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TITLE OF THESIS/TITRE DE LA THÈSE Ritual: A Model of Symbol Penetration

UNIVERSITY/UNIVERSITÉ Smith ~~Carleton~~ Carleton University

DEGREE FOR WHICH THESIS WAS PRESENTED/
GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE M.A.

YEAR THIS DEGREE CONFERRED/ANNÉE D'OBTENTION DE CE DEGRÉ 1980

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RITUAL: A MODEL OF SYMBOL PENETRATION

by

Mark Webber

Thesis presented to the School of Graduate
Studies of Carleton University in partial
fulfillment of the requirements for the
degree of Master of Arts in Anthropology

Ottawa, Canada 1980

The undersigned recommend to the Faculty
of Graduate Studies acceptance of the Thesis:

RITUAL: A MODEL OF SYMBOL PENETRATION

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in partial fulfillment of the requirements for
the degree of Master of Arts in Anthropology

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CARLETON UNIVERSITY
March 1980

ABSTRACT

This thesis is concerned with understanding how and why symbol-ritual systems aid in the genesis of transpersonal experience. First, the concept of neural modeling is discussed, then various aspects of symbol and ritual processes are outlined, drawn from biogenetic structural theory. From this theoretical base and linking experiential, ritual and behavioral data together, a model of symbol penetration is developed. The model is applied to various symbol systems, in order to test its cross-cultural validity and explicating the methodology derived from the model. Finally, conclusions and implications focus on developmental aspects of transpersonal experience, at individual and social levels.

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER I INTRODUCTION	1
CHAPTER II NEURAL MODELING AND COGNITIVE DEVELOPMENT	18
CHAPTER III SYMBOLS AND PHENOMENOLOGY	25
CHAPTER IV SYMBOLS AND RITUAL	32
CHAPTER V THE SYMBOL-RITUAL FIELD	40
CHAPTER VI SYMBOL PENETRATION MODEL	42
CHAPTER VII PSYCHOPHYSIOLOGY OF SYMBOL PENETRATION	50
CHAPTER VIII APPLICATIONS AND METHODOLOGY OF THE MODEL	
A. Visualization and Meditation	55
B. Transformation Masks	70
C. The Makah Wolf Ritual	72
CHAPTER IX CONCLUSIONS AND IMPLICATIONS	81
APPENDIX I ANALYTIC CONSTRUCTS OF THE MODEL	87
APPENDIX II TEXT OF THE VAJRASATTVA MEDITATION	89
APPENDIX III DEVELOPMENTAL STAGE MODELS	92
NOTES	96
BIBLIOGRAPHY	98

Acknowledgements

I wish to thank, from the heart, the guidance, discussions, inspirations and influences of my thesis advisor and friend, Dr. Charles Laughlin, Jr. There are no words that can express the balanced insightful contributions, on all levels, to this work and continuing changes in focus, from the Venerable Namgyal Rimpoche. Many thanks for the fruitful collaborations with Chris Stephens and Iain Prattis and financial support from the Department of Graduate Studies, Carleton University. Other persons contributed to the development of ideas, support, criticism and helpful comments. I wish to thank the following beings: Leslie Armstrong, Professor John Cove, Ven. Sonam Gelong, Ven. Tarchin Gelong, Professor Marjorie Halpin, Professor Robert Hoffman, John McManus, Professor Al Moffit, and John Shearer. Last, but not least, I thank Karen McGlynn for assistance in the crucial stage in the thesis: typing the manuscript.

I INTRODUCTION

It is necessary before explicating a new model of ritual-symbol interaction to review previous and current models, thereby demonstrating the need for a new synthesis. However, it is not the intent of this thesis to undertake an exhaustive discourse on all the various theories of religion, ritual and symbolism. The purpose of this work is to first isolate a number of neglected problems and enigmas, then develop a model synthesized from many disciplines and theoretical systems; a model capable of explanation and prediction. This introduction will cover the following topics:

- 1) the specific questions in the field, yet to be satisfactorily explained;
- 2) a review of certain key models pertinent to isolating the problematics, why other models of ritual and symbol are not discussed and why they are not suited to explaining the problems;
- 3) the reasons for using the theoretical base of biogenetic structuralism (Laughlin and d'Aquili 1974); and
- 4) the reasons for developing a more specific explanatory framework, and what this approach entails.

The specific questions to be analyzed in this thesis are:

- 1) How is symbolic information processed by the human organism during specific ritual practices?
- 2) What is the relationship between the structure of ritual practice, information content of ritual and the mode by which this information is processed by the brain?
- 3) Is there an underlying biological code, by which religious phenomenology develops, perceptual modeling systems change, leading to "mystical" experience?

- 4) What are the social-biological interactions which "hinder" or "accelerate" the genesis of profound religious experience?
- 5) Why are ritual "strategies" (ie., symbol systems) used to activate dramatically altered forms of cognition, behaviour and phenomenology and how is information patterned in the environment to best elicit religious experience?

These are the questions, it will be argued, that have in most cases been neglected or explained in ways not conducive to predictive explanation. The area of investigation most unsatisfactorily examined to date are those experiences, reported cross-culturally, that "transcend" or greatly alter the way in which peoples view themselves and their phenomenal environment (hereafter referred to as "transpersonal" experience). If we are to explain the nature of transpersonal phenomena, we must incorporate and look beyond the surface and content structure of ritual and symbols, to their underlying cognitive roots - the interactive relationships between the forces that exist in the ritual environment and the modeling of this information by the human nervous system. Of course there is no need to underscore the importance that symbolic systems hold within societies, for anthropology and sociology have long discussed the role of religious practice, as a key factor in all cultures. However, throughout the history of anthropology, few theories (except for Paul Ricoeur 1978, and d'Aquili, Laughlin and McManus 1979) to this author's knowledge seek to give equal treatment to the interactions between ritual and social parameters, the nature of symbolic information, ritual viewed from a biological-cognitive perspective and the development and classification of transpersonal experience.

In order to best explicate the problems facing the study mentioned above, it will be necessary to outline the criteria used to select which theories to discuss and those theories which are important in the study of ritual, religion and symbol, but which are too far afield for the narrow confines of this thesis. Thus, theories both classical and recent that will be discussed are those with only direct bearing on isolating various approaches to some of the questions mentioned above, examining both positive and detrimental contributions, especially models that serve to demonstrate what kinds of questions can not be asked or what forms of data can not be explained by using specific methodologies.

One approach to reviewing the field might be to divide theories into two basic headings: psychological and sociological as in E.E. Evans-Pritchard's Theories of Primitive Religion (1965). Evans-Pritchard attempts to discuss authors in "historical succession", ideas dating from the 1830s (ie., Auguste Comte) to the 1950s (ie., Paul Radin, Claude Levi-Strauss), classifying each author as following either a sociological or a psychological vein. Although this is an important work, his classification system fails, except in very few cases, many authors showing tendencies to shift from sociological to psychological explanations (eg., Herbert Spencer, Sir Edward B. Tylor, B. Malinowski, E. Durkheim, etc.). A more specific and useful classification scheme is to divide theories, roughly corresponding to functional, structural-functional, semiotic structuralism, ecological and evolutionary structural. Those theories or models that fall outside the strict confines of social anthropology, eg., neurophysiology, cognitive psychology, will not be discussed in this introduction but in detail within specific chapters to follow.

The phenomenon of ritual-symbolic utility, especially within the framework of religious systems was seen long ago to be both a universal factor of culture, and a phenomenon to be grasped for wider sociological theorizing. Many early authors were concerned with how religions evolved. Their focus was on the progression of "primitive belief" systems to the development of more recent religions. An author that had and probably still has his ideas incorporated into our modeling of religion, ritual and symbol and a notable evolutionary functionalist was Sir Edward B. Tylor (1873: chapter 11; Evans-Pritchard 1965). Tylor posited the notion that in essence the Judeo-Christian concept of God was closely approximated to "pagan and supernatural" concepts. He also argues that the concept of God developed from primitive belief systems. Tylor focused on the soul as a minimal indicator of religion and important in understanding the evolutionary stages by which religious phenomenon develops. The soul which evolves from belief in spirit entities (concept of animism) was seen to have derived from hallucinations, dreams and all types of aberrant mental processes. Although Tylor and other authors of his period have been accused of falling into the "evolutionist fallacy", one of their major contributions was to show the universality of religious experience, and most important, the underlying contentual similarities between both modern and "primitive" experiential frameworks. What these evolutionists failed to note or even consider was that the differences in experiential typography and belief systems may be greatly influenced by differences in cultural ideosyncrasies. That is, the language describing experiences may have marked differences cross-culturally. We must ask, does the overall effect and the symbolic representations used to describe these

experiences so radically diverge cross-culturally? One of the purposes of this thesis is to posit that in fact we can separate out the content of experience that is culturally specific and experience that appears to be species specific. And further, a difficulty in these early works is that "ritual" was not sufficiently separated from "religion", for as we now recognize, not every ritual system is or should be classified as religion; the notion of religion is a Western conceptualization, and many cultures do not even have a word for their overall belief systems.

Another functional contribution to the understanding of ritual-symbol interaction was developed by N.D. Fustel de Coulanges, in a work entitled The Ancient City (1864). Fustel de Coulanges recognized the importance of "spaces" or social environments that serve to carry messages thereby regulating social behaviour and relationships. Social order had to be continually re-modulated, through rules and ritual; thus, his view that ritual and symbolic activity is a mode of social control, embedding individual ideas into external symbols which functioned to reinforce social relationships. Although Fustel de Coulanges' work is seriously marred by lack of analytic and factual rigor, his basic notions of symbol and ritual are important: the concepts of the symbol-ritual environment, messages encoded in an environment and the concept that these messages regulate behaviour.

Emile Durkheim, who was a student of Fustel de Coulanges, appears to have greatly extended the latter's ideas. Durkheim viewed ritual activity as a means of regulating the internal solidarity and external identity of social groups (1915). Ritual is a means by which the individual embeds his behaviour into a social framework, thereby giving organization to social relationships.

However limited we find these functional notions, Durkheim must be credited with an important concept: that social symbolism acts as a switch point between external social constraints and organization and the internal experience of the individual actor. As well, he classified belief in the world into two domains, one containing all that is sacred, the other all that is profane. This concept of the sacred and the profane has had many ramifications over the years for the way in which we view ritual and religion and touches upon a concept developed in this thesis. For Durkheim, the fact that a belief system admits to sacred objects or experiences classifies it as a religion, whether it be belief in gods or in experience. It is precisely this point that is so important, for at some point, objects in the environment are given sacred qualities, the notion of transformation of information. Why, we must ask, are trees and snakes sacred cross-culturally under certain ritual conditions? Why are some objects "isolated" to become sacred in specific ritual parameters and others not? Durkheim discovered (though he did not elaborate on) an intimate link between symbolic information and the ritual context: that ritual may serve to alter the perception of information to the practitioner so dramatically as to give experience of objective realities -- sacred characteristics. However, it must be noted that Durkheim viewed the transformation of objects into sacred qualities as being resultant from social collective representations. That is, a snake becomes sacred due to social agreement through rites, not because the snake may represent or "trigger" experiences in man, cross-culturally as a species specific collective representation. For Durkheim and many anthropologists to date, ritual symbols are simply and only derived from social sources, not from an interaction with

our biological mode of perception which we know now to have genetic constraints and cognitive structures.

Further structural functional studies of ritual and religion in human relations are those typical of Malinowski (1931), A.R. Radcliffe-Brown (1939), and Clyde Kluckhohn (1942). Malinowski, following a slightly psychological but highly functional mode of explanation, stressed the importance of ritual (specifically magic) as a means by which man tries to bridge conflicts in empirical reality, when empirical means of explanation fail. No matter how much knowledge and science exists for man's use, there are always situations of environmental change which man is unable to explain or control and this gap of uncertainty generates ritual magic. Magic does not reside in nature, but only in the "relation between man and nature". Thus, an important contribution of Malinowski was not only to examine ritual from the perspective of fieldwork (previous theories were sorely lacking in fieldwork data) but to see ritual as a means of decreasing the uncertainty in men's minds, thereby reducing anxiety, giving positive solutions and organizing and fixing members of a society into an institutional relationship. Although he did not expand on this point, Malinowski clearly saw that the special experiences drawn from magic have their roots in deep psychological and physiological efficacy; in the natural processes of the human organism (1931). And it is precisely this point made by Malinowski which will be examined in great detail in this thesis: that ritual (and thus the mode of symbolic information processing) is a primary psychological and physiological aspect of normal organismic human behaviour.

Though Clyde Kluckhohn (1942) has posited a theory of myth and ritual, his only strong contribution as a functionalist is underscoring the importance of

seeing connections between myths and rituals. He, as others have commented before him, points out that often myth or ritual derives from dreams (an altered phase of consciousness), but still the analysis of ritual is viewed from a negative psychological perspective; ritual is an obsessive repetitive activity, often a symbolic dramatization of the fundamental needs of the society, whether "economic", "social", or "sexual". There is no question that Kluckholm's analysis is highly influenced by Freud's paper, "Obsessive Acts and Religious Practices" (1948-1950: vol. 2) as was Malinowski's work. It is unfortunate that Freud's contribution is now usually neglected (it has some concepts that are very important), but the aspect of ritual experience as a positive mental phase is so often overlooked. Until the rise of humanistic psychology and transpersonal psychology of the 1960s and 1970s, the emphasis on dramatic and transcendent experience and its role to view behaviour in a positive light has been ignored in anthropological models (except Paul Radin).

So far, the works discussed have been of the structural-functionalist school, whether psychological or sociological. Theories of this form were concerned with religious behaviour as a type of social action and how action maintains a social system. The great difficulty in these models lies in their inability to model phenomena related to psychological and behavioral alterations, of a non-Western form, and in fact there appears to be no structural continuity to these explanations, either in ritual or symbolic association.

A different form of analysis concerning ritual-symbol interaction is exemplified in various "ecological" studies. Two works are notable for their originality and utility for modeling how peoples transform phenomenon derived from their environment into cognized symbol systems: Roy Rappaport's Pigs for the

Ancestors (1968) and Gerardo Reichel-Dolmatoff's Amazonian Cosmos (1971).

An important contribution of Rappaport's study of ritual and ecology among the Tsembaga Marring people of New Guinea was to show that a symbolic system with ritual cycles may be seen to be a product of how people develop models of environmental phenomena. For example, the Tsembaga are "loath to build houses below 3,500 feet because certain spirits that are abroad at night in low areas give one fever" (1968:238). As Rappaport points out, the consequences of contact with the spirits is closely aligned to that of anopheles mosquitoes, carriers of malaria. The anthropologists' model of the phenomena he has termed the operational model and the environment conceived by the people who act in it, the cognized model. Though the two models may overlap, they are rarely identical. Rappaport's concern is how the cognized model "serves as a guide to action" and the "extent to which it elicits behaviour that is appropriate to the material situation of the actors..." (1968:239). However, this emphasis on the material activities of the actors may hinder a further investigation as to the phenomenological alterations present within the actors.

In Rappaport's description of various spirits residing in the Tsembaga environment, he mentions that a female spirit or set of spirits resides at a limestone cliff on the highest point of the Tsembaga territory. The female spirit is called "kun kaze ambra". Shamanic ecstasy is produced through the technique called "yur kaze ambra". He mentions that the female spirit (also known as the "smoke woman") is associated with the nose: "it is through the nostrils that she enters the shaman's body" (1968:40-41). Although Rappaport attempts to construct the cognized model of these spirits we are given no clue

as to how the "kun kaze ambra" and the ritual technique of "yur kun kaze" alter or play a role in the "religious phenomenology" of the ritual participants. So we ask, is there more to the ritual-symbol environment interaction than how actors modify their behaviour? Is ritual to be understood as actors solely coping with their environment and building up a "supernatural world"?

It will be argued that we must look at the short term and long term phenomenological changes of people who participate in ritual systems, and a number of systems which are obviously geared to this end will be explicated.

