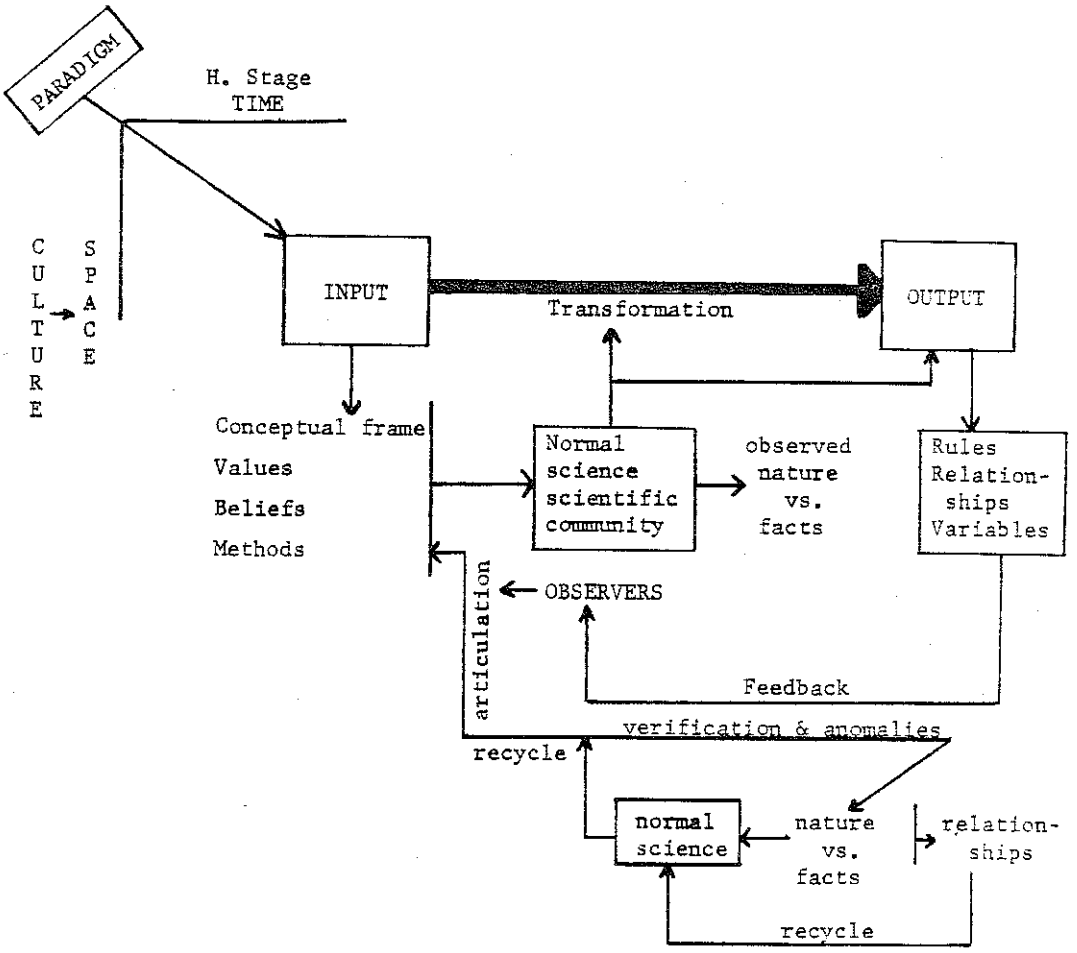


FIGURE 2

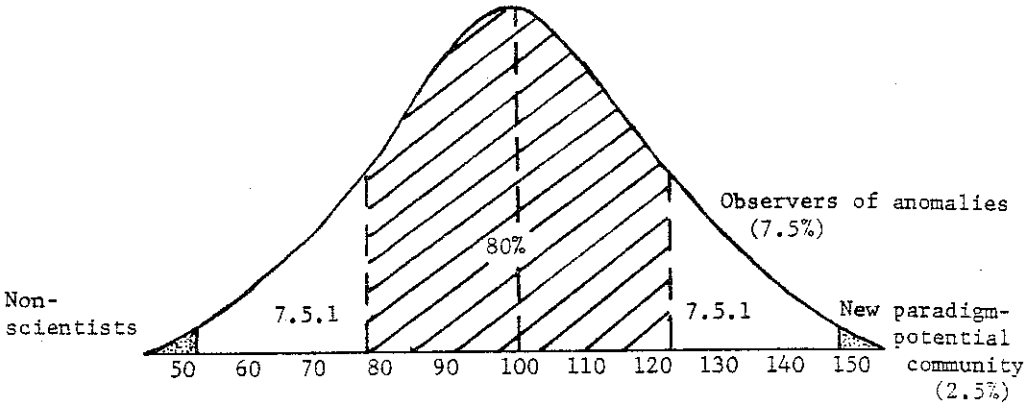
Paradigm Prior to Rules



When a paradigm is secured, normal science functions to articulate its conceptual frame of reference.

FIGURE 3

Distribution of Scientific Community During the Period of Scientific Paradigm - Stability



Paradigms underlying normal science as practiced by the majority of the scientific community --

- normal scientists constitute 80% of the total population were practitioners.

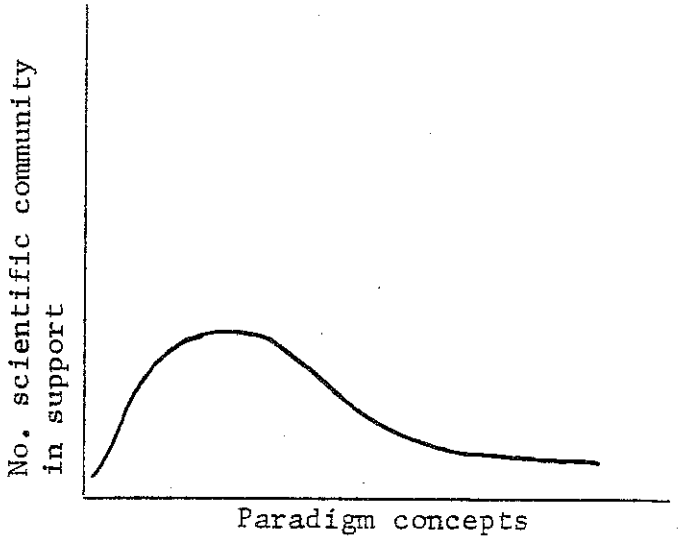
- 2,5% new paradigm - potential community (to the right).
- 2.5% non-scientists - unaware of paradigm (to the left).
-(7.5%) observers of anomalies - researchers (to the right).

-(7.5%) students of science accepting science as given in the textbooks - do not challenge facts at any point.

- the curve is a translation of Kuhn's concept of normal science in relation to paradigm as it relates to the scientific community (Galton Intelligence Distribution).

FIGURE 4

Scientific Paradigm During Scientific Crisis



Curve skewed to the right indicates less trust in the paradigm.

FIGURE 5

Distribution of Anomalous Discoveries by the Scientific Community During Paradigm Crisis

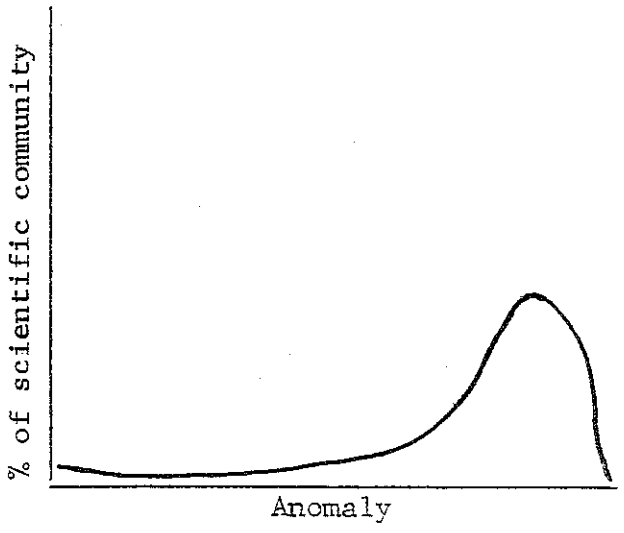
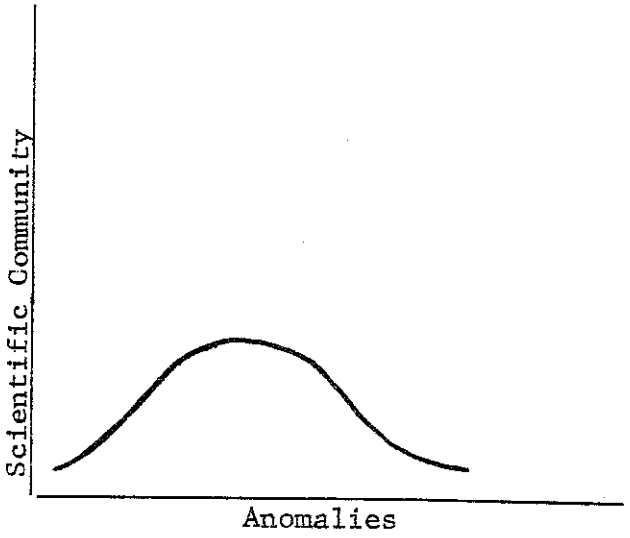