Reichel-Dolmatoff's analysis is based on interpretation through highly detailed studies of the "native's evaluation, categorization, and 'use' of such aspects as geographical features, fauna and flora, meteorological phenomena, sounds, colours, movements and so on" (1971:xv). He goes on to state:

These and other categories are culturally coded and constitute a means by which "reality" is handled and man is fitted into the biotope. The problem of the individual and societies place in what is nature to them is of importance here. It is on this level that symbolic thought establishes stereotypes and images, clusters of significant signs at different levels of abstraction, that, from there on, continue to pervade all patterns and institutions, technology, socio-economic systems and value orientations (1971:xv).

There is no question that these approaches are of great utility and a needed form of analysis; however, ecological studies lack emphasis on how symbolic information is transformed into transpersonal experience. And yet, Reichel-Dolmatoff's statement appears to be pointing to a mode of analysis that, if taken a slight "step further" to include transpersonal experience, might represent an analysis that penetrates the levels from "geographical features" to "abstraction". This thesis will explore in more detail the

mechanisms by which the mind "clusters significant signs at different levels of abstraction", what kinds of "images" and symbolic "stereotypes" are produced under various ritual-symbol structures. And further, the possibility and the methodology for analyzing the mechanisms and structure by which the mind moves from images and stereotypes to finer and finer levels of phenomenological abstraction.

Another paradigm that has emerged and has become quite popular in recent years as an explanatory framework is structuralism, notably semiotic structuralism. The term "semiotic" is used for two reasons: 1) because of its emphasis on signs and symbols of human behaviour and the central logic in how these signs and symbols comprise human thought, and 2) the major differences between evolutionary structuralist thought and the former (distinctions from d'Aquili, Laughlin and McManus 1979:3-4). The semiotic structuralist approach is exemplified by Claude Levi-Straus, E. Leach, P. Maranda and others. This paradigm holds that there is a finite or even singular form of logic underlying cognition and that this logic of cognition is synchronic; its mode of transformation is the same regardless of time and space elements. In the semiotic approach to the analysis of symbols, ritual or myth, there is a constant emphasis on "horizontal" structure, that is, the transformations between "surface" symbols, kinship classification, names in ritual texts, myths, etc. The transformations which are an ordering process are seen to be binary and oppositional, operating at an innate level of consciousness. For example, in the analysis of myth, Levi-Strauss seeks the underlying structure, a structure drawn from man's contradictory relationship with nature. These contradictions in any given culture, are really the transmissions of codes and

messages that on a structural level express an underlying structure; a central logic by which information is ordered. (Prattis 1979). Though this type of analysis is often very useful, its utility breaks down under certain conditions for the following reasons:

1) it is really only a surface analysis of phenomena, because it disregards the transformations in the cognitive structure of the organism (ie., neurological structure);

2) it disregards those experiences which "transcend" surface phenomena (ie., transpersonal experience) which are so common to ritual practices and can be seen to be mediated by alterations in neurophysiological structure;

3) no emphasis is given on how symbol information activates "vertically", being the transformations from the environmental level through to the organismic level and the laws governing these transformations; and

4) phenomena are usually only considered in a synchronic sense and not in conjunction with diachronic data.

These last four comments partially illustrate the differences between a semiotic structural approach and an evolutionary structural one, and also focus on questions of import to this thesis.

On the other hand, evolutionary structuralism is characterized in the following ways: it utilizes biological data, is diachronic in approach, and contrary to semiotic structuralism, the locus of activity is to be found in neurophysiological and cognitive structures (deep structures), and like all structuralism, structures are viewed as systems, and changes in surface structure are mediated by transformations in deep structure. Some authors who exemplify the evolutionary structuralist approach and are

essential to many of the arguments posited in this thesis are: Jung (1956), Waddington (1957), Piaget (1971), Count (1973), Wallace (1970), Schroder, Driver and Streufert (1967), Pribram (1971), MacLean (1973a, 1973b), Laughlin and d'Aquili (1974) and d'Aquili, Laughlin and McManus (1979).

There is a brand of evolutionary structuralism, developed in recent years, termed biogenetic structuralism, that has been an influence upon both the theoretical and methodological approaches used in this thesis. There is the need to discuss some of its central tenets, although specifics will be dealt with in some length later. Central to the theory of biogenetic structuralism is the tenet that "human behaviour, along with the behaviour of at least all higher vertebrates, is a function of the interaction between the organism's central nervous system, and the organism's environment" (Laughlin, McManus and d'Aquili 1979). Also, all nervous system functions are the result of activity of brain structure and brain structure develops and is to some extent constrained by genetic predisposition; therefore, all behaviour is at least partially under the constraints of the genetic code. The process of modification and interaction between the nervous system and the environment is termed equilibration (after Waddington 1957; Piaget 1971), and is a diachronic concept central to arguments yet to follow. In terms of ritual and symbol, the central approach is through the relationship between phenomenal events and the underlying processes of cognition, based on neurophysiology. Of course, as in any other theoretical system, it would be futile to examine all of the pertinent conceptual points of biogenetic structuralism, as so many will emerge in the following pages. However, I refer readers to a summary of terms and concepts to be found in The Spectrum of Ritual (d'Aquili, Laughlin and McManus 1979).

In recent years, emphasis on dramatic changes in phenomenology has been growing in the field of psychology, first evident in the emergence of humanistic psychology (see Maslow 1969). This trend has developed into a field called transpersonal psychology. The term "transpersonal" has been described as an "experience that transcends the limitations of corporeal existence through the use of techniques and agents that expand the purview of consciousness... and... transpersonalism as a movement may be defined as the scientific study of experience and knowledge derived from alternate phases of consciousness" (Laughlin, McManus and Shearer 1978). Transpersonal research is concerned with studying "dreams, mystical experience, awe, ecstasy", etc., and much data is derived from cross-cultural sources. In "Dreams, Trance and Visions: What a Transpersonal Anthropology Might Look Like" (Laughlin, McManus and Shearer 1978), the authors argue that the time is ripe for the emergence of a sophisticated transpersonal anthropology; an anthropology capable of exploring transpersonal phenomena, and able to generate hypotheses from a body of theory connected with field data.

In a recent paper (Laughlin, McManus and Webber 1979) we proposed that:

Because of the nature of the phenomena addressed by transpersonal anthropology, this body of theory must allow consideration, and give coherence to, all three sources of data available on such phenomena; ie., structural (neurocognitive, anatomical, neuroendocrinological, etc.), behavioral (description, ethnographic reports, behavioral testing, experiential, etc.), and phenomenological (introspective reports, experience, reports from alternative phases of consciousness, ethnographic sources reporting informant experiences, etc.).

In the aim of bridging these various fields of theory and data we proposed a synthesis through an already existing theoretical system; that of biogenetic

structuralism. Therefore, in many ways this thesis is an exploration of applied transpersonal anthropology. As well, this work seeks to "balance" horizontal as well as vertical examinations to the structures underlying transpersonal experience. The model of symbol penetration developed in the thesis derives from the author's research into how transpersonal experience alters perceptual views, how ritual aids in these transformations and also the implications of these cognitive changes, on both organism and collective groups. The reason for focusing on symbol penetration is primarily to develop predictive models of the effects of ritual-symbol-nervous system interaction, in conjunction with derivative experiences. In chapter 6, the model is applied to a text of a complex ritual: the Makah Wolf initiation. The author has no phenomenological data to aid in prediction of experience in this ritual. However, if the model and the data so far collected are coherent, one should be able to predict, solely on the basis of an ethnography (Ernst 1952), certain aspects of experience and underlying cognitive transformations. Finally, the specificity of the model which excludes other theoretical considerations (ie., economic, socio-political, etc.) derives from the author's contention that there is a primacy to the power of transpersonal experience in generating ritual practices and that much of what we study in ritual-symbol phenomena derives from experiences that are so transforming as to alter the motivations, perceptions, beliefs and creative manifestations of individuals.

The chapters that follow are written so as to best elucidate the model of symbol penetration. Chapter 2 is primarily concerned with how the nervous system constructs models, the relationships between genetic predisposition and

behaviour, how models are molded by environmental and genetic constraints and the processes by which models are relegated to operations outside our normal awareness. This chapter lays a foundation of biogenetic structural theory so that specifics of how information is coded, channeled, and transformed during ritual practices may be examined. Chapter 3 develops the bridge between neural models, symbols and phenomenology. In order to examine how information is treated by cognitive structures and the dramatic alterations to consciousness that may result from specific practices, it is necessary to define important terms such as symbol, phenomenology, and structural transformations in experience and information processing extrinsic to awareness. This chapter is critical for developing an understanding of why symbols are so evocative under ritual situations. In chapter 4, symbolic information is discussed with reference to ritual and how rituals order information for strategic entry into cognitive structures. The symbol-ritual field is discussed in chapter 5, briefly outlining the importance of considering the environmental parameters of a ritual situation. In chapter 6, the organizational model of symbol penetration is described and detailed through an example of a ritual and the attendant alterations of consciousness activated through practice of the ritual sequence. The second part of chapter 6 examines the link between alterations in consciousness and the underlying neurophysiological changes hypothesized from the data available in the ritual practice examined in the first part of chapter 6. Chapter 7 is a series of further applications and examples of symbol penetration, its primary aim being to demonstrate the methodology used in applying the model of symbol penetration and discussing implications of cognitive development accruing from transpersonal experience.

Chapter 9 concerns conclusions and implications derived from this work, with emphasis on considering the problematics of the model and the problems of transpersonal anthropology as an emerging discipline.

II NEURAL MODELING AND COGNITIVE DEVELOPMENT

The human organism cannot be defined by its innate capacities alone, nor by its actual behaviours alone, but rather by the link between them; by the way in which the first is transformed into the second, genetic potentialities focused into specific activities (Geertz 1973). We must therefore examine in detail our comprehension of the link and its transformation. In this analysis, the route to understanding lies through a concern with the particular and the concrete, especially analyses of the functioning of the nervous system - the process by which the link between gene and behaviour, brain and action is first made.

A central concept then in theories of cognitive and brain function is neural modeling (Eccles 1973, Pribram 1971, Young 1978). In biogenetic structuralist jargon, the term neurognosis refers to the initial form, structure and function of a neural model. All tissues during early development of the organism derive from an initial genetic "blueprint" and so too neural models ramify and change from early undifferentiated precursors. It is argued that neural models because of genetic predisposition are not totally plastic and there exist constraints in the early development of models which affect later structuring and information flow through models (Laughlin and d'Aquili 1974: 82-83). An important consideration is that there exists a genetic framework for how sensory input is organized. Further, the concept of neurognosis refers to all aspects of information processing, constrained sensory input, "information storage, retrieval, evaluation and the assignment of appropriate affect and action relative to stimulus" (Laughlin, McManus and d'Aquili 1979: 8-9). These processes considered in total, are a minimum definition of

cognition. Neurophysiological structures mediating information that form the foundation of cognition are termed neurognostic models.

Neurognostic models are comprised of efferent, afferent and inter-neuronal connections that form a pathway through a field of potential pathways in neural tissues (Eccles 1973)¹. By statistical assessment, the neurons most involved in the formation of models are the short axon, "local circuit" cells that predominate in the human nervous system (Rakic 1976, Caianiello 1968, Laughlin, Stephens and McManus n.d.). However, those models mediated by sub-cortical neural structures (ie., functioning with a motor or motivation-inducing component, these being examples of "lower order models" are entrained into more complex models dealing with conceptual discrimination (referred to as examples of "higher order models") through the extension and mediation of long axon neurons. These neurons are capable of involving the lower order models over a wide area of cortex, as well as, to a lesser degree, between cortical and sub-cortical structures and those elsewhere in the nervous system (eg., the diencephalon). It is entirely accurate to speak of all behaviour and cognition as being mediated by such models or networks of models (see Pribram 1971, Young 1978, Hebb 1949). It is presumed that all experience is to some degree mediated by these varying networks of neural models (Laughlin, McManus and d'Aquili 1979: chapter 1).

The development of the brain and growth of neural models occurs through an elaboration of neural processes - that is, the extension and ramification of dendritic-axonic-synaptic interconnections, the differential myelination ("sheathing and encasing") of neural cells once functionally entrained², and the increase in the proportion of component or support - cells. This elaboration is not totally plastic as both Roger Sperry (1961) and William Quinn and

James Gould (1979) have been at pains to make clear. Rather, in all cases the development of neural models proceeds: (1) from an initial, rudimentary blueprint of neural models that is genetically predisposed in its form, (2) in a sequence and periodicity of elaboration that is predisposed by genes, and (3) in response to genetically predisposed sensory input channels.

Thus, all neurognostic models originate from a genetically predisposed form, a form that has a determinate influence upon later transformation in the models (Laughlin and McManus n.d.).

Most importantly, this initial form of a model will establish constraints on the actual forms that models may take, much as an urban road plan constrains the driving routes of cars. The blueprint for genetically predisposed neural models is really a potential only; the potential which inheres within all neural cells from growing, linking up, and forming into certain kinds of neural models. The blueprint for neural models is then a blueprint of potential, and it may be called a potentiation structure (Laughlin and Stephens n.d.). What little potential may be finally actualized with reference to sub-cortical structures, will depend therefore on the endogenous and exogenous requirements for development.

All neural models undergo a process of development. The nature of any formative change in a model will be the result of a complex, on-going interaction between endogenous or genotypic and exogenous or environmental variables. This process of interaction is termed equilibration (Waddington 1957, Piaget 1971); the emphasis being placed on the diachronic nature of the process in which organisms pass through successive states of equilibrium and dis-equilibrium on their developmental path. A critical point here is that any neurognostic

model (at any time in its development) is a transformation on a potentiation structure (Laughlin and Stephens n.d.); it changes according to rules of potential and actual interaction with environmental phenomena.

This interaction logically implies that all models are structurally and functionally canalized in their development. The term canalization refers to the particular structural trajectory which any model in the process of development may take (Waddington 1957, Fishbein 1976). The initial neurognostic structure of a model may be viewed as setting a range of potential forms on the model, the form actually taken by a model in time will be determined, with genetic constraints, by a complex set of variables, referred to as "a steering committee" (ie., nutritional, physical aspects of the environment, social aspects of the environment, "cultural", etc.) that may inhibit, mold, set the direction of, facilitate, or otherwise control the functioning of that model. Changes in neurognostic models occur through a feedforward-feedback process physiologically active in the nervous system (Powers 1973) which involve modalities of sensory receptive patterns and motor subsystems in "tests" of model veridicality.

More generally speaking, neurognostic models are constructed in ontogenesis and reformed in on-going adaptation via the empirical modification cycle (or EMC) which is principally a process by which expectations derived from models (notions of what's going on out "there") are evaluated in relation to responses from the environment. That is, what consequences follow from actions executed or observed concerning the phenomena about which models were constructed. These models are modified to compensate for any perceived and salient discrepancy between the model and the environmental response (Laughlin and d'Aquili 1974,

Laughlin, McManus and d'Aquili 1979). Also, the more normal conceptual and behavioral functions of neural models are neither completely in synchrony nor harmony with the environmental phenomena to which they have become attuned. In the first place, there are constraints on the neural organization of information (see Sperry 1971, Quinn and Gould 1979), and in the second place, environmental stimuli are infinitely rich and varied (see Roszenweig, Bennett and Diamond 1972, Diamond 1976, Roszenweig and Bennett 1976). It is through this so-called testing procedure that the brain and nervous system maintain a partial isomorphism with the environment which results in responses adaptive to the organism.