FIGURE 6

The Trust in Anomalous Discoveries as They are Practiced After the Revolution



A normal curve indicates that anomalies become the new paradigm.

This is the final step in which the 2.5% of the right side in figure 3 is now increased to cover 80% of the total population of the scientific community -- post-revolution period.

FIGURE 7

The Relation Among Paradigms, Normal Science and Rules for the Emergence of New Discoveries

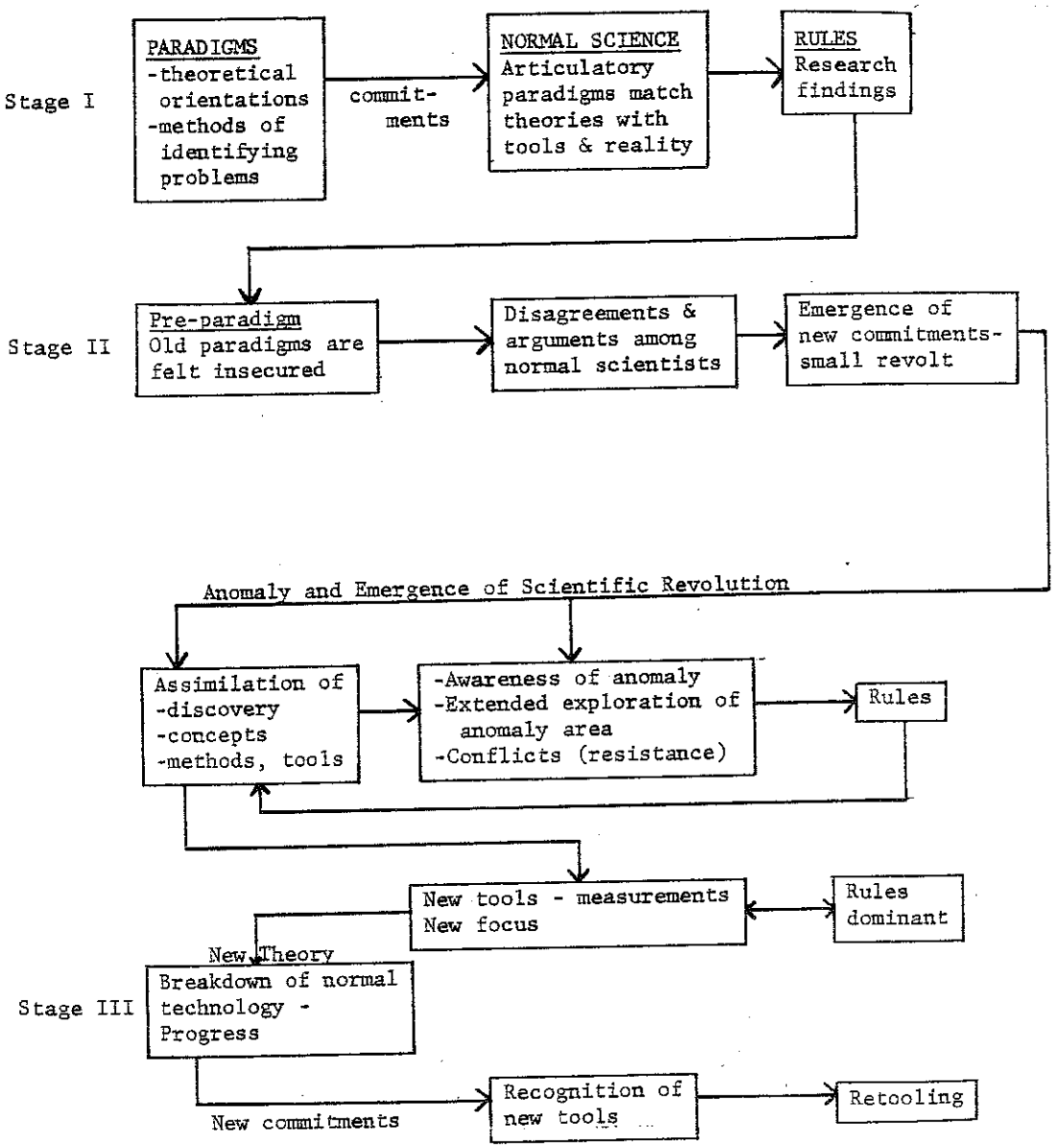
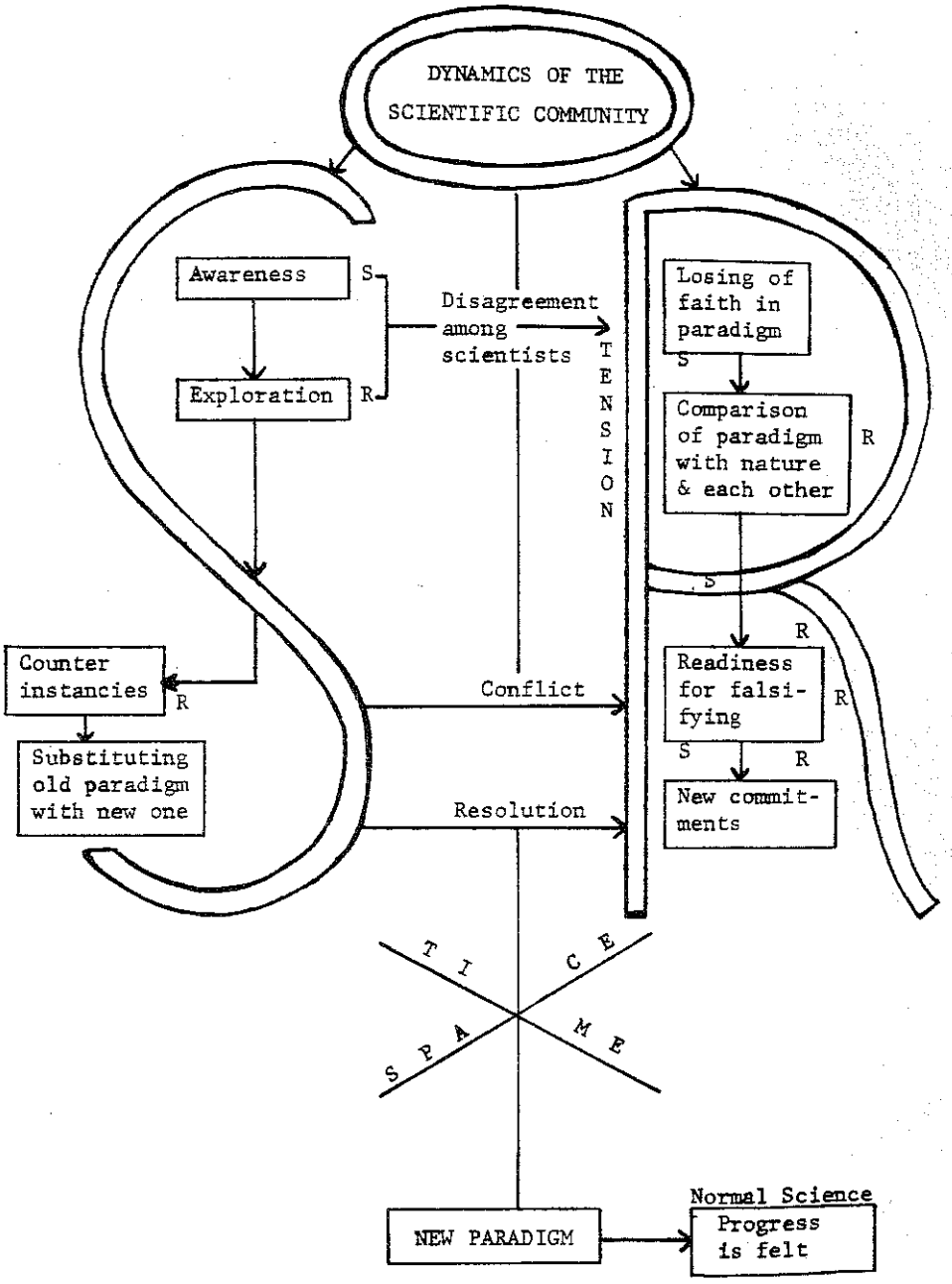


FIGURE 8

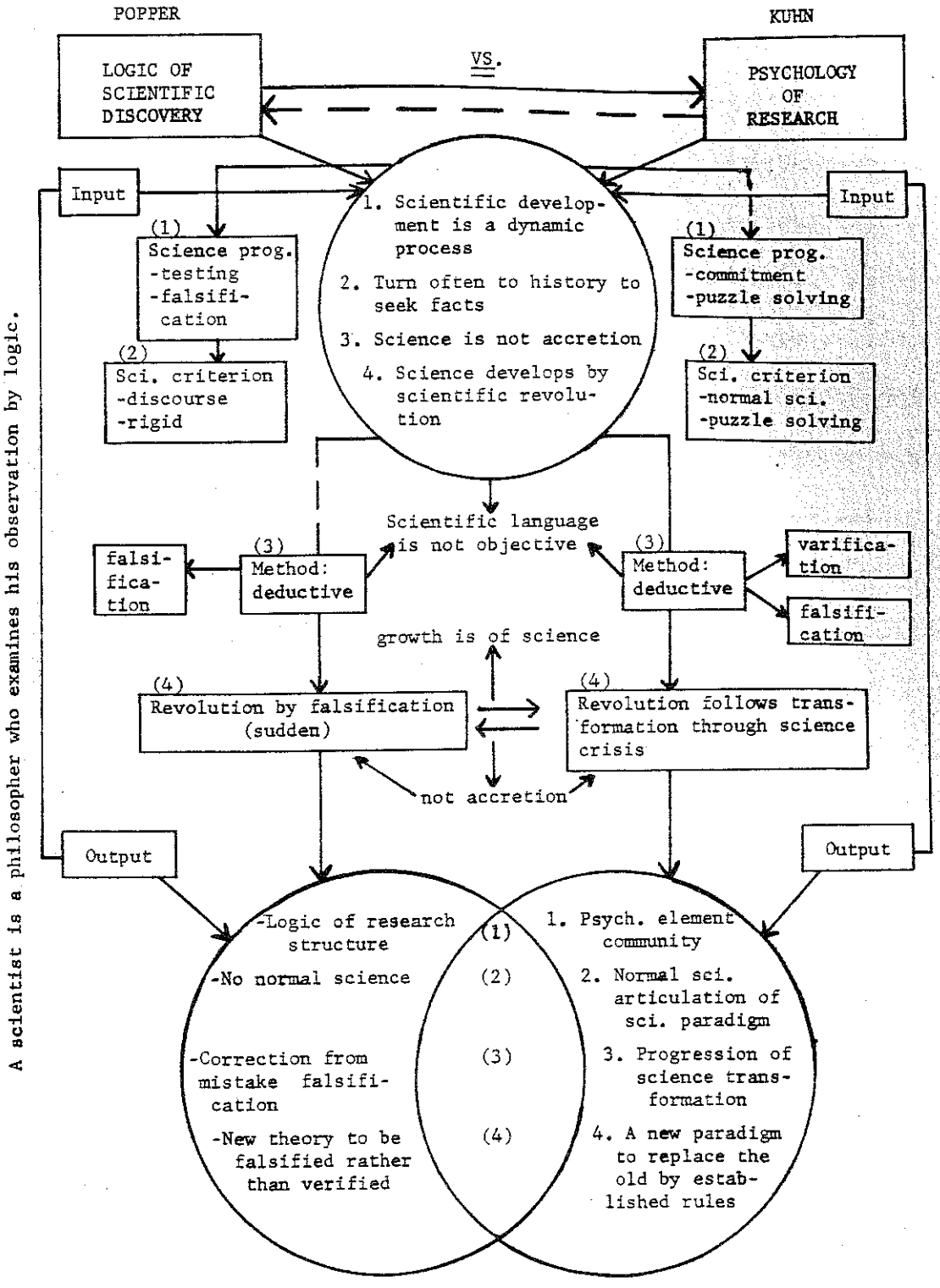
The Response to Crisis



The diagram is drawn within psycho-social dynamics in light of the cognitive matrix S-O-R.

FIGURE 9

Popper Vs. Kuhn



A B S T R A C T

A SYNERGISTIC VIEW OF MAN AND UNIVERSE: A PSYCHO-SOCIAL MODEL OF MAN AS AN OPEN SYSTEM

A synergistic view of man and universe is developed by using systemic analysis based on an interdisciplinary approach. The rationale for developing this model is based on an investigation of the epistemological foundations of psychological theories and their implementation in mental health practices in counseling and psychotherapy. This model attempts to break the dichotomies of man-universe, individual-environment, mind-body, and physical-metaphysical existential experiences. These dichotomies have been resolved by utilizing unitas multiplex logic which assumes a natural causality for the occurrence of events instead of regular causality. Causality is defined here as the natural flow of energy within which the individual is pushed to act "efficiently" and pulled to purposefully maintain his dynamic steady state. The concept of time-space is treated within the perspective of the theory of relativity and its co-partner, the principle of indeterminacy in quantum theory.

The properties of man as an open system are identified and defined to help provide a basis for describing the synergistic nature of man and environment as one system. The environment is defined as an externalization of one's existential universe in the form of sensory data upon which the individual acts during the process of expanding his or her negantropy. Thus, sensory data are viewed as existing a priori in one's existential universe. The holistic conceptualization of man-environment is made analogous to the structure-functions of the living cell. The DNA which is the container of genetic information within the nucleus of the cell is taken

as the basis for postulating a "cognizer" analogous to DNA structure-functions. The cognizer is a hypothetical construct, defined as a container of psychophysical information which is analogous to the genetic information in the DNA. The cognizer is the cognitive-nucleic-existential experience (CNE) which is "transcribed" into a sensory-nucleic-existential