The modeling of "environmental" phenomena and the phenomena themselves respectively belong to different arenas of understanding. The environment will, by virtue of neurognostic activity, claim some common ground, but there will always remain aspects of the environment which lie outside the realm of cognition. The combined system of all neural models in an organism is termed the cognized environment (E_c for short) and the environment being modeled (both external and internal to the organism) the operational environment (E_o for short) (see Laughlin and Brady 1978, Laughlin, d'Aquili and McManus 1979).³

Development in knowledge or conceptualization is the change in the E_c in its relationships to the E_o ; occasionally, there is reference to a change in the organization of the entire E_c system (as in the "leap" from concrete to formal operational thinking, Piaget 1977a) but more often than not there is reference to change in the organization of component neural networks (conceptual shifts) comprising the E_c (Piaget 1977b).⁴

Now, a further implication that follows from this understanding of human

cognition and the formation of neurognostic models, is that there exist systems of neurognostic models that remain functionally extraneous to a person's E_c . Because continual adaptation to the social and physical environment necessitates a measure of selectivity (we have evolved so to speak more with focus on the vicarious than on the direct), the consolidation of information modeled by neurognosis requires the exclusion of many aspects, and relegation of them to an unconscious status within the human organism. This exclusion from incorporation into the E_c either for a short period or for the duration of life-times (depending on the conditions in which the E_c grows or evolves) may occur at any time in the ontogenesis or evolution of the human organism. This process is especially active in the early years or evolutionary periods, during which time models go through the greatest number of changes in internal organization and integration of information (Bronson 1965, Piaget 1971, Webber, Stephens and Laughlin n.d.). The fact that there are systems of models that remain functionally extraneous to a person's awareness has great implications for the study of ritual, specifically the "need" for ritual communication. For, as a primary starting hypothesis, a primary function of ritual and thus symbol is to expose extraneous models to the level of conscious awareness (see chapter 4). In order to evaluate this hypothesis it will be necessary to examine how sensory information is "treated" or coded by the nervous system.

Sensory data are a particular kind of stimulus information about which the brain has organized a considerable corpus of knowledge. The relationship obtaining between any stimulus and that corpus of knowledge which informs the organism about this stimulus, has been termed the symbolic function (Laughlin,

McManus and Stephens n.d.). Neural models generated through organism-environment interaction provide salient information about incoming and outgoing stimulus. For example, with reference to the olfactory sense, a stimulus (eg. the smell of an apple) is coded by specific physiological receptor sites in the nose, then the data is transmitted to the olfactory lobe of the brain. However, at the level of brain, there exists a model of what an apple smells like, through a life history of conditioning. Yet this model may be drastically altered by experiences connected with apples (ie., in early childhood) which have remolded the primary "apple" model. Through trauma, the response might be "repulsion" of apple smell. "Apple" then has become a symbol for "repulsion", because the model is not totally isomorphic to the data being coded.

So a more accurate statement concerning the nature of the symbolic function would be this: the total information of an E_c model is evoked by partial sensory information pertaining to the E_o entity (eg. the apple smell) event of process that ~~has~~ been modeled (Laughlin, McManus and Stephens n.d., Sperber 1975). The evoking stimulus or sensory input is customarily termed a symbol.

III SYMBOLS AND PHENOMENOLOGY

Symbols, as Gary Witherspoon has cogently argued, are not representatives of reality, but rather reality transformed (1977). They are the digits of a peculiar code - not of the E_o but of the E_c - and cracking the code consists of permuting the digits appropriate to its combination. Analytically, we may speak of four kinds of digital permutations: incorporating symbolic processes of function, organization, and direction of information flow through the nervous system.

First, a symbol does not evoke the E_o entity that has been modeled, rather it evokes knowledge about the E_o - that is, both the E_c structural embodiment and the information contained therein. The meaning of a symbol then is the totality of those systems mediating information evoked by a symbol in any particular stimulus situation. Second, the same symbol may have different meaning depending for the most part on two factors - the context of the stimulus situation and the intensity of evocation. The intensity of evocation will vary according to a number of conditions working externally or internally to the E_c , including mode of expression (the intensity will be stronger if the symbol is presented through ritual communication by way of sound and sight rather than through a chance occurrence by way of sight only) and extent of penetrance of the stimulus onto E_c models. This latter factor is determined either by the degree of affect or attention directed at the stimulus or stimulus context (eg., a wolf observed in a hunting expedition may merely trigger a simple precept, whereas the same symbol presented in a Makah wolf ceremony may evoke an extremely complex set of experiences). Or, the degree of evocation may be a determinate of the level of cognitive com-

plexity at which an individual is operating (see McManus 1979: chapter 7). That is, an individual can operate in terms of formal operations in one context, and in another referent be conceptually concrete, an example of multilinearity in development (decalage in Piagetian terms) (McManus 1979: 234-235) (see Appendix III). For example, a mathematician comfortable with abstract-formal conceptualizations in the context of his or her work may, due to sociocultural conditioning patterns, operate in a conceptually concrete manner in the context of a ritual practice.

Third, symbols are not merely adjuncts to, but constituents of, highly organized cerebral processes. Like the players of a drama, symbols may reappear in successive scenes to provide sequence and order for what may often appear to be a confusion of unrelated events. From stimulus input to behavioral output, symbols orchestrate systems for thought and systems for action. Symbols which evoke information about an entire E_0 process may conceptually organize the connection between E_0 events and the organism's behaviour and goals into a temporal sequence - models serving to evoke additional models - until the connection is complete. We may thus speak of symbols as providing information with a structure of affective and effective utility, with "plans" of engagement (Miller, Galanter and Pribram 1960) and "strategies" for action (Flavell 1970). Thus, for many western families, the death of a relative may evoke entire plans for funerary and mortuary rites, not only triggering images of isolated events associated with such rites, but also evoking strategies for behaviours appropriate to the sequence of hospital-deathbed event, to funeral home arrangements and cemetery action. Symbols order and direct the flow of experience. They determine how events are experienced; they focus attention

and integrate information sufficient for meaningful re-cognition by organizing the information about events of the moment in terms of the knowledge contained within the E_c of E_o events experienced in the past.

Fourthly, then, the study of phenomenology ("consciousness") and semiosis (the growth by which a stimulus becomes a symbol in development) becomes critical to our comprehension of symbolism. Phenomenology is a process and consists of the normally existing cognizing function of the organism. More accurately, phenomenology is a combinatory function of E_o awareness, orientation response, stimulus reception and several moment to moment changes in neural structures operating upon information pertaining to the E_o (Pribram and McGuiness 1975). Phenomenology runs on stimulus deficit. Phenomenology consists not simply of happenings in neural tissue, but of a matching of states and processes of symbolic and E_c structures against which initiates E_c activity and stimulus "discovery" which terminates it (see Deutsch 1953). For as long as we remain in bewildered states about particular happenings in the E_o , our concern will be of a conscious sort (for more detailed elaboration of the above arguments, see Laughlin, McManus and Stephens, n.d.).

Semiosis determines the extent of this E_c focus; it is the process by which E_c structures and stimuli become patterned upon information relevant to an organism's experiences in development. Also, semiosis provides for phenomenological directionality. It is both structuring and stricturing. It serves to attune the E_c to those experiences most prevalent in the development of the human organism, particularly the information generated from organism interaction or action dialogue (Stephens and Laughlin 1978, Bruner 1975). But this dialogue often gives "insufficient feedback" to structure mediating

information gleaned from the idiosyncratic encounters outside the parameters of the ordinary E_o . These structures tend towards the more "unconditioned" nature of E_o events. A symbol is only the small tip of a large neural "iceberg". We are usually aware of only a fraction of the stimulus or image but usually unaware of the structures or the extent of the structures evoked by that stimulus (they are "unconscious"; Piaget 1976). It seems that on the surface of things the process of semiosis is simply one of systematic restriction. Organismic equilibration tends towards the "fixing" of irretrievable structures.

On the other hand, during development of the organism's brain and physiology and concomitant with the movement towards increased differentiation and organization of information, symbols accrue an ever increasing evocative field within the E_c . And this becomes especially accelerated when a symbol becomes incorporated into a higher level of cognitive complexity. By extending the field and permutations of information flow within the E_c , the number of phenomenological changes multiply, thereby adding to the potential of consciousness for more dramatic transformations (Webber, Stephens and Laughlin, n.d.b). Therefore, another aspect of semiosis is to supply consciousness with a vast constellation of symbols by which to organize and re-organize underlying information systems. Where the nervous system operates with specific constellations of structures and information and rules of organization specific to their functions, phenomenology operates with symbols and systems of symbols. Semiosis can be seen to be a mechanism serving to intermesh phenomenological functions through a developmentally coded system to access the structure of underlying models. It is only through the process

of semiosis that we can grasp how symbolic penetration of information into underlying models becomes accelerated and altered by the use of ritual practices.

However, it is important to specify, to at least some degree of precision, how symbols may operate to reorganize and transform phenomenology and systems of neural structure. Structures underlying phenomenology undergo a number of transformations in operating organization depending on the type of organization and extent of symbolic activity. Also, at this level of analysis, it is necessary to understand that phenomenology is phasically organized, and we may speak about phases of consciousness, instead of states of consciousness (Shearer, Laughlin and McManus n.d.). The problem with the "state" description of consciousness is that it lacks grounding in organismic ordering and structures, and much evidence supports this claim (Broughton 1975, Menaker et al. 1978). That is to point out that physiological systems that have direct bearing on alterations in phenomenology are modified and retuned continuously in infradian, circadian, ultradian cycles (one clear example being the neurohormonal changes accompanying the menstruation cycle). Phases that are phenomenologically salient, eg., sleep-wakefulness-depression-joy etc. we tend to be aware of and consciously isolate. Yet, not so with the transformations of these phases which can be discerned by awareness (or recollection). The subtle transformations of phases have been termed warps, ie., the sleep-wakefulness transitions called the hypnagogic and hypnopompic are most notable (see Schacter 1976). The importance of these analytic distinctions is to underscore the following argument; that it is highly probable for a transformation of structure to occur without cognizance of the transformation

as a distinct phase or warp, and a phenomenological phase will not occur without the co-occurrence of an underlying structural transformation (Shearer, Laughlin and McManus n.d.). Thus, phenomenological warps are either limited or extended manifestations of restructuring of information held within the system or systems of structure comprising the nervous system. In following chapters, detail is given of the order by which information penetrates and transforms models and this type of analysis is the direct result of concentrating on both salient phases and warps of a highly subtle nature; thus being able to discern the points that mark the transitions from one symbol to another - the activity of semiosis.

Thus, there may occur sensory transformations or changes in the information about the E_o reverberating in a system (Shearer, Laughlin and McManus n.d.), surface transformations or changes in the organization of neural subsystems of structure (in other words, information processed by a partial set of neural subsystems may result in changes), or deep transformations, changes in the complexity or simplicity of the rules by which systems and subsystems become entrained² (McManus 1979).

The reorganization or transformation of neural structures may therefore proceed through several phases. First, symbolic material may be introduced into phenomenology and the E_c structures may be "unconsciously" activated, thereby producing a shift in the phenomenological salience of symbols (i.e., model shifts and we experience this movement as a change in the kind of information reaching our awareness) or inversely symbolic information may be "consciously" ordered thereby effecting a change in the organization of neural structure (i.e., phenomenological alteration precedes neural reorganization).

Third, the information obtained from a phase of consciousness pertaining to a structure's mode of operation may lead, in effect, to changes in its rules of organization. The successive phases of reorganization may produce salient warps or changes, moving from sensory to deep transformations in neural systems and subsystems of neural structures.

It is the case that symbols may, through semiosis, acquire such an extensive evocative field; that is, their information has undergone reorganization both within and between subsystems of neural structures that they are registered in phenomenology as having particular significance. A special kind of stimuli, referred to as SYMBOLS, differentiated from the former, possess such phenomenological salience that they will draw an almost unequaled orientation response when presented before an individual - a response that may be termed a semiotropic response (Laughlin, McManus and Stephens n.d.). Attention is now directed to the nature of these symbols, their ability to penetrate through and move across multiple levels of meanings effecting and bringing about profound changes in organization of neural structures.

IV SYMBOLS AND RITUAL

It was proposed in the last chapter that penetration of neural models, in sum the reorganization of the E_c and internal E_o , is facilitated by SYMBOL systems.

SYMBOLS control (1) the nature and extent of transformations of neural structures underlying the various phases of consciousness, (2) the movement of information through these phases, and (3) the order of information within the transformations and phases, as well as provide the necessary conditions for integration of information across or between phases.

For any individual or group of individuals there emerges stimuli or internalized images the evocative powers of which are given universal cognizance and usually emphasized in ritually delimited clusters (ie., stylized motor activities such as dance, artifacts such as masks, iconic designs such as paintings). SYMBOLS evoke models of the most deep, profound and ramified meaning. And they can do this because they are stimuli elaborated and selected through phylogenesis and ontogenesis of the hominid line. SYMBOLS, through ontogenesis (and thus phylogenesis) have crossed the thresholds of change (transformations) in the move from immaturity to maturation of the nervous system, preserving and intensifying their powers of activation through use of the more refined processing capacity of the brain. They are in a sense the foci of those structural transforms, referred to earlier, drawing their power from changes which the organism has undergone in its development.

It was mentioned that innumerable variables in a sense constrain the power of SYMBOLS. And none of these are more debilitating than the very

factors which channel an organism through much of its growth in the first place. Experience undergone in a specific social and physical environment becomes cast in specific molds (see Ardener 1977). Some systems of neural structures mediating an experience become shunted out of awareness and other structures continue to operate in the forefront, while there still remain whole networks of structures that perpetually remain extrinsic to consciousness and, for that matter, to the sometimes altogether general focus of the E_c.

In order to better comprehend the evolution, meanings and permutations possible with ritual, we must further examine both latent models and models intrinsic to conscious awareness. And for this analysis, some of the key concepts developed by the psychologist Carl Jung will be most helpful. We have already mentioned that adaptation to the social and physical environments necessitates a measure of selectivity - that is, consolidation and exclusion of information. Both forms of information processing may relegate experience to a repressed state in the organism, often referred to as an "unconscious status". During the maturation of the organism, or in Jungian terms, individuation, a public "mask" or "image" is constructed. Jung called this public mask the functioning persona and repressed functions and attitudes, undifferentiated in development, our shadow. Repression occurs because of a rigid cultural conditioning, due to contradictorily defined sexual categories (see Jung, Collected Works, Vols. 6, 6, 9).

Jung also posited the concepts of the personal unconscious and collective unconscious. The personal unconscious is the realm of repressed, conditioned material, highly familial and culturally specific. The collective unconscious refers to the realm of the genetical and species specific material. Archetypes

are "primordial images", "always collective", expressing material primarily derived from the collective unconscious. And archetypes manifest themselves in primordial images through experience from dreams, trance, myth, art, fantasy and the like (Collected Works, Vols. 6:443, 9). These images serve to link the conscious ego with latent species specific material. Archetypes may either arise to conscious awareness spontaneously (as in normal dream material) or the linkage may be accelerated by willful application of awareness to archetypal symbols or imagery. Conscious communication between repressed personal or collective unconscious aspects greatly accelerates individuation, thereby healing potentially dangerous splits in the psyche.

It is suspected that experiences of archetypes are, in fact, experiences mediated by pure, or nearly pure, neurognostic structure- models at a stage prior to significant individuation. Experiences of the personal unconscious are mediated by models that have undergone significant elaboration. Historically, symbolic ritual systems are the most powerful tools in which to isolate repressed material, bringing vast constellations of models to conscious awareness.

The conditioned versus the unconditioned character of systems of neural structure refers to the way these systems are connected (ie., through what transformations they must pass in order for information to be evoked and integrated across the structures); the character of the transformations varying with the "kind" of constraints. All of which is to say that not all sensory information is capable of intense activation, because each organism is conditionally constrained as to how it may process information. Additionally, this will vary between groups of human beings according to the difference in which stimuli and images of great evocative power become translated or appro-

priated for general and social use (see Schrodër, Driver and Streufert 1967).

Realizing that every individual has certain constraints as to how much and in what manner symbol stimuli will transform models, how can information be tuned to penetrate and activate the most extensive array of models possible, within a given domain? The means adopted to penetrate multiple levels of neural structures has been termed the mechanism of symbol penetration (Webber and Laughlin 1979; Laughlin, McManus and Webber 1979; Webber 1979; Webber, Stephens and Laughlin n.d.). In fact, symbol penetration is a particular application of the systemic penetration hypothesis developed by John McManus (McManus, Laughlin and d'Aquili 1979:354-358). The penetration hypothesis of McManus is described in two phases: (1) "penetration refers to the effect that one level of systemic organization has on another", and (2) that a level of structural organization acts as a buffer between related structures and structures external to itself (McManus, Laughlin and d'Aquili 1979:356). Thus, we can speak about techniques of ritual systems that are able to cross buffer zones within the vast arrays of models available in the human organism. A penetration technique is defined as a practice which uses particular SYMBOLS to activate the phenomenology associated with the most extensive set of neural structures (Webber, Stephens and Laughlin n.d.a; Webber and Laughlin 1979).

Symbolic penetration is a practice that uses stimulus information to activate neural structures not ordinarily accessible to the E_c or consciousness. The two main characteristics of symbolic penetration are the potential it exhibits (1) to bypass inhibitions and constraints on neural changes and (2) to expand and alter systems of transformations comprising neural structures. This leads to an increase in neuro-cognitive flexibility: the flow

of information across phenomenological phases becomes greatly enhanced and conditions are secured for the integration of further information. It has been argued (Webber and Laughlin 1979) that those traditions of practitioners espousing the use of techniques to alter phases in phenomenology (the "transpersonal systems" in particular) arose from an understanding of this mechanism. Certain SYMBOLS, the effects of which became experientially testable, were recognized to have great efficiency in: (1) the ability to bypass ordinary constraints on the nature and extent of transformations in neural structures, (2) the ability to evoke information held by general and particular neural structures (ie., the activation of an extended range of neural models, the locus of which may lie within any number of phases and in any part of the brain); thereby laying down (3) the necessary conditions for integration of information across phases and between structures.

Now it is important, especially for purposes of later discussion, to differentiate between levels of systemic symbol penetration. Broadly speaking, there is penetration into the loci of personal and cultural conditioning patterns - Jung's "personal unconscious", etc. and penetration of relatively unelaborated models, perhaps the level of the "collective unconscious". Of course, in methodological terms, we could further differentiate these levels, perhaps producing many loci of penetration. However, what is critical is to briefly sketch the possibilities of transformations and to argue that there is a continuum of possible degrees of penetration; though we do have some evidence that penetration seems to work in a quantum like manner - continuum and quantum aspects of penetration are probably not

exclusive of each other. Therefore, following logically from previous arguments presented (transformation of neural models) transformation of undifferentiated models will generate phases of consciousness radically and qualitatively different than changes of models common to E_c function. It is precisely this type of analytic distinction that allows us to bridge and equate experience arising from undifferentiated structure and experience mediated by highly conditioned structure. And without the grounding of the symbol penetration model in neurophysiology, we would have no analytic means of predicting the causes of transpersonal experience - nor the genesis of these experiences in developmental sequence. This type of analytic "cutting edge" is applied and elaborated in Chapters 6 and 7 (see Appendix I).

It is here that the critical distinction is made between the "core" feature of a SYMBOL - one for which there is no "cultural" frame or the kind of experience that has been elicited through SYMBOL penetration, and the external manifestation or "outer" form of a SYMBOL. The latter type of SYMBOL are those stimulus information given over to recognizable images for general and social consumption. Core SYMBOLS, those structures involved in the mediation of experiences and information pertaining to relatively undifferentiated neurognostic structure, lack a frame for either personal description or general interpretation. Core SYMBOLS become translated or appropriated (they become "like" sensory images) for "cultural" use. Thus, for many Tibetan people the image of Dorje Sempa (Fig. 1, Chpt. 7) as typically painted and observed in the Tibetan Buddhist tradition is the translation of a core SYMBOL, the symbol being an experience of calm mental clarity, the forerunning experience of Nirvana (Lauf 1976). So too, for many Christians, the Greek cross is the

translation of a core SYMBOL, the symbol arising as an experience in consciousness associated with structural or psychic integration (Jung, Collected Works, Vols 9, 12, 13, 14; Guenon 1959).

A particular tradition will initiate an individual into a specific symbol penetration technique, because a certain set of SYMBOLS are well known to bring about in the practitioner an alteration in consciousness. There will be, of course, a collective universality to SYMBOLIC "arisings" because humans possess the same genetically endowed neural processes. SYMBOLS, then, especially those connected with deep structure, become hierarchically organized within systemic bundles such that one may speak of "core" SYMBOLS, the evocative fields of which contain the meanings of other secondary or tertiary ("outer") symbols (Laughlin, McManus and Stephens n.d.).

The function of rituals in delimiting these clusters of SYMBOLS so as to secure a matrix of deep as well as general or universal understinading is therefore crucial. The distinction between ritual behaviour and RITUAL is posited in exactly the same way, and for exactly the same reasons, as we made the distinction between symbol and SYMBOL. Rituals and symbols pervade our lives, but most ritual is performed outside of our awareness (Goffman 1971). Yet among all human societies there exist rituals that are particularly salient events and become conceptually and materially demarcated as discrete units vis-a-vis the normal flow of action or behaviour. These conceptualized ritual events we label RITUALS. RITUALS are, of course, SYMBOLS, or more properly, SYMBOL systems (Turner 1973) comprised of forms of diverse activities and techniques the common denominator of which rests with the especial purpose of SYMBOL penetration. Among transpersonal systems (ie., those of the Oglala Sioux or Navaho,

to take just two examples) RITUAL by virtue of (1) its sequential structuring or grammar-like format, (2) its repetitive and rhythmic structure, and (3) its coordination and synchronization of psycho-physiological processes both within and among participants (d'Aquili, Laughlin and McManus 1979), has the central effect of intensifying and amplifying stimuli so as to activate a greater range of neural structures than normally operative in the moment-to-moment function of the E_c (Laughlin and Stephens n.d.). RITUAL thus prepares the individual's E_c for gaining entry to the core SYMBOLS. RITUAL tends to be complex, organized in a hierarchy of SYMBOLS, forming an orchestration of SYMBOLS in sequence. More specifically RITUALS employ systemic bundles of SYMBOLS (invariably a SYMBOL triad - outer or tertiary, inner or secondary and core or primary symbols) moving from generally recognizable images of cultural attrition (those "outer" SYMBOLS) to evocation of experience pertaining to "core" SYMBOLS.

It is the combined process of semiosis and the attention attained through semiotropism that underlies the cognitive efficacy of ritual (Count 1973). RITUAL provides the socially prescribed presentation of highly salient SYMBOLS that, via semiosis and semiotropism, operate to "gear" the phenomenology of participants. Through RITUAL activity, SYMBOLS are presented by way of innumerable techniques and activities, attention to SYMBOLS is orchestrated through time, fields of structures and attendant phenomenology evoked, and salient experiences therefore attained.

V THE SYMBOL-RITUAL FIELD

Before going on to give examples of symbol penetration it will be necessary to isolate out another aspect of ritual - the environment of symbols used, or more exactly, those signs intended to evoke symbol or SYMBOL response. In rituals of most types, it is clearly evident that an environment of symbols are set up for the specific purpose of evoking response in the participants. For example, in the service of the Christian Mass, one encounters not only the objects used directly in the service, eg. the chalice, the altar, offering plate, vestments, incense, and incense holders, candles, wafers, etc. but the chapel and the surrounds of the chapel. Not only must we consider all those objects or events that activate senses, but the total "setting" of the event (Turner 1967, 1973; Levi-Strauss 1963: chapter 10; Murphy 1979).

Some objects will be presented together or at different times, eg. the wafer eaten, then the wine sipped. The wafer and the wine (plus cup) could be considered as a Symbol bundle: wafer-body of Christ; cup and wine - blood and mind of Christ. A concept which will be examined in greater depth later in this thesis is that some sensory activities are heightened at special times in a ritual for greater potential entry into the E_c or to evoke specific response.

It was mentioned earlier that there are models not normally accessible to conscious awareness. Simplistically stated, the function of a ritual is to allow certain types of stimuli to (1) gain entry into the nervous system and (2) to activate models normally inhibited from conscious awareness. Thus the "ritual-symbol field" is but an aspect of the symbol penetration technique.

But for general purposes the two concepts are describing the same thing. The use of the term "symbol penetration" refers to E_c activities. Whereas the "ritual-symbol field" refers generally to events in the E_o . The difference is only analytic, and in some meditation practices, the ritual-symbol field is constructed entirely within the E_c (see Chapters 6, 7, 8).

Another factor is the genesis of the ritual-symbol field, the question of why certain symbols are used, why others are ignored. It was mentioned earlier that there are types of specific stimuli that have played important roles in hominid evolution, whether passed on genetically or culturally. These symbols hold high phenomenological efficacy or potential to elicit a semiotrophic response. And it is at this time possible to classify these stimuli into major sensory modalities. For example, fire-red is well known to elicit specific psychophysiological responses (Birren 1969, Jacobs and Hustmyer 1974). Thus we find the predominant use of "core" symbols being used in ritual and often note the similarities of one symbol used in many rituals cross-culturally. This observation was repeatedly pointed out by Carl Jung (among others) who developed his concept of the collective unconscious from these observations (Jung, Collected Works). The importance of using the analytic concept of the ritual-symbol field is that one can delimit the form in which a stimulus is entering into interaction with the participants, look for stimuli which have a high potential of eliciting semiotropic response and for purposes of classification which become necessary when analysing the sequentiality of symbol penetration. In the mode of analysis developed, one generally works from E_o events to E_c events, then looks for relationships of causality.

VI SYMBOL PENETRATION MODEL

The main characteristic of symbolic penetration is the potential it exhibits to alter the general make-up of neural structures mediating information within the human organism. The triad of SYMBOLS are designed to move through, bridge and organize the range of experiences evoked by multiple levels of neural structures, many of which, as argued earlier, lie outside the normal parameters of the E_c . Any SYMBOL of great potency, then, will move through more than one set of neural fields or structures, activating structures of an "unconscious" or "unconditioned" kind, and connect these in such a way as to produce changes or transformations in the overall organization; transformations which will typically provoke attendant physiological changes leading to further alteration in neural organization. This chapter elaborates and applies the model of symbol penetration and sets out its psycho-physiological basis.

Formula and Example

To be more explicit about the organizational hierarchy of the SYMBOL triad and its phasic alteration of phenomenology, the process of SYMBOL penetration begins with the recognition of a ritually demarcated stimulus (ritual-symbol field) and is terminated by the integration of and absorption into the full range of structure and experiences evoked by the SYMBOL. We can describe the penetrance of a SYMBOL in the following manner, keeping in mind that the succession of four steps, so to speak, refers to three phases of transformation and one phase of phenomenological intensification.⁵

First, the outer SYMBOL, an entity or event in the E_o , is presented

to the individual for the purpose of evoking information about these entities or events in the E_c . Examples of an outer SYMBOL could include a visualization of a Greek cross, an animal mask worn by a ritual dancer, a lit candle, a Navaho sand painting (mandala), a cube, a crystal sphere, a cut diamond, an alchemy experiment, a classical symphony, and so on. Any one of the senses (e.g. auditory, visual, tactile, etc.) can serve as an "entry gate" to the E_c . It is also important to note that outer SYMBOLS may range from images of general or cultural appropriated use, e.g. a mask of an animal indigenous to a particular society, to a stimulus well devoid of any cultural patterning, e.g. the flame of a candle.

Secondly, the outer SYMBOL will evoke within the E_c an image or features thereof, either wholly or partially duplicated. This is the inner SYMBOL. The image and meaning of the inner SYMBOL will be accompanied by alterations in sensory awareness as well as by changes within those neural structures involved in the mediation of information relevant to the SYMBOL. Thus, the image may be greatly distorted and the alterations varying. Perhaps only a partial image of a SYMBOL will appear, with distortions being incorporated into the inner SYMBOL. This does not imply, however, that a SYMBOL cannot alter its sensory modality (as in the cross-modal transfer of information), for in fact they do. One may see patterns of coloured lights from listening to a symphony, smell a visualization, or touch an object and experience a pattern of lights (author's field data).

Third, the inner SYMBOL may evoke a core SYMBOL. An experience arising from a deep transformation (inner SYMBOL evoking core SYMBOL) will be accompanied by changes or warps in the flow of consciousness, and attendant

changes in physiological activity (Lex 1979; Webber n.d.). The core SYMBOL will be presented to consciousness significantly transformed from the character of the experiences elicited by either inner SYMBOL or outer SYMBOL. An example of these transformations is described below. The transformation occurring through the evocation of a core SYMBOL may be experienced through any one of the sense modes. Or the experience may be cognized as a "categorically distinct" change in consciousness, yet changes will also "be felt" via other senses. For example, consciousness may "feel" "light", "clear" and "empty", yet this experience typically arises conjointly with the body feeling "clear", "empty", "hollow" and "light"; sounds and sights will also seem "clear", "empty" and "light" and so forth (See Vajrasattva meditation, Chapter 7). The important point being that the Subject is still viewing the change or transformation "objectively" - the experience is coded as "categorically distinct" from the one who is undergoing to experience.

Fourth, the evocation of the core SYMBOL may be accompanied by an altogether radical change in the organism's physiology. We refer to this as "neurophysiological entrainment": a process in which a variety of physiological systems (e.g. neuroendocrine system, respiratory system, musculatory system, etc.) and their attendant neural structures become synchronized within a common system of transformations operating at the deepest level of awareness. Phenomenologically speaking, the entity focused upon within the E_c is no longer cognized as distinct from the individual undergoing the experience. Phenomenology becomes "phase amplified", then highly intensified and the subject is absorbed into the experience evoked by the core SYMBOL.

Just as white light is apperceived via a combination of multiple wavelengths of differently coloured light, before absorption into the core SYMBOL phenomenology continually shifts through multiple "wavelengths" of sensory information processing. At the moment of absorption into the core SYMBOL, one's phenomenology becomes amplified then intensified into a singular, highly salient phenomenological-physiological phase, much like a laser amplifies then emits an intense coherent beam of light, tuned to a very narrow wavelength band.

An example of this change would be represented by the Shaman becoming a jaguar. For a duration of time, the Shaman is totally, experientially, an animal; the Shaman's phenomenology is merged with the actualized animal mode of behaving (see Halifax 1979; Harner 1973; Reichel-Dolmatoff 1971; Eliade 1964; Webber 1979). This fourth phase is termed absorption into the core SYMBOL; it is a phase intensification of consciousness.

In summary, then, the mechanism of symbolic penetration works in the following manner. An E_o stimulus or outer SYMBOL may evoke an E_c model or inner SYMBOL which may further activate extended tracts of extrinsic E_c neural structures or core SYMBOLS. Activation of core SYMBOLS inevitably brings about transformations in the entire neuro-cognitive structure underlying phenomenology causing a wholesale change in the E_c as well as in its physiological character. The experience undergone by the individual may be felt or sensed through a change in consciousness or any one of the other senses, or the individual may become totally absorbed into the experience evoked by the core SYMBOL. Absorption is facilitated through the entrainment or bonding of neural structures within a common system of transformations; it is the wider field

of both active and latent neural structures which mediates the experience. The change arises from structural alteration of the entire neural system, rather than simply exchanges in the information held by particular neural structures. This latter change is essentially an intensification of the phenomenological experience undergone through evocation of the core SYMBOL.

Full description of practices pertaining to "transpersonal" experiences are rarely found in the literature. Nevertheless, an illustration is provided of how SYMBOLS penetrate by recourse to a ritual exercise based on field work.⁵ The example is a "mandala" meditation; a practice common to a number of transpersonal systems (Laughlin and McCroskey 1974; Jung 1954; Tucci 1961; Arguelles and Arguelles 1972).⁶ The practice is undergone in the Buddhist tradition and involves meditation upon a mandala called "the water kasina" ("Kasina" is the ancient Pali word equated with the Sanskrit "mandala").

The form of this practice is partially taken from an 1800 year old text by Batacharya Buddhaghosa (transl. 1964)⁷ and field notes of oral discourse from the meditation master Venerable Namgyal Rimpoche.

In this ritual exercise, the first step consists of the construction of the outer SYMBOL (ritual-symbol field), by first demarcating an area off for purposes of "unhindered" practice. The practitioner then fills a neutral grey bowl with clear, strained water (that is, water without impurities), 2 1/2 spans in front of his body)⁷. The bowl is placed at a 45° angle to visual level. The meditator then sits in a relaxed yet alert position, focusing on the water in the bowl for short intervals (5-30 seconds),

repeating silently the word "apo" (water). The outer SYMBOL is now complete. To evoke the inner SYMBOL, the mandala of water is duplicated within the visual system with or without the eyes closed. Evocation of the inner SYMBOL may take some time, depending on the skill and concentration of the practitioner. Traditionally (as in southern Asian countries) when the inner SYMBOL is evoked, and the image of the water becomes stabilized, the meditator then goes to another place to meditate further on the inner image (i.e., in a cell or isolation).