experience (SNE) and "translated" during the process of psychosynthesis of sensory data into new existential experiences, and thus "replicated" into a daughter CNE. The CNE in relation to its transcription into SNE is analogous to the relation of DNA to RNA. This analogy helped in developing a synergistic conceptualization of the man-environment relationship in a coherent pattern on the basis of which many psychological processes are described and explained. In fact, the cognitive processes in this model are postulated to follow the hypothesis of central dogma. "CNE ⟲ SNE → psychosynthesis" is analogous to DNA ⟲ RNA → protein biosynthesis.

The implications of the CNE/DNA analogy are multi-dimensional. It provides principles to explain existential transformation, unity within diversity, equipotentiality-equifinality, energy-importation, self-regulation, self-differentiation, self-integration, negantropy in living systems, etc. The harmony of opposites and their dialectic has been explained in terms of the "tao" motion, while the transcendence of the tao and its expansion is described in terms of particle-wave, and the alteration of the radius expansion-contraction from the ideal point into the unbounded space.

The individual, according to this model, can reach any point of this universe as he explores his existential universe and further expands his negantropy through the process of psychosynthesis. The model is called

the psycho-social model, because each concept was applied on the micro and macro levels of communication from individual to individual through various forms of social relationships to international relationships in a supranational system.

The arguments were substantiated by empirical findings in scientific discovery, logical arguments in theory building and intuitive inferences from the multi-disciplines. The disciplines which were used for this purpose include psychology, sociology, philosophy, molecular genetics, physics, communication, counseling, education and general system theory. However, psychology was the field in a leading positional value more often than any other field. Nevertheless, the systemic approach made it possible to unite all these fields selectively around a common core of universal principles in describing human nature.