Further meditation on the inner SYMBOL will lead to a transformation in the practitioner's phase of consciousness. "Meanings" of the inner SYMBOL may be experienced through any one of the senses (as in the cross-modal transfer of information pertaining to the experience undergone by this change in consciousness). Both the text (Buddhaghosa 1964) and field data indicate that there is a succession of common experiences evoked by this visual image. One may perceive "streams" running throughout the inner SYMBOL, or "bubbles" emerging from the surface of the "water", or "steam" arising from the water.

All these "images" relate to the spectrum of features by which the brain ascertained the character of the symbol, i.e., what it does. They signify an extension in the neural processing and consolidation of information pertaining to the E_c model of water. These SYMBOLS are common fore-running indicators of the "classic" water mandala experience. This experience is often experienced as a "crystalline network", sometimes in space before the individual or in the body. Or parts of the body may comprise this crystalline network. The nature of this experience is interpreted as a

"connectiveness or cohesiveness". The salient point is that both "interpretations" are descriptions of the crystallizing network. The underlying condition is one of structural integration. This phase of consciousness represents a further change from the previous phase of consciousness. This additional transformation is the core SYMBOL. The core SYMBOL lacks any particular "frame" for interpretation (devoid of personal or cultural factors).

It is important to note that the core SYMBOL may and often does arise without the initial evocation of the inner SYMBOL. Evocation of the core SYMBOL is of course facilitated by the focus and equanimity of neural structures extant within the individual. Descriptions or interpretations of core SYMBOLS are usually found with reference to commonly recognized features, ie., a kettle pouring forth steam, or air bubbles within a glass of water. Bubbles and steam are an example of the translation of symbolic experience into generally recognizable images (experience often "framed" into culturally communicable images).

Further penetration and activation of structures underlying the core SYMBOL can lead to an experience of absorption. Absorption (Sanskrit - Dhyāna) may occur when the mind develops a balance between the workings of neural structure mediating the inner SYMBOL and structure mediating the core SYMBOL; in other words, a regulation of both kinds of structures by a common system of transformations. Only then will the core SYMBOL give rise to an experience in which there is no separation between the practitioner and the image upon which he or she is focusing (ie., "mystic union"). In other words, the phenomenology of the practitioner becomes fully "locked"

into the core SYMBOL, devoid of further sensory input. When absorption occurs, the practitioner's consciousness becomes synchronized (locked into) with the transformation of phase itself. The experience undergone refers not to the results of the transformation but to the moment of change itself. Further investigation of this last transformation is to be found in the next chapter.

Symbolic penetration has been described by referring to an example of a mandala meditation. It is clear from this example that outer SYMBOLS often have no intrinsic connection with the experience elicited through evocation of the core SYMBOL (ie., water - connectivity, fire - gold pillar, earth - expansion and contraction). The implication of this is especially important: scholars who are engaged in the study of transpersonal systems will simply be unable to comprehend the relationship between the outer SYMBOLS in use and the resulting phenomenology or experiences reported by subjects (or in texts, myths or imagery), unless these scholars are aware (experientially) of a vast enough array of core SYMBOL transformations. This latter point will be discussed in the conclusions of this thesis.

VII PSYCHOPHYSIOLOGY OF SYMBOL PENETRATION

The principle function of the human nervous system is the construction of models of information pertaining to entities in the E_o . An outer SYMBOL is a particular kind of stimulus information about which the brain has encoded an array of information. In the case of the visual system, an image is obtained from sensory relayed patterns stored and maintained by retinal and cortical cells (Land 1976). With the visualization of the water mandala, an image and model are evoked in the cortex which encodes information relevant to the scene and its features: that is, we recognize that the object before us is a bowl of water. We create a close isomorphism between objects in the E_o and a precoded model which leads to a given perception of water in a bowl. The evocation of an inner SYMBOL, however, requires a stabilized image, devoid of extraneous information pertaining to its pragmatic or conditional significance. In effect, information pertaining to sensory pattern (ie., the image) is retained. Transformation of neural structure mediating the outer SYMBOL must converge on the image alone. The requirement then is a stabilization of sensory pattern within the E_c model without recourse to further changes.

The stabilization of a specific sensory pattern within a field of neurons may operate in the following manner. Stabilization derives its effectiveness from phenomenological control over model evocation. It is apparent that the cortex encodes patterns of highly discriminative and specific power and that with direct stimulation or "discrete stimulus entry" patterns may be evoked specific to the phenomenological "command" (SYMBOL stimulus). Just as electrical stimulation of projection areas in the

occipital cortex may evoke an array of images typical to those "seen" upon activation of inner SYMBOLS in ritual practice (referring to such things as "illuminate balls", "coloured light", "blue discs", "coloured rings", "blue fogs" and so on) (see Luria 1966: 132-133), so too does it seem quite possible for individuals to voluntarily evoke, with the same degree of specificity (through penetration techniques), similar images.⁸

Both kinds of stimulation (electrical or phenomenological) involve activation of a specific field of neurons mediating information pertaining to a particular sensory pattern. The clarity in internal "duplication" of an outer SYMBOL varies to the degree to which the practitioner is capable of activating and stabilizing a specific locus of neural cells. The process by means of which the practitioner learns to "home" in on the specific neural field mediating the sensory pattern is here termed phenomenological feedback. It is through the ritual practice - repeated focus on the object and continuous drawing of attention to both the communication event and to the structure of the activity underlying the event - that the practitioner modifies and hones the neural model to specification. Meditation on mandalas, or for that matter, wearing a mask, is essentially a period of successive stimulation. Each re-focus is added "stimulus" to the neural field mediating the sensory pattern imposed by the outer SYMBOL. In some schools of meditation, practice continues until the practitioner can evoke the inner SYMBOL at will.

Convincing evidence for this process can be found in "biofeedback studies". In recent years, many people have been trained through "biofeedback"

techniques to generate specific brain wave frequencies and activate particular physiological functions (e.g. single motor-neurons, heart rate, visceral and glandular workings, etc.) (see Basmajian 1967; Blanchard, Young and McLeod 1972; Miller 1969). The instrumentation used in biofeedback is only an aid for the subject to recognize what it "feels" like to experience, to take one example, continuous trains of alpha waves and its accompanying physiological affects. Once the subjects can "feel" their way into a specific frequency of brain waves, they often no longer require the aid of instrumentative feedback, for they are in effect practising phenomenological feedback (Green and Green 1977). They become capable of activating or deactivating (as the case may be) certain physiological functions independent of any instrumental reading on the particular brain frequencies which match the experiential phases. In sum, then, outer SYMBOLS will only evoke a corresponding inner SYMBOL, when constraints on the "working form" (that is, the way a model mediating information about an E_o stimulus is routinely linked with other models in behavioral functions of the individual) of the neural structure are sufficiently altered to permit evocation and retention of the sensory pattern alone. And this is accomplished through phenomenological feedback.

Two conditions are met in the evocation of core SYMBOLS. The first is a change in the organization of specific neural structures mediating the information pertaining to the inner SYMBOL. And this is effected by stabilization of the sensory pattern: a balance is struck between externally and internally imposed constraints on the "form" or "purpose" of the image or inner SYMBOL evoked. Stabilization is in effect consolidation of a

particular structure of neural structures' relative power; its ability to enlarge and enrich the underlying system of transformations by which the individual's phenomenology may alter its sphere of penetration. The second condition, then, is a change in systemic integrity - a "charging" of transforms. The evocation of a core SYMBOL amounts to not only a change in the operating organization of specific neural structures but a regulation and appropriation of its rules of structuring (or transformations) for extending the sphere of cognitive penetrability. The efficacy of a SYMBOL lies in its ability to regulate and appropriate the rules of transformation by which the organization of specific neural structures operate. In neuro-physiological terms, the reduction in autonomic sympathetic nerve activity and heightening of autonomous parasympathetic nerve activity is what accompanies this change. Augmented parasympathetic activity effects synchronization and integration of cortical and sub-cortical rhythms in respective neural structure. As parasympathetic enervation increases, penetrance and thus activation of a wider field of neural structure operating in rhythm (that is, under the same system of transformation) will occur (see Lex 1979). It is at this point that the core SYMBOL is evoked.

As long as neural structures mediating the core SYMBOL remain active, autoreverberation will ensue (Laughlin, McManus and Webber 1979). In other words, neural cells will continue to "fire" and the experience generated through activation of the field of cells will remain salient to the individual. The structure underlying the core SYMBOL may continue to reverberate if it is capable of energizing itself without added stimulus. Stabilization of experiences undergone through activation of the core SYMBOL may result.

That is, the individual may remain aware of the change in experience over a significant period of time. If autoreverberation continues, phenomenology may become locked, and the experience intensified, within this single phase. As long as the structure reverberates, a warp in the normal flow of consciousness will continue.

The fourth phase, absorption, will occur with subsequent synchronization of especial physiological systems. A larger portion of the organism's physiology becomes entrained with the extended activation of those neural structures which mediate their working. Alteration in neuroendocrine (or neurotransmitter) activity serves as a catalyst to further change in the operation of other physiological systems (e.g the cardio-vascular system). Synchronization of all these systems effectively binds the organism more fully to the experience mediated by this particular change.

Initially, the experience undergone by the individual in the state of absorption may only last for a fraction of a second (author's field data), but because changes in physiology also occur, the individual may feel the bodily effects for a longer period: for many hours or days the individual will undergo successive modifications in behaviour brought about by the alteration of the individual's physiology. It is clear that the phenomenological phase induced by the evocation of a core SYMBOL is quite different from other phases. Indeed, it overlies a wholesale change in neural structure as well as in physiology and this mirrors an alteration in experience specific to the evocation of a core SYMBOL.

In the next chapter, these transformation principles are further tested and applied, drawing on more complex and diversified rituals.

VIII A VISUALIZATION IN MEDITATION

The practice of visualization in meditational systems affords direct analysis of cognitive transformations. Meditational practices are extremely broad in scope. They may range in subject from simply noting the qualitative alternations in breathing (e.g. concentration at tip of nostrils) to visualizations of symbols in one to fifty parts of the body (Chang 1963). Practices that utilize the visualization of images to bring about definitive changes in phenomenology have been practiced developed and refined for no less than 3000 years in India (Avalon 1964; Beyer 1973; Eliade 1969). It is also safe to state that the number and scope of exercises reached a zenith within Buddhism as practiced in Tibet. Buddhist meditations were introduced to Tibetans by Indian teachers eight to nine hundred years ago (see Evans-Wentz 1958).

One type of visualization meditation was previously described for purposes of outlining the process of SYMBOL penetration. The practice described below is more elaborate and differs from the water mandala in its aims and focus. The function of this meditation is to develop within the practitioner various experiences: (1) calming of thoughts, (2) calming of the physical body, and (3) experiencing the mind to be calm, bright in awareness to the point of feeling crystal clear or adamant. This meditation, known in Sanskrit as Vajrasattva (Tibet - Dorje Sempa) was taught in India at least by the 8th century A.D. - taught in various forms by different meditation teachers. The example below is derived from a Tibetan teacher of the Gelugpa school (direct lineages of Indian traditions) (see Appendix II for text) (from Willis 1972:83-86).

The words Vajrasattva or Dorje Sempa mean literally Diamond (adamantine-vajra - dorje) Being (sattva - sempa). The word vajra also refers to a symbolic thunderbolt sceptre which is diamond hard, crystal clear and represents the phase of consciousness experienced by an enlightened person (Pali - Buddha) or one who has experienced "transcendant" consciousness (Western word referring to the experience of consciousness beyond sensing). Thus the name of the meditation practice refers to the aim of the exercise or the actual experience to be developed. The meditation on Vajrasattva is also traditionally one of the "foundation" (tib. non-dro) or starting practices of all practitioners before more meditations are taught. Also, traditionally, practitioners from time to time keep coming back to this practice, as it is both the starting and the end point (beginning and culmination of practice).

One who wishes to practice the meditation is first initiated or empowered (tib. wong kur) through a ceremony by a qualified meditation teacher (one who has deeply experienced the Vajra or diamond quality of consciousness). In the initiation, the teacher "enters" the experience of Vajrasattva and from this phase of consciousness guides the initiate through symbology and practice, specific to the meditation. In the empowerment, the initiate hopefully gains a "feeling" for the quality of mind specific to the practice. Then, depending on instructions by the teacher, the initiate spends considerable time (from weeks to months) working with the practice and augmenting, experientially, various symbolic themes of the meditation.

The short version of this meditation follows a progression of

visualizations as shown in Figure 2 (text from Willis 1972:83-86). The purpose of Figure 2 is to demonstrate the methodological and theoretical applications of the symbol penetration model.⁹

In all traditional forms of the meditation introductory prayers (Figure 2, No. 2) are said to strengthen confidence (Sanskrit - saddha) and most importantly, determination and effort (Sanskrit - adātana) in one's practice - an example of preparing the E_c as one would prepare a ritual-symbol environment (ie., making the ritual environment sacred by ritual cleansing). We can hypothesize the connection between the inhibitory surround (Rakic 1976; Eccles 1977), those higher order neurons responsible for delimiting the activity of a specific model by deactivation of extraneous models and the common practice in ritual to inhibit extraneous stimuli, except for the stimuli intended for symbolic evocation. This inhibitory quality is what makes the ritual-symbol environment valuable for symbol penetration. The inner ritual-symbol environment, that of the E_c is further prepared in this meditation through the practice of the "hollow body" (see Chang 1963; Evans-Wetz 1958). One visualizes and feels the body to be hollow, like a balloon or a "tent". The practice of the hollow body is not to be found in the Vajrasattva text; however, it is either given orally or referred to textually and often assumed to be practiced whether stated or not (Figure 2, No. 2). As well the hollow body is practiced first before visualizations, for the same reasons that a painter would not want to imagine a landscape on a canvas that already has a portrait on it.

The transformation from the "bare canvas" to "suddenly" visualizing the form of Vajrasattva above the head, is an example of creating an inner

Figure 2

Progression of Practice (textual and oral instruction)	<u>Progression of Symbol Penetration</u>
1 Initial Prayers	Ritual-Symbol Field
2. Hollow Body (oral instruction - assumed will be practised, whether in text or not)	Ritual-Symbol Field - also a core SYMBOL
3. Visualization of Vajrasattva above your head (Fig. 1)	Creation of Inner SYMBOL - cultural specific image
4. Visualization of "seed-syllable" HUM (1st transformation of Vajrasattva inner SYMBOL to core SYMBOL - vibrant blue light. Rotating mantra is light experienced as sound, also a core SYMBOL).	Transformation of inner SYMBOL to 1st core SYMBOL
5. Prayer-securing will to practice (this prayer is often omitted in most versions)	Extension of Ritual-Symbol Field
6. Visualizations 1, 2, 3 in text are further transformations on seed syllable HUM	Ramification and extension - transformations on core SYMBOL HUM (vibrant blue light, with or without sound - an example of cross-modal transfer).
7. Visualization 4 in text - "waterfall" of white light and amrita (experienced as blissful secretions descending through body).	Core SYMBOL trans. to Core SYMBOL - amrita filling the body is a profound psychophysiological phase of consciousness (hypothesize large secretions of neurotransmitters into cerebro-spinal fluid and blood)

Figure 2 (cont'd)

8. Body and consciousness is experienced as blissful, crystal-adamantine, powerful, "bright awareness" - dispelling of toxins, "negative" factors of mind dissolve (eg. neuroses, delusions, etc.) - one becomes identical to Vajrasattva (not as the image visualized above)	Absorption into core SYMBOL - no longer in the realm of personal or sociocultural models - transpersonal experience
9. Mantra Yoga (100 syllables) - this mantra is recited many times in each exercise of the meditation	Depending on the cognitive development of the practitioner either emergence from the core SYMBOL and recitation of mantra, or mantra is utilized for extension of core SYMBOL. In either case, the mantra aids in stabilization of experience and the generation of cross-modal transfer - the mantra can then be used to quickly activate the core SYMBOL phenomenology.
10. Dissolution and transformation of image above the head, to light, then to HUM and all aspects of the organism (body, speech and mind) are again inseparable from the Vajrasattva experience.	This last exercise is primarily for those who have emerged from the core SYMBOL. It is a swift condensation of the whole practice. This last part is the "pith" of all the necessary stages needed for the practice of this meditation and is intended to extend the phase of consciousness from the practice to daily life activities. This last stage is an excellent example of how a symbolic system aims at causing radical and stabilized transformations to an individual's cognitive systems. That is, once the core SYMBOL is activated replication of the experience and extension into normal cognitive functions accelerates.

SYMBOL (Figure 2, No. 3). The Vajrasattva form referred to is a cultural specific SYMBOL, one element within a tradition's cosmology. Traditionally this figure is stabilized in consciousness (as in the water kasina meditation), as its form has been found to best represent the Core experience of the "Adamantine-being" (Vajrasattva). It facilitates the generating, whether consciously forced or not, the further cognitive transformations that lead to the "classic" experience of the diamond mind.

After the visualization of the "traditional" form of Vajrasattva, the text outlines many visual or auditory transformations (Figure 2, Nos. 4, 6, 7, 8, 9, 10). Now, the order of progression and the nature of the visualizations used is interesting, as they are the closest possible representatives of core SYMBOL; they are images with very slight cultural or personal conditioning patterns. For example, it was reported to this author that a person once meditating on Vajrasattva had a milk bottle appear consistently above his head (he was a Westerner). Similar types of transforms have been reported, ie., light bulbs, glass water jugs and similar objects. This type of transformation is a clear example of how quickly an alternation in phenomenology, which is uncommon to every day experience, is transformed into a familiar form; an object palatable to the cultural conditioning of the individual. What is important in the context of this argument, is that the images given in the practice act as "keys" to start neural model transformations. And the sign that these transformations are taking place is the development of associations on the meditation subjects.

Each image given in the text has its corresponding experience devoid

of traditional and personal conditioning. For example, the visualization of the "seed syllable" HUM represents the experience of radiant, vibrant blue light often reported as a "squiggle" of vibrating light, like a filament in a light bulb. Therefore, we can see the Tibetan stylized letter HUM being the closest approximation within specific cosmological framework to represent an experience often devoid of cultural or personal referents. It is because the syllable is the closest approximation to the core experience that meditation teachers (within a given tradition) have used this image to quickly evoke the corresponding core SYMBOL. This explanation is not only in accord with what the symbol penetration model would predict, but a similar argument is given by both Western meditation teachers and a Tibetan teacher.

The stage of absorption into a core SYMBOL is clearly defined within this meditation text (Figure 2, Nos. 7, 8): "Now your body is completely filled with amrita and light; your body has completely become like the body of Dorje Sempa (Vajrasattva)." Beginnings of this radical transformation of consciousness are to be seen with the light and amrita (blissful liquid secretions) descending from the top of one's head and permeating the whole body. The individual is so transformed by this experience that the mind and body are experienced as "clean", "clear and powerful". This experience is termed absorption because the phenomenology of the individual is in "total" phase or synchronization with the network of models that are in fact a core SYMBOL. It is also evident that the experience referred to in the text is radically different than the starting image of Vajrasattva - the Vajrasattva of the initial visualization has no seemingly "rational" connection to the

experience it is meant to represent. In the Tibetan Buddhist tradition of meditational philosophy (Abhidhamma) the initial image of Vajrasattva is considered to be an "outer offering" and the actual experience of absorption, a "most secret offering" and in the Indian schools of Abhidhamma, "learning symbol" (parikammanimmita) and "absorption" (jhana) in respective order.

It is possible to infer from the textual material and reports of this experience cross-culturally (also author's data), that there is an accompanied alteration to body physiology; one of the best indicators of a radical alteration in phase of consciousness (see Chapter 7 for previous discussion). It has been posited by a number of authors that the described physiological alterations, so common to this type of experience may be due to large fluctuations in neurohormonal balance and other physiological systems (see Avalon 1964; Eliade 1969; Elson, Hauri and Cunis 1977; Hirai 1974; Gopi 1971; Govinda 1960; Webber n.d.a; Webber n.d.b; Webber and Laughlin 1979; Laughlin, McManus and Webber 1979). The search for the underlying structural bases of a given behavioral or phenomenological change is not only an imperative in biogenetic structural methodology (see Laughlin, McManus and d'Aquili 1979:21-25) but fundamental to a sophisticated transpersonal anthropology (see Laughlin, McManus and Shearer 1978; Shearer, Laughlin and McManus n.d.; Laughlin, McManus and Webber 1979). It is precisely the characteristic phenomena of dramatic physiological change linked to radical phenomenological change which is a strong indicator of transpersonal experience.

The next consideration necessary in the transpersonal anthropological

approach is to verify the universality of the "Vajrasattva" experience. Is this type of experience only a function of those individuals participating in a given ritual or religious tradition, or is this a manifestation of a rare but universal neurocognitive transformation common to most religious or symbolic systems? The answer to this question is dependent on a number of variables: (1) the familiarity of the experience to the investigator, (2) can he or she pick out of reports, myths, ethnographies, etc. the essential aspects of the experience even though the phenomenon is framed in highly cultural or personal terms, (3) are there enough indicators of the experience to make cross-cultural comparisons? Applying these methodological strictures, the conclusion would be that the experience described in the text (it is also common to hundreds of other Tibetan meditation texts) is common to man cross-culturally. For example, strong indicators may be found in many Christian mystical writings (ie., St. John of the Cross 1959; Eliot 1944: 57; Guigo 11: 1188 (1979):88-89; Revelations XXII), often referred to as the "baptism of water".

Two further important considerations of the Vajrasattva meditations are (1) long term developmental effects of cognitive transpersonal phenomena, and (2) cognitive flexibility due to model construction and dissolution. The first consideration has been mentioned in the 10th stage of the practice (Fig. 2), the conscious extension of the experience into daily life. Throughout the meditation there is continual model building leading up to absorption in a specific structural network, yet after the mantra yoga phase (No. 9), there is conscious reconstruction of becoming "unified" with Vajrasattva. As in most meditational systems there is a recognition

that for the experiences derived during meditation to be effective, developmentally, stress must be placed on "transferring" phases of consciousness experienced in the period of meditation into "normal" consciousness. Ritual-meditation, as a repetitive behaviour is used to expose a model system, so that it operates as a functioning constellation within normal E_c functions. Cognitive changes are accelerated by reinforcing the discipline of extending transpersonal experience into normal E_c functions; a process of neurocognitive integration. At least in this particular tradition the direct aim is to transfer the "blissful, clear and powerful" body-mind phenomenology into daily life. The highly social function may be seen throughout the text; references in the meditation, experience not only for one's own enlightenment but the enlightenment of others. The oral teaching refers to being able to interact with people, not from a clouded, negative phenomenology, but a clear and radiant mind (Willis 1972; Chang 1963; Rimpoché 1979). Thus from the traditional Buddhist perspective the real aim of the practice is to develop compassion, yet it is only from a radically different type of perception that compassion is possible (Namgyal Rimpoché 1979; Govinda 1960).

Therefore, the aim of the meditation is both for the development of the practitioner and for the contribution on an interactive level with other members within a larger social context (this consideration will be discussed in the conclusions).

The second critical consideration directly pertains to the above discussion, the mechanism by which the E_c is cognitively restructured.

The Vajrasattva meditation, and for that matter all "arising and

dissolving yogas", function to develop the experience of constructing models and their dissolution. In Piagetian terms, we are seeing the active acceleration and exploration of formal thought (Inhelder and Piaget 1958; McManus 1979:192-194)⁴. Formal operations is the last developmental stage (from sensori-motor period - preoperational - concrete operational - to formal operational thought), a stage characterized by highly flexible thought; the ability to cognize operations on operations. Whereas concrete operational thought is tied to operations that "allow mental manipulation of the elements of reality, but are bound to reality as it exists in the individual", formal operations manipulate probability situations (McManus 1979:191). As John McManus has stated these properties:

This new coordinated thought system makes possible operations upon operations or thinking about thought. When this level is attained, thought has burst many of the biological constraints imposed at earlier levels, although it still functions in terms of elaborated, biologically based laws. A formal operational thought system is considered to be both a deeper organization of the self and a more flexible, stable adaptive system oriented toward the outer world (McManus 1979:192).

One of the central features of all "arising and dissolving yogas" is to enhance one's ability to construct complex model systems and the flexibility to mentally move from one mental construct to another - the realization that perceptions are manifestations of cognitive models. These meditations also have the characteristic of "operations on operations", experiencing subtle transformations and their attendant psycho-physiological effects.

As well, it could be posited that these types of symbol systems enhance

the potentiation of lessening biological constraints on mental-physical operations. For example, there is a meditation text called The Essentials of Mahamudra Practice by the Venerable Lama Kong Ka (in Chang 1963) that clearly details the practice for lessening biological-psychological constraints to activities. Biological constraints refers to autonomic psychophysiological processes, such as fear, anger, sorrow, joy, etc. In the text, the practice first assumes extensive training in arising and dissolving yoga, then asks the practitioner to "purposefully stir up desire-passions such as lust, hatred, jealousy, etc. and then observe them in depth"(Chang 1963:44). The process further described in the text is simply to observe the warp and phase of any mental process, that is in essence to observe and isolate a cognitive model ("thinking about thought" or an operation on an operation), bringing its affect to awareness, thereby disengaging its swift autonomic (usually thought to be unconscious) engagement. This is an example of accelerating cognitive flexibility, a process defined as "the number of units or dimensions of information considered and the degree to which these units are integrated into a system" (McManus 1979:217 from Schroder et al 1967). And the process described is a form of phenomenological feedback (see Chapter 7); the ability to isolate a model system (as in alpha wave training) through transformation, thereby gaining conscious control of the structure.

The above argument and its implications are central to our understanding of transpersonal phenomena. What is often described as a profound and transcendent experience has at its core experiences of highly extended formal operational thought linked to "breakthroughs" of cognitive flexibility.

On one level we are seeing the emergence of individuals from the constraints of models that perpetuate personal and sociocultural conditioning patterns and the penetration into structure and the development of novel model systems often associated with transpersonal experience (for many accounts, see Halifax 1979; Jung Collected Works, 6, 7, 16, 17).

In sum, the Vajrasattva ritual is an excellent example of the process of symbol penetration being applied in a sophisticated manner. The progression clearly moves from the use of outer symbols to activate associative models related to a specific core experience. It should be noted that it may take weeks to many years for the core expressions to augment and filter up to awareness. Another way of expressing this process is to analyze "Arising and Dissolving" as a continuum of "masking then unmasking" aspects of consciousness not ordinarily available to phenomenology. The mask in this case is the visualization of Vajrasattva above the head and its transformation in the practitioner's body. Conceivably, one could wear a "frontlet" on the head in the form of Vajrasattva. Both images are outer SYMBOLS. The efficacy of using constructs in the mind is that it develops flexibility in starting with the inner SYMBOL first. This is not to say that wearing a mask of Vajrasattva would not be effective in bringing about the necessary alterations in phenomenology. The symbol penetration model predicts that the two forms of practice are in essence identical. To support this hypothesis is an example from the masked dances of the Tibetan tradition. One of the masks (with regalia) symbolizes the wrathful aspect of consciousness, Mahakala (Nebesky-Wojkowitz 1976). In the Tibetan Buddhist tradition, there are

secret initiations and meditations of Mahakala that use the Arising and Dissolving format. In public Mahakala dances, only the masked format is used, yet the dancers of Mahakala are initiates and practitioners of the Yoga, the general public not initiates (Christopher Stephens, personal communication).

It is the author's purpose to have analysed Arising and Dissolving Yoga before examining masks and masked rituals. It will be argued later that the cognitive transformations undergone during both masked rituals and meditations of the Arising and Dissolving type are but simply different approaches to symbol penetration. However, the reason for first examining the Vajrasattva meditation is that it clearly shows within the text how masks (internalized) are used to bring about penetrance. Masks must be seen to be but a "label" of E_0 symbols worn on the body; the difference between these and "masks" used in meditation is a technical and social one. There is little question that the use of masks in ritual tends towards public life, whereas meditational practice tends to conform to the private life. However, these social differences should not interfere with investigators seeing the experiential and cognitive similarities underlying these sometimes diverse ritual practices. The hypothesis thus generated, predicts that whether in reference to meditation or masked ritual, the underlying neurocognitive transformations and social implications are identical; the differences may lie in technique, rapidity of accelerated transformations, the stress on making the transformations conscious and the total range of structures (eg. unconscious constellations of models) penetrated. What we view to be differences may have their roots mainly in the conditioning

history of the individual, his access to instruction and whether the mode of penetration leads to neurocognitive development (à la Piaget and Schroder et al.) or continual "shifting" of personal and cultural E_c models.

VIII B NORTHWEST COAST TRANSFORMATION MASKS

The model is now applied to an interpretation of transformation masks. However, it must be stated that from the above discussion, all masks are transformation masks. Masks are aids in the transformation of experience. There is not a class of "transformation masks" and another class, non-transformation masks. This is an analytical error. Yet, some masks openly suggest the process of multiple transformation than can take place in models underlying cognition. Let us examine briefly one such mask.

Figure 3a shows a mask of the Bella Coola people from the Northwest coast of Canada, a mask now in the collection of the National Museum of Man¹⁰. When the mask is closed it depicts a hawk's head. The beak of the hawk opens down the centre and the crown folds up to reveal a green human face (Figure 3b). As well, the mask opens to reveal a collar of 12 segments surrounding the human face, each segment being a face of a shark (Figure 3c). Of course, the meaning behind this mask can be interpreted in many ways. For example, the mask is signifying to the wearer and the audience one aspect of the development of a clan origin myth; when at an early remote time humans and animals were on the same "level" (Goldman 1975). Yet, without going into the details of either the mask or its use in a specific ritual, what strikes us first is that the transformation from the animal to the human is linked and connected within one mask. Thus we would posit that the outside and the inside of the mask are "two sides of the same coin". The human being is still connected with his or her animal heritage and the mask symbolizes

Fig 3a . Bella Coola mask-hawk head (see text for details)

Fig. 3b. (see text).

Fig. 30. (see text).

the ontogeny and phylogeny of an individual as an integrated part of his or her clan. The mask symbolically aids the wearer and the audience, through SYMBOL penetration, in eliciting specific archaic modes of behaviour and experience.

On surveying Northwest coast masks, or examining the wide range of mask costumes in the Hopi Kachina dances, one sees masks of males and females, female and male masks expressing emotional states, masks that are combinations of animal and human, and masks of non-humans and various "humanoid" masks. The large body of masked types, which may run into the hundreds, forms a symbolic "map" of models available to the E_c or extrinsic to the E_c (Laughlin, McManus and Webber 1979). The masks are representatives of the symbolic "map"; they are the outer expression of neural models lying extrinsic to consciousness. The "excavation" of these models was realized long ago to be adaptively necessary over the course of a life time, to promote direct experiential communication with cognitive processes; experiences and behaviours inhibited because of the outer focus of the maturing person.

VIII C THE MAKAH WOLF RITUAL

The purpose of the following analysis is to further test the model of symbol penetration by recourse to hypothesizing the nature of transformations not available either from textual source or from field data. By application of the model an attempt will be made to elicit phenomenological and behavioral changes (no data available) from known variables as given in a description of a specific ritual. This ritual is a four day secret Wolf initiation, still performed in 1932, and recorded by Alice Ernst (1952). Ernst's data is derived from personal direct observation and "word of mouth transcription" of the tribal dances of the Makah of Neah Bay. At the time of Ernst's study, the Makahs (a subtribe of the Nootkan) were located near to Cape Flattery on a northwest peninsula in "Washington, bordering on the Strait of Juan de Fuca directly across from Vancouver Island, whose west coast is territory of the Nootkan proper" (Ernst 1952:6).

Wolf rituals performed during the winter ceremonial season are called Klukwalle and this particular secret initiation, which lasts four days is called Qua-ech' (Ernst 1952:11-27). The first Klukwalle of a winter ritual season is initiatory (Qua-ech'), a means of bringing new members into the Klukwalle secret society. The setting up of the outer SYMBOLS occurs before the first day of initiation: invitations are sent to all members of the society; "inviters" wear either a cedar-bark headdress or a relatively simple box-type Wolf head mask (Fig. 4), with faces painted red or black. In terms of SYMBOL penetration, what we see here is the initial focusing of cognitive processes onto a delimited stimulus - humans

Fig. 4. Black animal-head mask worn early in the Klukwalle, basic Wolf pattern.
(Ernst 1952) (photograph courtesy of the Museum of the American Indian,
Heye Foundation)

pretending they are wolves. This process involves the setting up of the "ritual-symbol field", the environment that centres attention on information that gets more complicated and evokes greater semiotropic response. It is important to note that the ritual stimulus gets more complex, less human, as each day of the initiation proceeds.

On the first day (Itak'ashit'l), just after dusk, (wolves are nocturnal animals) no masks are worn, but all the members' faces are painted black. There is no dancing, talking, speech of any kind and the mood of the members is quite serious. Also, the normal diet is altered. Fasting is common and all the members come together at the Klukwalle house in ones and twos, forming a "pack". And finally, the only noise that is made emanates from small wolf whistles.

"There is no prescribed ritual procedure on this first-night gathering except for the procession through the village by the initiates" (Ernst 1952:13). To be emphasized here is that initially the Klukwalle members begin to act out certain traits and behaviour patterns specific to the wolf.

On the second day of the initiation (He-quat-luck)¹¹, beginning in the morning, all members are invited for a second night. On this night, specific Klukwalle songs are performed with the accompaniment of the bird rattle (tsē'ka), an undecorated object painted dark, with pebbles inside. The noise of the pebbles accompanies the song. Each person is required to "sing his own particular tsē'ka song". A procession of masked members go into every house of the village, returning to the Klukwalle house. The mask worn is a solid Wolf-head mask (Figure 5), more elaborate

Fig. 5. Solid-type Wolf mask worn on the second day (Ernst 1952).
(Photograph courtesy of the Museum of the American Indian,
Heye Foundation)

than the "secular" box-type mask worn before the first day. At dusk on the second night, people gather in the Klukwalle house with some of the initiates:

A fire is built in the centre of the house, and the people first begin to sing with bird rattles - Klukwalle songs, tsē'ka songs... In the midst of the singing there comes a sudden stop. The snarling Wolf is heard. The lone cry, "Hu-Hu-Hu," is begun by one person, then repeated, very long drawn out, "Hu,u-hu-u-hu", by all present in imitation of wolves, and so realistically that the forest wolves outside often swell the chorus (Ernst 1952:15).

It is also noted in the text that while the tsē'ka songs are sung, the singers stop occasionally to "give talk" to the song; that is, to interpose words about wolf behaviour. It is quite apparent that on this second night, the ritual environment has become more complex, as does the behaviour matching of human imitating wolf. That is to say, that the sensory stimulus available to cognitive processes of the individuals is such that all the senses are being attuned to either taking in Wolf behaviour or contributing to a refinement of the imitation. This refinement of imitation is the stabilization of the inner SYMBOL. That is a mode is clearly being formed between the ritual information coming in and the previous models of wolf behaviour and archaic wrathful, animalistic behavioral traits.

It is also worth noting that sometimes a "protean Wild Man mask" is worn along with the other wolf masks. The Wild Man is depicted in two forms: "the Wild Man proper (Figure 6), fierce and grotesque" and "a shadowy being, distinguished by the natives as "the Other Wild Man" (Figure 7). The outer behaviour of the first Wild Man may be described as "wrathful" "animalistic", "destructive". For example, if the person acting as the

Fig. 6. "Realistic Makah Wild Man mask, with traditional cedar bark trim and split eagle feathers" (Ernst, 1952). (Photograph courtesy of Museum of the American Indian, Heye Foundation)

Fig. 7. Makah mask representing the "Other Wild Man" or "The Destroyer." (Ernst 1952) (Field Museum of Natural History)

Wild Man sees a person he would chase them into the woods: "as he goes, he puts his hands down, then smells them, to follow the trail of the person". This activity, and **other** recorded behaviours, is interpreted as a focusing on the sense of smell, a very archaic sense, well developed in **many** animals but certainly a secondary sense of importance to humans. The "other Wild Man" appears to be a character opposite to the Wild Man, as he represents a spirit; the relationship being animal-man:spirit, brown (mask):White (mask). What we see here is the projection of specific behavioral and experiential mythic dramas which juxtapose the wolf-man relationship.

On the third day (Chechecha'ikl) the initiates are required to cut or gash themselves on arms or elsewhere. The "hatched" scar that results "is a mark of fortitude", a sign that one has been initiated. Initiates are gashed either by themselves or by an expert Klukwalle member. After this ritual initiates and members proceed through the village in a line, without masks, yet they conform to a particular behavioral pattern. "Their gait is a stiff, exaggerated ceremonial step." Members follow the initiates sometime singing tsē'ka songs, using the Klukwalle rattles, into the Klukwalle house. Near dusk, either the small wooden Wolf-head mask or the two Wild Man face masks or costumes are worn. As well, other masked creatures may appear, representing Bees, Raccoons, etc., "bad" creatures. Again, once in the house, Klukwalle songs are accompanied by bird rattles and drumming.

The "climax" of the four day ritual is reached when those who have been cut "dash about, as they experience the Wolf frenzy... putting the

fire out and giving the Wolf cry." The Wolf frenzy is described thus:

The singing is often lost in the noise of the Klukwalle rattles and Wolf calls. The initiates at a certain point come out and circle about round the fire, "showing what they are" (ie., that they are neophytes) until the fire is put out by those who go "He-quat'luck" as the Wolf frenzy is called. During the He-quat'luck a certain ordained type of Wolf mask is worn (Figure 8) by the initiate; this is accompanied by a very vigorous mimetic dance in which the protagonist, his face duly painted and dagger or knife in either hand, is held by two men with ropes until his frenzy subsides. Although the third evening is the appointed time for the He-quat'luck, beginnings of it might appear as early as the second night. (Ernst 1952:20)

The above reported events are very much in accord with the penetration model. In an organizational sense, the He-quat'luck corresponds to the third stage of SYMBOL penetration and more specifically what we have termed absorption into the core SYMBOL (Webber, Stephens and Laughlin n.d.a, Chapter 6). The more complex Wolf mask is worn because it represents the full evocation of and union with core models specific to "Wolf-like animalistic behaviour". In other words, the Wolf frenzy is a distinct phase of consciousness and it brings about deep neural entrainment and physiological synchronization. That is, the core model activated stimulates various visceral (limbic system functions) and "animalistic" motor functions, which have the effect of drastically altering normal organismic physiological and cognitive patterns. For those members who really do experience the Wolf frenzy, cognitive, experiential and physiological patterns are so "locked" into the specific core model that for all intents they have transformed into the core SYMBOL. Besides other data (Webber and Laughlin 1979; Webber, Stephens and Laughlin, n.d.a;

Fig.8. Hile'koob type Wolf mask used in the Spinning Wolf(or Whirling Wolf)dance.Symbolic of and used during the He-quat'luck(Ernst 1952:38) (photograph courtesy of the Museum of the American Indian,Heye Foundation)

Webber, Stephens and Laughlin n.d.b) which would confirm the above hypothesis (though it would be necessary to have interviewed those who experienced the Wolf frenzy to test the hypothesis in this specific case), it is noted that the report states that the Wolf frenzy may begin on the second night. In accord with the model, what is really needed is for the ritual stimulus to activate a core SYMBOL in a member which would signal the onset of the He-quat'luck experience.

On the fourth night of the Wolf ritual, spectators "capture" members of a masked procession as they enter the Klukwalle house. "Every masked person must be captured." Transformation of the core SYMBOL to models mediating normal phenomenology may be accomplished in the following manner:

The removal of the mask instantly calms the Wolf frenzy, and the wearer, "wild" until then, immediately becomes quiet. This "calming" of the Wolf frenzy or Wolf spirit, and the removal of the mask symbolizing it, form the dramatic culmination of the Dū-buk-be'yees. Here, as elsewhere in Northwest Coast ritual, the mask may evoke deity, demon, or merely animal. Its removal, uncovering the human creature hidden beneath whatever strange being whose powers he may have assumed with it, means the departure of these spirits, and the rehumanizing of the wearer. (Ernst 1952;24)

Since the mask is an outer projection of deeper SYMBOL models, removal of the mask serves to "break" communication, again symbolizing the intimate potential link between cultural-personal models and models normally extrinsic to awareness. It is also reported (p.24) that after the culmination of the initiation (after the capture), older members help initiates practice and perfect their dancing technique. Thus we are looking at a long

term process of ritual training and therefore SYMBOL penetration. Thus as is argued that not every initiate or member will experience transformation into the Wolf frenzy. It is through the year to year practice and perfecting of specific dances, ritual masking sequences, myth, etc., which afford the potential for SYMBOLS in the actual rituals to penetrate extrinsic models greatly intensifying semiotropic response resulting in experiential and physiological alterations.

The Wolf ritual starts in the "realm" of the human, moves into the animal "realm" and then re-emerges into the human "realm", culminating in a joyous festival during which all members of the community celebrate. It is as if initiates and members of the secret society have brought back with them experiences which can be blended with their personal and social roles, enriching their ties with the community as a whole.

Masks, then, are outer SYMBOL (cultural and personal) transformations of core SYMBOL models. A mask must reflect personal and cultural conditioning patterns, even though a mask may be primarily a representative of an archaic SYMBOL field. In Carl Jung's terms (Vol. 7, 9, 1959) a mask will represent either singly or in combination, elements of the "persona", the "personal unconscious" and elements from the "collective unconscious" (the realm of the archetypes). Penetration through specialized ritual is the acceleration of the demasking process. Wearing a mask in ritual context starts the SYMBOL penetration process, until information can activate models not normally available to awareness. Generally, once a core SYMBOL is evoked to consciousness, further attempted evocation of archaic material, within or without ritual parameters, becomes accelerated

through time. That is, experience of these models arise more and more frequently, surfacing (through neural transformations) in both dreams and in wakefulness (see Ridington's study of the Beaver Indians (1978)).

In conclusion, it is hypothesized that the essential means by which penetration is accelerated is through imitation (behavioral and phenomenological) of wolf behaviour, thus setting up a model corresponding to an inner SYMBOL. Due to the close correspondence between SYMBOL penetration hierarchy as interpreted from the text and the organizational model described in Chapter 6, a further implication is drawn. The reporting of a "classical" experience, known as the "Wolf Frenzy" that may occur to some individuals and at a time not dogmatically bound to a given stage in the ritual, implies the activation of a model system enervating autonomic and "animalistic" behaviour structures. Though this type of alteration in phenomenology and behaviour might be a rare occurrence, the fact that children as early as eight years of age are initiated and practice aspects of the ritual every year for perhaps 30 to 60 years, the process of semiosis (the growth of symbol in development) probably plays a key factor. For a Makah initiate, the sound of the wolf whistles, or a specific masked wolf dance would act as a semiotropic "trigger" SYMBOL, "gearing" the practitioner's phenomenological phase into a highly salient warp; as does the repetition of the Vajrasattva mantra evoke with rapidity the "cleansing" experience of Vajrasattva (Chapter 8a).

Another pattern (though not exclusive) may be seen to be operating throughout the ritual sequence; a series of masks are worn at specific times, signaling each transformation of penetrance. In the same way that

a "transformation mask" is used in Northwest Coast dances, we can conceive of the masks used in the Wolf Ritual as being connected through time, the difference being in that the masks are not physically connected in one mask; the difference may be cultural and not a difference in underlying cognitive transformation principles. Again, the penetration model would predict the latter view.

IX CONCLUSIONS AND IMPLICATIONS

In the introduction five questions were listed. It is felt that these questions are central to a necessary understanding of ritual-symbol interaction, and with current theory and data bases preliminary answers can be posited for these questions. On one level these questions can be reduced to asking: Is the structure of ritual practice causally linked to the code by which SYMBOL information is evoked in the nervous system? In the first three chapters, evidence was provided from neurophysiology (non-controversial) that information is coded and decoded in highly specific modes as it penetrates through neural networks. It is also understood that the flow of information is constrained through development, by a process of canalization. Thus, in the same way that sensory information is coded, it was posited that "transpersonal" experiences are coded in a hierarchical process and the purpose of this thesis was to uncover the rules of transformation governing the emergence and evocation of transpersonal experience (see Appendix I).

The rules of transformation underlying transpersonal experience appear from the analysis described in this thesis to be possible to explain at this time. From detailed studies of meditational systems, a model was generated, conforming to both the ritual structure and the sequential experiences leading to transpersonal phenomena. The approach to the generation of the symbol penetration model was to analytically link, with the closest possible isomorphism, these four elements:

- (1) sequential structural changes within the ritual practice that initiates transformation of experience,
- (2) author's data and textual data describing

22
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the sequential transformations of experience and behaviour associated with the ritual, and (3) theoretical and experimental neurophysiological data describing the rules governing the transformation of sensory information as it flows through a wide range of neural fields. The level of isomorphism discovered pertaining to the above elements generated the following hypotheses: that there is a universality to (1) how transpersonal phenomenon is evoked in the organism, (2) transformation rules can be explained in neurophysiological terms, (3) ritual structure is generally a manifestation of the most efficacious way to evoke transpersonal phenomena and is therefore a reflection of the hierarchical structure of symbol penetration, (4) ritual systems are a qualitative and quantitative mixture of symbolic elements ranging from those devoid of cultural and personal features to systems highly coloured by cultural and personal forms, and (5) the most direct means to generating transpersonal phenomenon is by the use of SYMBOL and RITUAL information relatively devoid of cultural or personal "frame".

In order to test the above hypotheses and penetration model, three further examples were examined in Chapter VIII. In the case of the Vajrasattva meditation it can be concluded that the above hypotheses hold well. The Vajrasattva meditation is an excellent example of highly structured RITUAL practice using symbolic elements closely linked to experience. That is, there is a class of RITUALS which use core SYMBOLS to quickly activate transpersonal phenomenology within a practitioner. Instead of diluting symbols used in the text, the actual SYMBOL experience is described and integrated into the practice.

The purpose of examining transformation masks was to further

demonstrate the link between outer SYMBOL and inner cognitive SYMBOL processes. It can be concluded that masks are the "outer" expression of cognitive transformations, conforming to symbol penetration. A transformation mask is the "material" form of an oral-ritual text involving visualization.

From the example of the four day Makah Wolf ritual, the organizational hierarchy of symbol penetration again appears to be operative. However, the real purpose of examining the Wolf ritual in depth was to derive hypotheses concerning experiential and behavioral changes, where none are known, from a single variable - an ethnographic text. Using the symbol penetration model explicated in early chapters, it was possible to (1) isolate the ritual-symbol structure by stages and by transformations of the activities of the practitioners, (2) isolate possible cognitive transformations and (3) to understand how semiosis and the process of semiotropism are essential ingredients in rituals that demand long developmental application.

Another conclusion that can be drawn from this study and a point emphasized many times is that symbol penetration is a process by which neural models are activated in a coded sequential structure; but the possible models activated are constrained by personal environmental and sociocultural conditioning factors. Ritual practice, defined as a symbol penetration technique, is a means by which conditioned inhibiting factors are bypassed, so that relatively "pure" neurognostic models may be evoked. It is posited that activation of extended tracts of relatively undifferentiated neural models, extrinsic to the E_c , account for a majority of transpersonal phenomena. However, data was presented to

indicate that when autoreverberation occurs to extrinsic E_c models and is linked to synchronized physiological systems, another class of transpersonal phenomena results— termed absorption into the core SYMBOL.

The implications of the absorption or other forms of transpersonal experience is important, not just on the individual level but in transformations among many individuals. Reports of absorption experiences are so dramatic in their ability to radically alter how one "sees" the world (both inner and outer), that we can hypothesize changes in how one views social relationships. For example, Brooke Medicine Eagle's vision (Halifax 1979:86-91) and the experience that the "words" of her "Rainbow Woman" were in fact her own, radically changed her perceptions of social relations: As a shaman, her focus of discourse altered from the tribal level to global considerations. Further, if we trace the accounts of Shamans in Eliade (1964) or in Halifax (1979) from initiation to practice there is usually a marked change in their status and how they interact with others. The social implications of transpersonal experience certainly warrant further investigation, for there is data available, and it might give us a better idea of long term developmental effects of ritual on social group activity.

In reference to long term developmental cognitive changes among individuals who have transpersonal experience, it was mentioned in earlier chapters (II, III, VIIIA) that some symbolic systems are "geared" to increase cognitive flexibility and develop formal operational thought processes. This conclusion is not only a direct implication of the symbolic penetration process, when applied as technique, but may be a direct aim (though not

stated as such by traditions) of many symbolic systems. Thus, it is posited that development of cognitive flexibility and the emergence of formal operational thought may be a necessary causative precondition to transpersonal experience. For as Brooke Medicine Eagle states:

We need to achieve a clarity and lack of resistance before we seek a vision - a surrendering, a relinquishing. If you are unwilling to be in your experience now, then vision will not open for you. You need to get on that circle where there is no resistance, no up, no down, where there are no square corners to stumble on. Then, someday, you become that circle. (Halifax 1979:91)

A final implication of this work (as an exercise in transpersonal anthropology) has been to demonstrate that examination of symbolic systems and especially transpersonal phenomena, demands of the investigator a degree of familiarity with personal insights into transpersonal experience (see Laughlin, McManus and Shearer 1978). In Chapter VI and VIIIA the analysis of meditational phenomenology strongly indicated that the initial "outer" SYMBOLS used in the ritual have no "rational" structural connection to the core SYMBOL evoked. A semiotic structural, economic, ecological, etc. mode of analysis would in no way explain or predict the relationship between a RITUAL structure, inner SYMBOLS and phenomenology of core and absorption SYMBOLS generated. The key variable needed is direct experience of a wide range of cognitive transformations (alternate phases of consciousness) so that cross-cultural studies are possible. Application of the symbol penetration model, without recourse to direct experience, leaves any analysis barren. The argument has been put forth many times that it is impossible to enter into a foreign culture's symbolic system through experiential means and therefore we can never really understand what "they"

are experiencing. The conclusions drawn from this study indicate that insights into transpersonal phenomena and the symbolic system of another culture is not a closed door. For, if in fact transpersonal experience is mediated by cognitive structural codes in all men, we can learn to be aware or bypass cultural and personal specifics, thereby gaining insight into the genesis of RITUAL and SYMBOL, why they are used, and the variable realities of other peoples - and our own.

APPENDIX IANALYTIC CONSTRUCTS OF THE SYMBOLIC PENETRATION MODEL

Proposition I - An alteration in phenomenology will always cause structural transformation within the organism.

Proposition II - A symbol is any stimulus in the E_o (inner or outer) that evokes more information in the E_c than in the E_o stimulus itself contains.

Proposition III - No symbolic stimuli act on neurognostic (physiological) structures randomly, but stimulus penetrates isomorphically, tuned to the incoming stimuli.

Proposition IV - Models are activated veridically as quantum units by symbolic input. Genetically, models are ontogenetically constructed to respond to information phasically in quantized units - canalized ontogeny.

Proposition V - The form of a model(s) will be constrained as to its potential transformations. Experience is constrained through mediation of neurophysiological structures.

Proposition VI - All models and thus experience will undergo a structured process of development.

*Proposition VII - Phenomenology associated (generally) with symbolic information will reflect and represent the non-random veridically organized penetration of data through quantum (as energy levels - limiting phases) phases.

Proposition VIII - Phenomenology and the models generating conjoining behaviour is heirarchically organized.

Proposition IX - Some models are deep structural (ie., limbic-brain stem) models, not normally activated through normal phases of consciousness. Many deep models are inhibited (sympathetic innervation) by canalizing pressures.

Proposition X - One symbol system is utilized over another because the symbolic stimuli is isomorphically tuned to veridically penetrate deep (archetypal) models.

Proposition XI - Many deep structural models give rise to experiences common to homo-sapiens cross-culturally (from Proposition IV). These experiences are termed universal core SYMBOLS. Universal experiences will generally quickly revert to conditioned cultural colourings, because they are associated with deep affective structures (ie., limbic system).

* Proposition VII is the concept behind the model of the 5 stages of penetration.

Proposition XII - Most symbolic traditions aim at eliciting universal core SYMBOLS through structured practices (ritual).

Proposition XIII - A penetration technique is thus a practice utilizing symbolic sensory input that potentially has the ability to activate the phenomenology associated with specific-extrinsic E_c models.

Proposition XIV - Penetration techniques expand and modify deep structures. The symbolic information is canalized, thus exerting canalized pressure on neurognostic structures, decreasing sympathetic inhibition to deep models.

Proposition XV - Penetration techniques (with specific primary symbols) are isolated and amplified by a tradition, because they are empirically known to be able to quickly move through and bridge multiple deep models.

Proposition XVI - The symbol-ritual environment amplifies and modulates specific neurognostic structures, so that information (primary symbols) will pass through normally inhibited models (eg. chanting may calm the practitioner to allow other information to act on deeper models).

Proposition XVII - Therefore, the "efficacy of a powerful penetration symbol lies in its ability to by-pass cultural and personal conditioning patterns, that inhibit latent constellations of deep models, lowering active sympathetic inhibition by extrinsic models to the universal models within the E_c " (Webber and Laughlin 1979).

APPENDIX II

THE YOGA METHOD OF DORJE SEMPA (from Willis 1972:83-86)

The meditation in this form was given by Geshe Thubten Yeshe in Nepal.

When Sakyamuni Buddha attained Enlightenment, he showed the Dorje Sempa form to his Vajrayana disciples. He showed this extraordinary form because to have emanated an ordinary vision would have only generated ordinary mind. He showed the extraordinary Dorje Sempa form, the Buddha's Body of Bliss, Sambhogakaya, in order to generate in his disciples the extraordinary mind. Of kriya tantra meditations presented here, this Gelugpa meditation of Dorje Sempa is the most powerful; it is practised especially to cure one of all negativities so that he may make progress on the Path, for the benefit of all sentient beings.

(This meditation is to be practised before sleeping. An attempt should be made to recite the mantra 108 times, but it must be recited at least 21 times.)¹

Before meditating, one should think, "In many previous lifetimes I have created very much bad karma. I must finish it now (in this very lifetime)! Bad karma is just like fire; if I don't finish it, it will burn me. Bad karma is just like poison; from the root of poison, poison grows. I must take the antidote or die."

Think and experience true sorrow because of all the bad karma you've created in countless lifetimes and in this one.²

Generate the thought, "This I will never do again." Now begin the meditation.

Visualize the Dorje Sempa sitting upon a moon bed atop a lotus about six to eight inches above your head. His body is the Buddha's body. It is omniscient Mind. Dorje Sempa sits, adorned with many beautiful jewels on his crown, around his neck, and hanging from his ears. Actually, all the jewels are of the nature of the Buddha's mind. Every part of his body is completely clear and transparent; it is completely white in colour. On his crown are five points symbolizing his attainment of the Five Dhyani Buddhas.³ In Dorje Sempa's heart center is the syllable "HUM", in the middle of a moon around the edges of which appears the rotating mantra.

Now offering a prayer to Dorje Sempa: "For myself and all my mother-sentient beings, from all negativities, all diseases, and all superstitions please let me be cleansed (get out)." (Offer this prayer with much sincerity.)

After offering this prayer, visualize this sequence:

1) Much light comes from the "HUM" in Dorje Sempa's heart center and radiates out from his body to all the universes.

2) Then, in the form of much light and amrita, all the Buddha's return blessings to Dorje Sempa's form.

3) Much white light and amrita flows into the "HUM" in his heart center.

4) Then from Dorje Sempa's heart, just like a waterfall, this light and amrita pours into your rTsa-dbU-ma (pronounced "sa-u-ma") (middle vein at the top of your head), comes to your heart center and spreads through your body. All your ignorance and all your negativities and all their imprints (of ego, disease, bad karma, superstitions, etc) are completely and quickly dispelled and disappear. The mind becomes very clean and clear and powerful. (Also, at the same time, he sends much light and amrita to all sentient beings.)

All pains and discomforts of your body are dispelled and you experience Dorje Sempa's transcendental happiness. (At the same time higher positive imprints are planted for future times.) Now your body is completely filled with amrita and light; your body has completely become like the body of Dorje Sempa.

Now recite the mantra:

OM BENZAR SATO SA MA YA / MA NU PA LA YA /
 BENZAR SATO TUE NO PA TI STHA / DR DHO ME
 BHA WA / SU TO SHYO ME BHA WA / SU PO SYO ME
 BHA WA / A NU RA KTO ME BHA WA / SA RVA
 SIDDHI MME PRA YA CCHA / SA RVA KA RMA SU CA
 ME / CI TTAM SRE YAH / KU RU HUM / HA HA HA HA
 HO / BHA GA VAN SA RVA TO THA GA TA / BENZAR
 MA ME MU NCA / BENZAR BHA WA MA HA SA MA YA
 SA TO AH HUM PHAT⁴

Now offer thanks to Dorje Sempa for his great kindness: "By my ignorance, degenerated and being the opposite of vows, Guru Savior, please grant your help. The principle "holding-Vajra"⁵, who is of the nature of compassion, to you I go to refuge, to the principle of all beings."

Now Dorje Sempa tells you, "My son, Dorje disciple, and the son of my lineage, all your delusions and veils and degenerated vows are all purified."

Then, as white light, he sinks through your sa-u-ma to your heart center and into the "HUM" there. He is absorbed into you and your three doors of body, speech and mind become inseparable from Dorje Sempa.

Endnotes to Appendix II

1. It is the usual practice to use a mala, or Tibetan rosary, to count off the number of times a mantra is to be repeated. This way, counting does not interfere with the concentration of the actual meditation.
2. One is instructed to contemplate these thoughts for as long as one feels necessary and until one truly feels sorry for having created bad karma, i.e., for having sown seeds of bad action and thought.
3. That is, the Attainment of the Five Wisdoms.
4. The mantra of Dorje Sempa (Sanskrit, Vajrasattva) is the "One-Hundred-Syllable Mantra".
5. Translation of "Vajradhara".

APPENDIX III

ASPECTS OF COGNITIVE COMPLEXITY

I. Piagetian Developmental Stages (summary derived extensively from McManus 1979:183-215)

1. Sensorimotor Period

At birth structures are extremely elementary, constrained to motoric activity (reflexes). Intelligence at this stage is the coordination between sensory and motor systems. The sensorimotor period lasts for about 1.5 years and can be divided into 6 substages. Through the various substages there is a gradual transition from purely motoric-sensory intelligence to activity characterized by comprehension (insight). One can view this period as the emergence of the symbolic function. That is, organismic activity is freeing itself from some of the early biological constraints.

2. Preoperational Period

This stage arises with the ability to represent a stimulus within the internal environment. During the second year of life there is the appearance of the semiotic function - imagery and language-representation of objects not currently in the immediate perceptual field. The transition between stages 1 and 2 is through imitation, the basis of which is representation. This second stage typically lasts from ages 2 to 7 years. In this stage we see early conceptualization of practical physics, number, time and space constructions with emergence of elementary structures of language. Initial constraints of biology are loosened and broadened.

3. Concrete Operational Thought

Operation refers to actions that take place in thought, and are reversible transformations. This type of operation allows flexibility in behaviour, as mental actions can be substituted for motor action. That is, trying out "alternatives" mentally. "Concrete operations allow mental manipulation of the elements of reality but are bound to reality as it exists for the individual. Even fantasy and speculation involve the rearrangement of known entities."

4. Formal Operational Thought

This stage involves a fully flexible system of thought - operations on operations. Concrete operations are tied to existing reality. Multiple variations on possibility are a characteristic feature of formal operational thought. What in fact becomes possible is the act of thinking about the process of thought. It could be said that formal operational thought is the ability to grasp and instigate interconnections between what appears to exist and what may exist; characteristic flexibility of model construction and dissolution.

II. Conceptual Systems Theory

Reference is made here to the work of Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967). This theory treats the E_c as an information processing system, related to an individual's social environment. As in the above stage model development proceeds in an "invariant sequence from relative undifferentiation to high articulation and organization". The four stages below move from relative disorganization

to relative high organization:

Stage 1: relatively fixed perceptions or hierarchical organization.

Stage 2: emergence of alternative perceptions of the same dimensions.

Stage 3: complex rules for simultaneously comparing and relating perspectives.

Stage 4: generation of complex relationships among rules of comparison.

Progressively, each stage has greater structural complexity, with more efficient and comprehensive information processing abilities. Also complexity of these stages is age related as are the two preceding stage models. The concern here is not so much what a person thinks but the way they think about a given problem. Complexity then can be defined in terms of the number of units or dimensions of information considered and the degree to which these units are integrated into a system. Information processing, as a function of the interaction between organism and environment takes the shape of an inverted U-curve:

Environmental Complexity (Schroder, Driver & Streufert 1967)

1.

Relationship between Environmental and Behavioral Complexity for Different Levels of Personality Structure (Schroder, Driver and Streufert 1967)

Concrete structures tend to be favoured towards "external standards", eg. authority and categorical thinking and tend to avoid discrepancies within the cognitive system - lower adaptive flexibility. Contrasted to concrete structures, complex structures are characterized by flexibility and mobility. It should be noted that a person may be able to operate in a highly complex mode or in formal operational thought, yet not choose to, depending on internal or external environmental constraints. Or a person may operate at a formal complex level, yet exhibit a low degree of moral development.

NOTES

1. Afferent neurons are those that carry information into the nervous system from the periphery. Efferent neurons carry commands out to the muscles and organs. Interneurons are those that intervene between afferent and efferent neurons, and thus are responsible for mediation.
2. "Entrainment" refers to the process by which the nervous system links models in an array to form more complex arrangements. Entrainment of models can include both their neurobiological and, in some cases, their neuroendocrinological components.
3. The terms are borrowed from Rappaport (1968) but have been considerably expanded elsewhere (Laughlin and Brady 1978).
4. For a summary of Piaget's cognitive development model, see Appendix III.
5. The organizational model of the SYMBOL triad is based on author's field data and published works (some have been cited earlier in this paper). Some of the experiential data, specified in this article is derived from both reports of practitioners (meditation teachers, students of various transpersonal traditions, etc.) and data of the author's practice in various transpersonal systems, including south Asian Buddhist meditation schools (i.e., Kabbalistic, Masonic, Christian Mystic) and schools synthesizing ancient Eastern and Western teachings with modern science. Participation in these schools extends to instruction in the theoretical and historical traditions. The classification scheme is more specifically adapted and modified from a number of ancient sources to analyse diverse cross-cultural transpersonal traditions. One source is the Abhidhamma, a Buddhist meditative-philosophical tradition, which specializes in the analysis of transpersonal experience (see B. Arnuddhacariya, A Manual of Abhidhamma, M.T. Narada (tr.), Colombo, Ceylon, Buddhist Publication Society, 1975). The other major source is the Tantric Buddhist meditation traditions. The models of symbolic penetration is explicated in terms of both biogenetic structural theory and analysis of experiences undergone in ritual practice and participation in transpersonal systems.
6. Mandala is a sanskrit word (pali - kasina) that refers to inner or outer objects of mind that aid in the proper unfoldment of specific phases of consciousness. The word mandala literally means "mind device", an object that represents a unifying principle of consciousness, directed towards a core SYMBOL.
7. The text cited is approximately 2000 years old and composed by the Buddhist monk, Buddhaghosa (1964) which clearly outlines this meditation and 39 others. This text is still used today.

7. Traditionally, a grey neutral coloured clay bowl is used, because other colours have been found to inhibit the development of the inner and core SYMBOLS specific to this meditation. A "span" is the length measured from the elbow to the tip of the middle finger.
8. Aleksandr Luria cites the experimental work of Hoff and Potzl (1930) and Penfield (1941), concerning the images evoked by electrical stimulation of the occipital cortex: A. Luria (1966:132-133).
9. Data describing experiences are derived from three sources: (1) reports from practitioners and teachers, (2) textual reports and descriptions and (3) author's experience with this and similar meditations.
10. This mask is in the collection of the National Museum of Man (Canada), specimen number VII-B-20 (258).
11. He-quat-luck refers to "Masked dance with Wolf headdress", symbolizing the Wolf frenzy (Sah-ook') (Ernst 1952:13fn17).

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